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DEPARTMENTS OF LABOR AND HEALTH, EDUCATION, AND WELFARE APPROPRIATIONS FOR 1968



HEARINGS

BEFORE A

SUBCOMMITTEE OF THE COMMITTEE ON APPROPRIATIONS HOUSE OF REPRESENTATIVES

NINETIETH CONGRESS

FIRST SESSION

SUBCOMMITTEE ON DEPARTMENTS OF LABOR AND HEALTH, EDUCATION, AND WELFARE AND RELATED AGENCIES

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ROBERT M. MOYER, *Staff Assistant to the Subcommittee*

PART 4

PUBLIC HEALTH SERVICE

(Except the National Institutes of Health and the National Institute of Mental Health)

Printed for the use of the Committee on Appropriations

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DEPARTMENTS OF LABOR AND HEALTH, EDUCATION, AND WELFARE APPROPRIATIONS FOR 1968

MONDAY, APRIL 3, 1967.

PUBLIC HEALTH SERVICE

WITNESSES

DR. WILLIAM H. STEWART, SURGEON GENERAL
DR. LEONARD D. FENNINGER, DIRECTOR, BUREAU OF HEALTH MANPOWER
DR. RICHARD A. PRINDLE, DIRECTOR, BUREAU OF DISEASE PREVENTION AND ENVIRONMENTAL CONTROL
DR. CARRUTH J. WAGNER, DIRECTOR, BUREAU OF HEALTH SERVICES
DR. JAMES A. SHANNON, DIRECTOR, NATIONAL INSTITUTES OF HEALTH
DR. STANLEY F. YOLLES, DIRECTOR, NATIONAL INSTITUTE OF MENTAL HEALTH
JOHN H. KELSO, EXECUTIVE OFFICER
G. R. CLAGUE, ACTING CHIEF FINANCE OFFICER
JAMES B. CARDWELL, DEPUTY ASSISTANT SECRETARY, BUDGET

Mr. FLOOD. The committee will come to order.

We are very pleased and very fortunate indeed to have with us this morning the Surgeon General and other top officials of the Public Health Service. Of course, first on the agenda will be the general statement by our old friend, Dr. William H. Stewart, the Surgeon General.

General, we have your biographical sketch, which we will insert at this point.

BIOGRAPHICAL SKETCH OF PRINCIPAL WITNESS

William H. Stewart, M.D., was named Surgeon General of the Public Health Service by President Lyndon B. Johnson on September 24, 1965. Six days later, the U.S. Senate confirmed his appointment as 10th Surgeon General in the 167-year history of the Service.

Born in Minneapolis, Minn., on May 19, 1921, he attended the University of Minnesota and Louisiana State University, and received his medical degree from Louisiana State University School of Medicine in 1945. His internship at Philadelphia General Hospital was followed by 2 years' duty with the U.S. Army Medical Corps. Upon completion of his residency in pediatrics at Charity Hospital, New Orleans, he was in private practice in Alexandria, La., until he entered the Public Health Service in 1951. He was certified by the American Board of Pediatrics in 1953.

His first 2 years as a Public Health Service career officer were spent in Thomasville, Ga., where he headed the epidemiological unit of the Communicable Disease Center. He came to PHS headquarters in 1953 to serve the next 4 years with the National Heart Institute and the heart control program of the Bureau of State Services. The next 8 years, he spent in a staff capacity, first to the Surgeon General and, later, to the Secretary of Health, Education, and Welfare.

In 1957, he became Assistant to the Surgeon General and the following year was named Chief of the Division of Public Health Methods, major staff planning arm to the Surgeon General. During the 3 years he held that post, he also served as Executive Director of the Surgeon General's Committee on Medical Manpower which issued "Physicians for a Growing America"; was a member of the Study Group on the Mission and Organization of the Public Health Service, and was staff director for the study of environmental health, conducted by the National Advisory Health Council and for the special report of the same Council on the role of the Service in medical care.

In early 1963, after organizing the new Division of Community Health Services, he was named to the immediate Office of the Secretary of Health, Education, and Welfare as Assistant to the Special Assistant to the Secretary (Health and Medical Affairs). He left that post in August of 1965 to become Director of the National Heart Institute, the office he held when he was named Surgeon General.

Dr. Stewart is author of scores of publications and presentations dealing with a wide range of public health issues including spread and control of various diseases, health status of the population, education for the medical and health professions and medical care administration.

He is a member of the American Academy of Pediatrics, the American Medical Association, the American Heart Association and the American Public Health Association. Dr. and Mrs. Stewart and their two daughters reside at 9108 Ewing Drive, Bethesda, Md.

General Statement

Mr. Flood. You may proceed, Doctor.

Dr. Stewart. It is a pleasure and privilege for me to appear before you to support the budget request of the Public Health Service for the 1968 fiscal year. I welcome this opportunity to discuss with you some of our accomplishments, our aspirations, and and our challenges.

In doing so I am deeply aware, as are all my colleagues, of the profound debt of gratitude owed by the Amercian people to this subcommittee and its late chairman, John Fogarty, of Rhode Island. His dedication, vision, and practical leadership helped to shape the entire American health effort over the past two decades. Many men and women are alive and well today, thanks to decisions made and vigorously espoused by John Fogarty. In looking ahead with you toward new health challenges, we cannot forget the part he played in bringing us to our present state of national health.

Life Expectancy and Death Rate

For we are a healthy people, with much to be proud of. Life expectancy for a child born in the United States stands above 70 years—a landmark figure passed for the first time in 1964. For one major segment of the population, white females, life expactancy surpasses three quarters of a century. Our death rate, about 943 per 100,000 persons per year, ranks among the best in the world.

Mr. Flood. What country has the best death rate?

Dr. Stewart. I believe it is Sweden, but I would have to look it up.

I have some representative death rates. United States is 9.4; Australia 9; Canada, 7.7; Denmark, 9.9; England and Wales, 11.3; Netherlands, 7.7; Norway, 9.5, and Sweden is 10. Those are 1964 figures because some of the 1965 data is provisional still.

Mr. Flood. Just so we get a feeling for the situation.

COMMUNICABLE DISEASE OUTBREAKS

Dr. STEWART. The year 1966 was free of major outbreaks of communicable diseases. Polio, which just 15 years ago struck more than 50,000 children, was reduced to only 102 cases, most of which occurred among an inadequately immunized population group in a single State. A total of 35 States reported no cases of polio at all.

Mr. FLOOD. When did we run that national immunization campaign.

Dr. STEWART. 1955–56 was when the vaccine was introduced. There was a drive on the Salk vaccine and then when the oral Sabin vaccine came, there was a drive all over the country for that.

Mr. FLOOD. I never saw or heard of anything like it before or since.

Dr. STEWART. That is right. I do not tthink there is any other instance in history in which you had almost a total eradication of a disease in the span of 15 years.

Mr. FLOOD. I saw entire neighborhoods go by bus down the street in my town as if going to a picnic or a ball game.

Dr. STEWART. This is correct.

This, year, as I shall explain in greater detail later on, we hope and expect to bring measles similarly to the vanishing point.

Mr. FLOOD. You do not include German measles in that?

Dr. STEWART. No, sir.

Mr. FLOOD. What is the difference between German and regular measles?

Dr. STEWART. They are caused by two different kinds of viruses and they have symptomatology somewhat different, but they look enough alike to both be called measles.

Mr. FLOOD. German measles is the hard nut to crack?

Dr. STEWART. German measles is the one we have now in the experimental vaccine. If it comes to be one that can be used generally, then we have cracked it. But it is the one we are trying to crack now.

Mr. FLOOD. This is a frightful thing in pregnancy?

Dr. STEWART. This is where it is most important.

Mr. FLOOD. I suppose your people will touch on that later on.

Dr. STEWART. Yes, they will.

Speaking of regular measles, this much underestimated disease has affected hundreds of thosuands of children annually, killing several hundred and leaving thousands with the handicapping after effects of its complications. Soon measles will be gone from the United States.

REMAINING HEALTH CHALLENGES

Yet, with these accomplishments, we must also record serious shortcomings. In 1966, 247 infants died before their first birthday out of each 10,000 born alive. This is the lowest infant mortality rate we have ever achieved in this country. But at least 10 nations in the world have lower rates of infant mortality than we do.

Mr. FLOOD. Will you list those at this point in the record.

Dr. STEWART. Yes, I will.

(The information follows:)

Infant mortality rates, 1965

[Rates are deaths under 1 year of age per 1,000 live births]

Rank	Country	Rate	Rank	Country	Rate
1	Sweden	[1] 12.4	8	Switzerland (1964)	19.0
2	Netherlands	[1] 14.4	9	New Zealand	19.5
3	Norway (1964)	[1] 16.8	10	United Kingdom	19.6
4	Finland	[1] 17.4	11	Federal Republic of Germany	[1] 23.8
5	Australia	18.5	12	Eastern Germany	[1] 24.5
5	Japan	[1] 18.5	13	Canada (1964)	24.7
7	Denmark (1964)	[1] 18.7	13	United States of America	[1] 24.7

[1] Provisional.

Dr. STEWART. Virtually every statistical index of health shows a great gap between the most favored and least favored segments of our population. More than 20 million Americans are limited in their activity by chronic illnesses or impairments—many of which could have been prevented or reduced in severity. More than 100,000 Americans are killed by accidents each year and more than 52 million injured on our highways, in our homes and places of work.

Moreover there are other conditions, less easily defined in quantitative terms, that challenge and reproach us. Millions of our people lack ready access to the medical care they need. This access is blocked by social and economic circumstances, by the uneven distribution and unequal quality of health manpower and facilities, and by gaps and failures in the organization of health services.

The Nation has not yet provided its people with adequate protection against the hazards of the modern environment. The case against air pollution has been well demonstrated, but pollution still hangs heavy over our cities. Diseases that need no longer occur still take their toll. The noise and stress of the metropolis do undefined but undeniable damage to physical and mental well-being.

These are some of the health problems we face as a Nation. They are the concern of the Public Health Service and of the larger American health partnership of which the Federal component is one important segment. They are also the concern of you in the Congress and of the nearly 200 million consumers of health services you represent.

These problems can be broadly classified in two major categories. The first includes problems related to health care, including the facilities and patterns of organization through which health care is delivered to those who need it. The second includes problems of health protection, including the prevention of disease and the provision of a safe, healthful environment.

To meet these challenges, two major resources are required—health knowledge, generated principally through research, and health manpower, recruited and trained to perform a great variety of necessary tasks.

These are the basic ingredients of the national health enterprise. In dealing with these problems the Federal Government works with individuals in private practice of the health professions, with community hospitals and other institutions, universities, public health agencies in States and communities, and many voluntary health organizations. The partnership also involves American industry, labor, and other elements whose major function is outside of but not unrelated to

health. The health of the people is the product of the society in which they live.

Within this broad context, the role of the Federal Government has changed rapidly in recent years. More than 50 major programs have been authorized by the Congress and assigned to the Public Health Service in the past two decades. As a result we are now engaged on many fronts in action programs related to health care and health protection, and in resource development programs to develop knowledge and manpower.

NEW ORGANIZATION OF THE SERVICE

On January 1 of this year, we put into effect a new organizational structure. We have realined our programs to correspond with our major missions. As a result of this reorganization, we believe that we are now equipped to discharge our responsibilities more efficiently and effectively in each of the areas of primary concern.

HEALTH CARE

In the field of health care, the new Bureau of Health Services combines our direct medical care programs for Federal beneficiaries with programs which help to support delivery of care to the whole population.

The Bureau of Health Services helps to support the planning and construction of hospitals, nursing homes and other health facilities through the Hill-Burton program. It plays an important part in medicare by helping to assure that our older people receive the high quality of professional services to which they are entitled. This Bureau also supports and encourages the development of home care programs, services to the mentally retarded, and programs to meet health emergencies.

In addition, the Bureau of Health Services includes our oldest program—the provision of medical care to merchant seamen—and our largest direct medical program which meets the health needs of American Indians and Alaskan natives. Through this Bureau we also provide medical services to such Federal agencies as the Bureau of Prisons, the Coast Guard, and the Peace Corps.

Mr. FLOOD. What do you mean, "the provision of medical care to merchant seamen, our oldest program"?

Dr. STEWART. This was the original program of the Public Health Service in 1798 which was established to give relief to sick and disabled seamen.

This is not a random combination. In our direct medical care programs we are experimenting with better ways of delivering health care both within and outside institutional walls. At the same time we are stimulating the development of new approaches in hospitals and communities receiving our support. These innovations interact. A new method which shows promise in one of our own facilities may well be adaptable to a community setting. This kind of research and development in health services can point the way toward improved patterns of organization which in turn can eliminate the barriers to care I outlined a few minutes ago.

HEALTH PROTECTION

Let me turn now to the field of health protection. The new Bureau of Disease Prevention and Environment Control pulls together our programs designed to keep diseases from happening, to minimize their impact, and to help produce a safer environment. It studies the relationship between the occurrence of disease and the environment in which it occurs.

Five national centers comprise this Bureau. Two are dedicated to the control of specific types of disease—the communicable and chronic diseases, respectively. The other three are engaged in environmental protection—the National Centers for Air Pollution Control, Radiological Health, and Urban and Industrial Health.

This combination unites a number of complementary skills and permits their use in a mutually reinforcing way. These involve the identification of factors that lead to disease, the development of methods to control these factors, and the application of these control measures, working in close concert with State and local health agencies.

The success we have experienced in reducing or eliminating many communicable diseases is the result of this process—malaria, typhoid fever and many others have been controlled by environmental measures. We are now studying environmental factors in relation to chronic as well as communicable disease patterns in search of new methods of control.

The Bureau of Disease Prevention and Environmental Control protects the American people against the introduction of diseases from abroad through its foreign quarantine activities, and against the spread of disease through its epidemic control program. It combats chronic disease by supporting programs to apply new knowledge in early diagnosis and treatment. It works to reduce the toll of accidents in homes, work places, and on the highways. It helps to reduce pollution by promulgating standards, supporting control programs, and initiating Federal enforcement procedures. Across the board, it helps to build the competence of State and local agencies for dealing with this broad range of problems of health protection.

Our newest area of major responsibility is related to the development of the Nation's health manpower resources. Each year since 1963 the Congress has enacted legislation strengthening the Federal role in meeting the critical needs for professional and auxiliary health workers—the Health Professions Educational Assistance Act of 1963, the Nurse Training Act of 1964, the Health Professions Amendments of 1965, and last year's Allied Health Professions Act.

To administer these new programs we have created the Bureau of Health Manpower which provides, for the first time, a central Federal focus for education in the health professions.

Our first concern is with meeting shortages which exist in all the major health disciplines. Through construction grants, we support the development of new medical, dental, nursing, and other professional schools and the expansion of existing schools. Through scholarship and loan programs we help to broaden the base of recruitment for these disciplines.

But we are not concerned with numbers alone. Through improvement grants we are able to support the strengthening of curricula so that new graduates may be better prepared to serve health needs. We

are also encouraging the development of new kinds of health workers and the more effective meshing of skills of the health care team. For the Nation's need for health service can be met only if each doctor, each nurse, each ancillary health worker performs those tasks for which he is best qualified and operates at the peak of his capacity.

BIOMEDICAL RESEARCH

The greatest health resource of all, the one upon which all else ultimately depends, is our advancing store of knowledge. Thanks in large measure to a strong and well directed program of Federal support, America's biomedical research effort has grown and flourished since World War II. This effort has greatly advanced our understanding of biological processess, of health and disease. It has yielded an impressive harvest of specific medical benefits.

This program has been built upon a uniquely effective partnership between the Federal Government and non-Federal research resources, especially the universities. It has been administered in large part by the National Institute of Health, the biomedical research arm of the Public Health Service.

NIH is made up of eight Institutes, six of them oriented toward specific groups of diseases and two—General Medical Sciences and Child Health and Human Development—noncategorical in nature. It also includes the Clinical Center, one of the world's great research hospitals, and seven Divisions. One of these is the newly created Division of Environmental Health Sciences, which will conduct and support research on the health effects of chemical and other environmental pollutants. Another is the Division of Regional Medical Programs, designed to carry out the mandate of the Heart Disease, Cancer, and Stroke Amendments of 1965 to speed the application of new knowledge for the benefit of those who suffer from these and related diseases.

NATIONAL INSTITUTE OF MENTAL HEALTH

The fifth Bureau of the reorganized Public Health Service combines the four major elements I have described—care, protection, manpower and knowledge—in a unified attack on one of the Nation's most serious and widespread health problems, mental illness. The National Institute of Mental Health, as a Bureau, provides leadership for a national movement that is bringing treatment of the mentally ill out of the large, remote and primarily custodial institutions into a community setting. It also encourages prevention, and early diagnosis and treatment, of mental illness.

This Bureau conducts and supports research, supports manpower development, and aids in constructing and staffing community mental health centers. It deals with special problems such as alcoholism, drug addiction, suicide, crime, and delinquency. It administers two Federal psychiatric research hospitals in Lexington, Ky., and Fort Worth, Tex.

These five Bureaus constitute the principal operating components of the Public Health Service. In addition we have two special resources, each unique in its field—the National Center for Health Statistics and the National Library of Medicine. Both of these report

directly to the Surgeon General. They serve national needs for health data and the communication of health knowledge.

The Office of the Surgeon General is the coordinating and policy setting unit for the Service. In our reorganization we have given special attention to strengthening our capability for planning and evaluation and for maintaining effective liaison with the many other agencies whose work relates to ours.

COMPREHENSIVE HEALTH PLANNING

One new responsibility of the Office of the Surgeon General merits special mention. This is the administration of the new program authorized by the Comprehensive Health Planning and Public Health Services Amendments of 1966.

This program is one of the most significant in many years. It envisions a new kind of partnership among health agencies in communities, States and the Federal Government. Specifically, this "partnership for health" program strongly supports States and localities in planning to meet their health needs. It also restructures the programs of Federal grants for health services so as to provide much greater flexibility in the use of Federal health funds.

Mr. FLOOD. You are emphasizing the State rather than the community level, are you not?

Dr. STEWART. No, sir. Section 314(a), (b), and (c) of that act includes not only the comprehensive health planning agency for the State , but also the metropolitan areawide planning portion, with a link between the two.

What we are trying to do is create a planning effort which affects the metropolitan areas as well as the States with a working relationship between them. The rest of the bill does emphasize the State health agency.

In short, this program places responsibility and invites innovation where the problems are—in the States and communities. Recognizing that health problems and resource shortages are not everywhere the same across the Nation, it encourages the establishment of priorities on the basis of urgent local needs. Since its effects will have an impact on so many of our programs, we have departed from our traditional organizational pattern. We shall administer this far-reaching new enterprise centrally, in the Office of the Surgeon General and our regional offices.

In presenting this rather detailed description of the Public Health Service in its newly reorganized form, I hope I have provided you with a useful guide to the testimony that will follow. More importantly, I hope it will be helpful in relating the many and diverse parts of the Service to the whole. Our new organization derives from our mission, which in turn is derived from the health needs of the American people as envisioned and given legislative expression by the Congress.

ACCOMPLISHMENTS AND ASPIRATIONS

My colleagues who will testify before you in support of specific appropriations will describe in some detail the accomplishments of the past year in their fields of special competence and interest. I shall

report to you on only a few selected highlights related to each of our major missions.

HEALTH CARE

The year 1966 marked the 20th anniversary of the enactment of the Hill-Burton Hospital Planning and Construction Act of 1946, which began an outstandingly successful collaboration between communities, States and the Federal Government. Over this 20-year span, this partnership has resulted in 8,684 projects, adding 371,415 hospital beds to the Nation's health resources. It has brought hospital care within convenient geographic reach of virtually all Americans.

The total cost of this investment in better health has been $8.6 billion, of which the Federal share has been $2.7 billion. This program has also been responsible for pioneering the application of areawide planning techniques, and for experimentation in better hospital design for more efficient service at lower cost.

Mr. FLOOD. Has this given rise to a new subprofession in architectural engineering?

Dr. STEWART. Yes, it has. It has given rise to new firms, private firms which combine the architectural-engineering-planning aspects of planning and developing hospitals.

When this program first started in 1946, the men who were starting it in the Public Health Service looked around for places where they could get ideas and found there were none.

Mr. FLOOD. Invariably a certain set of names always crop up in this city or that city as more or less specialists in the field.

Dr. STEWART. That is right.

There has developed now—I do not know how many there are—a whole series of firms which serve as consultants to any hospital trying to expand, or to those trying to develop new ones.

Mr. FLOOD. There is nothing particularly wrong about this.

Dr. STEWART. Not at all.

On July 1, 1966, millions of older Americans became eligible for hospital care under the medicare program. On January 1 of this year the benefits were extended to include nursing home care. Two elements of the Public Health Service worked closely with the Social Security Administration to assure that these benefits were available on schedule. Our Division of Medical Care Administration has had primary responsibility for advising SSA on the professional health aspects of potential providers of services and for helping States to assure that professional standards are met. At the same time our Office of Equal Health Opportunity has assisted in assuring that hospitals and nursing homes are in compliance with title VI of the Civil Rights Act of 1964. At the present time a total of 6,751 hospitals and 3,500 extended care facilities are qualified as providers of medicare services. This response, which has made possible the smooth and successful launching of this vitally significant program, is above all a tribute to the health resources of the Nation.

MEASLES ERADICATION

This year, 1967, may well go down in history as the year of measles eradication in the United States. Measles, an almost universal disease of childhood, can lead to dangerous complications. Several hundred

children die from its after effects each year, and thousands more suffer blindness, impaired hearing, mental retardation, or other lasting impairments. Now, just 4 years after the licensing of a safe and effective measles vaccine, its eradication is within reach. Some 20 million doses of vaccine have been produced, and the annual incidence of the disease has already been sharply reduced. Now, intensive vaccination campaigns directed at 1-year-olds and children in the earlier school years—the groups which contain the most susceptibles and are the source of measles epidemics—are capable of bringing the disease to the vanishing point.

Mr. FLOOD. How do you conduct a campaign of vaccinating 1-year-olds?

Dr. STEWART. By stimulating the community to put on campaigns or get the doctors to give it to the children when they go into the pediatrician's office or maternal and child health clinic—wherever the people take their children for immunization—to be sure that measles is included in the standard immunization pattern.

Mr. FLOOD. Is this received with the same widespread enthusiasm and awareness and knowledge as the polio vaccine?

Dr. STEWART. It sure is. They vary it. Some States or some communities have done mass campaigns and others have done it through whatever the normal way of getting people in is.

Mr. FLOOD. Polio was a thing people understood, but is it not difficult to get some people to realize measles is serious?

Dr. STEWART. This is true. Measles has sort of been accepted as a way of life. It was so universal that while it affected thousands of children, there is not the awareness by the public that measles is a very serious disease.

I think the campaigns we are putting on contain a large amount of public information and public education, through comic strips, television, or radio.

Mr. FLOOD. You say it is accepted?

Dr. STEWART. Yes.

Mr. FLOOD. I remember during World War I the casualty lists would come out from the cantonments of the United States. Measles and pneumonia would be the first headline and there would then be columns of these young men who died in cantonments of measles and pneumonia.

Dr. STEWART. When we were in more isolated groups, where we lived in smaller towns——

Mr. FLOOD. This was 1917.

Dr. STEWART. You bring people into cantonments who are susceptible to pneumonia, and with complication of measles, which is also a disease that spreads in both camps or cantonments.

Mr. FLOOD. Is it contagious and infectious?

Dr. STEWART. Yes.

Mr. FLOOD. There is none of that kind of thing going on now, measles and pneumonia by the thousands?

Dr. STEWART. Not by the thousands.

An all-out effort, in which all major professional and voluntary health organizations are working closely with our National Communicable Disease Center, can do the job.

GERMAN MEASLES VACCINE

A test for detecting immunity to German measles—a different disease—has been developed by scientists of the Public Health Service's National Institutes of Health. The new test is so simple and reliable that a physician can determine within 3 hours whether an expectant mother has antibody protection against the disease.

Mr. FLOOD. What is the test? Do not make the explanation too complicated.

Dr. STEWART. It is a blood test in which they show whether the person is immune or is not immune. This gives the doctors a warning.

Mr. FLOOD. A blood test of some sort?

Dr. STEWART. Yes.

Development of this test, following on the heels of the live, attenuated experimental German measles vaccine, announced at the time of this committee's hearings last year, gives hope that we may soon be able to put on the conquered list this disease with its disastrous effects on the unborn child whose mother develops it during early pregnancy.

Mr. FLOOD. You were practically lyrical when I examined you last year about this German measles vaccine. Did you mean it?

Dr. STEWART. Yes; I think I keep my same lyrical quality. I think we are in that hard stage of going from an experimental vaccine that worked in a small situation, which gives great promise, to the developmental stage. The rest of testing, the rest of the experiments, have to be done from there on out. I think the lyricism is the same we had last year.

You may wish to ask Dr. Shannon more details of that later.

USE OF COMPUTERS FOR HEALTH SERVICES

In the field of chronic disease control, we have successfully demonstrated in the past that computers can be used routinely to analyze electrocardiograms, spirograms, and other medical signals.

This achievement permits screening of large populations with minimal expenditure of time and effort by physicians and nurses. In 1966 three events occurred to move this practice from laboratory demonstration into clinical acceptance.

Mr. FLOOD. Have you pursued the suggestion of a central computer system for a group of hospitals to do this kind of thing instead of having all the hardware, frightfully expensive, in every hospital?

Dr. STEWART. Yes, we are trying to develop a system in one State where the hospitals are all related to a central facility. We do have developments in some of the regional medical programs where a central facility is proposed.

Mr. FLOOD. Is this seriously pursued or is it merely talk?

Dr. STEWART. I think it is pursued quite seriously. I think the computer analysis of the electrocardiogram has great promise.

Mr. FLOOD. This hardware is so expensive and changes so rapidly by generation, I am afraid the salesmen will saddle our hospitals with tons of obsolescent and soon obsolete hardware.

Dr. STEWART. This is true. We have had some difficulty with hardware that was available, for example, in handling records in hospitals.

We have had difficulty in using the hardware on the records because we were looking more at the hardware than we were at the records.

Mr. FLOOD. I am going beyond records, I refer to automation of tests themselves.

Dr. STEWART. I think the development of the automation of tests or reading of tests like the electrocardiogram, or automation of laboratory work, is progressing in the right way.

Mr. FLOOD. It strikes me if there ever was a natural for a computerized system for distribution of this intelligence, this is it.

Dr. STEWART. I think we will see some organizational structure come out of this where you can combine to get more of a shared facility; a central facility.

Mr. FLOOD. Who is working on it? Is anybody thinking about it in the private sector?

Dr. STEWART. It is both. We are supporting some of the work going on in this area, but the Bureau of Health Services and the National Institutes of Health are working on the development of some of the primary knowledge in the area of use of computers, in the regional medical programs. I think we have a multifaceted program.

REGIONAL MEDICAL PROGRAMS

Mr. FLOOD. The regional medical programs are dragging their feet too much to suit me. Will we go into that later with someone?

Dr. STEWART. I do not think they are dragging their feet.

Mr. FLOOD. I do.

Dr. STEWART. This is a complicated affair for them to start. We have been in operation about 18 months.

Mr. FLOOD. That is a long time.

Dr. STEWART. Not for the type of planning and putting together this is talking about. It is an entirely new concept.

Mr. FLOOD. I come to these hearings and talk to you, I get excited, go some place and make a speech; I am still excited. But then nothing happens.

Dr. STEWART. I think we now have a very significant planning effort going on in the country. We now have three to four operational grants about to start. You have to start with the place where the knowledge is or it will not work. The whole trick is to connect that place with where the work is done on people with heart disease, cancer, and stroke.

Mr. FLOOD. I wanted you to know that we are watching this program closely and are less enchanted with it than we were 18 months ago.

Dr. STEWART. The American Medical Association and American Dental Association asked us to provide computer analysis for their screening efforts. An EKG data pool plan was initiated to help broaden the scope of our computer program by translation into other computer languages.

Third, more than 25 medical care groups are now using our EKG computer analysis. And in addition, in collaboration with NASA, we have a system to analyze EKG's telemetered from astronauts in space.

INTENSIVE CARE UNITS

The same type of system could also be used for patients in intensive coronary care units.

Mr. FLOOD. Is this idea of the intensive care unit being pursued back into the community hospital. Is it getting into the smaller centers?

Dr. STEWART. Yes, sir. We have developed some 13 or 14 of these intensive coronary care units. There is a limit as to how far you go.

Mr. FLOOD. I do not mean just coronary. The intensive care unit was not meant just for that.

Dr. STEWART. No. I had mentioned here the coronary unit, the intensive care unit——

Mr. FLOOD. As such.

Dr. STEWART. Is now visible in many new moderate sized hospitals where they try to concentrate their skills of watching people who have had serious surgery or accident cases.

Mr. FLOOD. This takes specially trained people to do this work?

Dr. STEWART. It takes special training and special observation so you can intervene at a moment's notice if something is going wrong. This has been sometimes through just watching with trained people, through television, through electronic devices.

Mr. FLOOD. But it is getting out into the provinces?

AIR POLLUTION

Dr. STEWART. Yes, sir.

Progress against air pollution in 1966 was highlighted by interstate abatement actions initiated in nine areas of the country. Pollution of the air was measured in 19 other interstate areas to determine the need for additional enforcement actions. Through matching grants we helped to support stronger air pollution control programs on the part of 140 State and local agencies. Federal emission standards were issued during the year for automobile exhausts, effective with the 1968 automobile model year.

In December a National Conference on Air Pollution, which brought together 3,500 interested citizens from all parts of the Nation, called for vigorous and immediate action to apply control measures.

HEALTH MANPOWER

As of February 1, funds have been awarded to create 3,324 places for first-year students in new or expanded health professional schools. These will expand our national educational capacity by 1,252 medical students, 786 nursing students, 589 dental students and smaller numbers representing other health professions. About 1,000 of these new places will be ready for occupancy by September when the next academic year begins.

NEW MEDICAL SCHOOLS

Mr. FLOOD. How many brand new from-the-ground-up medical colleges are we going to have in the next 10 years?

Dr. STEWART. I would say around 25.

Mr. FLOOD. Is that good?

Dr. STEWART. Yes, I think it is good. I think the development of the medical schools is at the rate that we can implement them in terms of the availability of faculty, the availability of operating money and the availability of capital to build them.

Mr. FLOOD. Geographically distributed?

Dr. STEWART. They are pretty well distributed geographically.

HEALTH PROFESSIONS LOAN PROGRAM

During 1966 and 1967 funds have been provided for 3,374 scholarship awards to students of the health professions in 227 schools. The average annual award is $816 per student. In addition, loans averaging $1,190 were awarded during fiscal year 1967 to some 21,000 students in 149 schools. Both the scholarship and the loan programs are designed to help qualified young people from all economic strata to pursue a health professional career.

Mr. FLOOD. How many medical schools do we have in the United States?

Dr. STEWART. There are about 91 medical schools and five schools of osteopathy. So there are 96 in all.

Grants totaling $30 million have been awarded to 170 professional schools during fiscal year 1967, including 98 schools of medicine and 52 of dentistry, for purposes of strengthening their curricula and teaching programs. These grants are intended to assure that improvement in quality accompanies expansion in quantity of educational output.

NEW DENTAL SCHOOLS

Mr. FLOOD. How many dental schools do we have?

Dr. STEWART. Roughly half the number of medical schools. Fifty.

Mr. FLOOD. How many new ones are we going to have in the next 10 years, about?

Dr. STEWART. This is a little harder to predict, Mr. Chairman.

There are about 8 or 10 new dental schools in the works at the present time, but we do not have the feeling there are a lot of new ones now being thought about that will be coming in the next few years. We are concerned about it and are trying to work with the universities on developing more dental schools. I do not think there is any question about the need for dental schools.

Mr. FLOOD. Nobody debates that, but I wanted to know generally where we stand.

Dr. STEWART. A research project aimed at increasing the productivity of dentists and expanding the functions of dental auxiliaries is now under way at Louisville, Ky. This 5-year investigation may be a key step toward meeting the Nation's dental manpower shortage, and may have implications for other health professions as well.

In the study, dentists and dental assistants work together in a model dental clinic. The duties of the assistant are being studied to determine what additional responsibilities they might assume, thereby freeing the dentist to care for more people, and what training would be required to assure the maintenance of high quality care.

Mr. FLOOD. Is there a difference between a dental assistant and a dental technician?

Dr. STEWART. The term "dental assistant" is used for a person who has had this kind of training. Actually, the difference is one of levels of skills, but I think most people use the words interchangeably.

KIDNEY DISEASE

Good progress has been reported in the development of more efficient and less expensive so-called artificial kidneys to support life in patients with uremia. Significant also has been the improvement of hemodialysis systems and the increased understanding of the crucial factors in kidney disease. Transcending these developments, however, has been the use of prototype tissue-typing tests to match unrelated persons for kidney transplant operations. This marks a landmark in the perennial search for methods of overcoming the chief barrier to successful kidney and other organ transplantations, namely, transplant rejection due to tissue incompatibility.

As a result of the new tests, kidney transplants between unrelated but matched donors and recipients have now approached the success rate for transplants between relatives.

Mr. FLOOD. What is the life expectancy on the transplants?

Dr. STEWART. I am sorry, Mr. Chairman, I cannot give you that. There are a fair number of people now alive, and functioning quite well, who have had kidney transplants, usually by the relative.

Mr. FLOOD. Five years ago?

Dr. STEWART. Yes. There were some figures published on this just recently in a report on all kidney transplants.

Mr. FLOOD. Put those in the record.

Dr. STEWART. We certainly will.

(The information follows:)

According to the records of the Kidney Transplant Registry, over 1,170 people received 1,200 kidney grafts on a world total basis, as of March 1, 1967. Of these, approximately 600 patients are living. It is impossible at present to predict life expectancy, but some indication can be obtained from the two-year survival figures. When statistics are corrected by eliminating those cases where the transplant never functioned or where it succumbed to non-renal causes of failure, the following two-year figures emerged: sibling donor, 77%; parent donor, 77%; unrelated living donor, 25%; cadaver donor, 49%. Other data show the success rate in the past two-year period is better than results obtained earlier. More experienced surgical centers have a higher success rate than those considered less experienced.

There is also statistically significant evidence that patients who are recipients of histocompatibility matched kidneys survive longer than patients receiving mismatched kidneys.

CANCER RESEARCH

Dr. STEWART. Cancer research continues to yield valuable and encouraging results. A number of studies have shown that a high percentage of patients with localized Hodgkin's disease can experience complete control of their disease for 15 years and longer if they are treated with intensive doses of X-ray. Such results may be regarded as "cures" and suggest the possibility of a more promising outlook for this disease in the future.

Reports from a large scale study supported by the Cancer Institute indicate that mammography, or examination of the breasts by X-ray, is revealing cancers not detectable by ordinary means and may

be useful for early detection of breast cancer in populations of apparently healthy women.

Mr. FLOOD. Is this as widespread as we laymen understand it is?

Dr. STEWART. I think the examination of the breast is widespread, but the examination of the breast by X-ray would be uncertain.

Mr. FLOOD. I meant, Is the breast cancer as potentially dangerous and widespread as we laymen hear it is?

Dr. STEWART. I think it is. It is a fairly common cancer in the female.

Mr. FLOOD. Why?

Dr. STEWART. The female breast is a skin gland, and the cancer is a type of glandular cancer. I think it is just because of that. If we knew what caused cancer I might have a better answer.

A measure of progress in treating acute leukemia is the growing list—it now numbers 130—of children and adults who have survived for 5 years or longer after diagnosis of their disease. The use of drugs fostered over the years by the Cancer Institute and the more recently introduced technique of platelet transfusions to control hemorrhage have, without doubt, been largely responsible for these long-term remissions.

REGIONAL MEDICAL PROGRAMS

Few if any health programs in recent years have generated more interest than the regional medical programs stemming from the heart disease, cancer and stroke amendments of 1965.

One year's experience with the program has demonstrated conclusively that medical schools, community hospitals, and private practitioners can develop cooperative arrangements for bringing the latest in medical knowledge into the mainstream of community medical practice. A total of 34 planning grants have been awarded to regional agencies during the past year.

Mr. FLOOD. This program started out with much bravado and it is not working out. What happened to it?

Dr. STEWART. I am sorry, Mr. Chairman, but I think that for the type of program we are talking about and length of time that has passed by, we have made a lot of progress. This is a complicated form of planning which is relating community hospitals to a university center. There is a great need for them to get together and sit down to figure out how this will work. The planning grants were for this purpose, and actually, as soon as it can be determined that the plan fits in with the program, the program can be launched right away.

We have now 34 planning programs in operation. There are some 13 or 14 more that are now in the review process, and some are now moving into the operational phase—some four areas at this time. I think we are going through the stage that we visualized.

REGIONAL PROGRAM IN PHILADELPHIA

Mr. FLOOD. I have been trying to set up one of these with the general Philadelphia metropolitan area as the base. I had the idea I could establish a satellite of that Philadelphia base in my congressional district. We have been working on it for quite some time with all of the medical associations, and I just do not seem to be getting any place. I suppose the trouble is Philadelphia primarily.

Dr. STEWART. There have been some difficulties in Philadelphia, but the concept you have is exactly what this program is. The medical center in Philadelphia, moving into the hospital in Wilkes-Barre with a satellite for teaching, and continuing education of the physicians in Wilkes-Barre, to take care of their patients with heart disease, cancer, and stroke.

Mr. FLOOD. I thought I had this put together at least 11 times. It's like trying to pick up a handful of quicksilver, when I have it, it "ain't" there. I have never been able to understand what the trouble is. This thing just is not clicking in my area. Is it clicking some place else?

Dr. STEWART. I think the developments that are going on in many places are interesting and exciting, such as in Kansas. I think the most difficult area we have had in developing this concept has been in major metropolitan areas where there was more than one medical school—New York, Philadelphia.

Mr. FLOOD. Trying to get them all together. This is the prima donna problem.

Dr. STEWART. Perhaps it is a prima donna problem. It is a problem of five institutions or six institutions, whatever number it is, being asked to develop something out in the community in which for years they have been independent institutions.

One of the reasons we have been so careful to develop this planning phase is because we are asking groups to work together that never worked together before.

Mr. FLOOD. You knew this the day the bill was signed.

Dr. STEWART. We also know we cannot carry out the idea of developing the lines between these medical centers and where people are, where the practice of medicine occurs. They have to get together.

Mr. FLOOD. Those of us who do not come from the large cities are anxiously awaiting this kind of thing so glowingly presented here for 2 years. We are getting frustrated, nothing is happening in the big cities, they are not getting together. Unless they get together we get nothing.

Dr. STEWART. I think your desire and impatience are certainly understandable because the idea was to plan it so that it was in the community.

Mr. FLOOD. But it "ain't."

Dr. STEWART. Also, we knew it was going to be tough because we are asking groups to work together that have never worked together before.

Mr. FLOOD. Nobody told me it would be tough until I found out for myself.

Dr. STEWART. The key is not whether we avoid this toughness or do not. It is absolutely essential, however, that they get going in these groups—and it is difficult to get going.

Mr. FLOOD. Is it going to?

Is this going to happen?

Dr. STEWART. I think it will get going, very much so. We found it was easier in States where there was one medical school working out into the communities.

Mr. FLOOD. I know. Philadelphia is one of the greatest medical centers in the world and I just happen to have a real tough problem compared, I suppose, to most areas.

Dr. STEWART. I assure you we will do everything we can to see that it is solved.

AWARDS OF OPERATION GRANTS

The first awards for actual operations will be made very soon. As the existing regional plans are put into action, physicians in all parts of the country will have ready access to up-to-date diagnostic and treatment methods for the benefit of their patients who suffer from heart disease, cancer, stroke and related diseases. Each regional plan has been locally developed, designed to make maximum use of the region's medical resources to meet its particular needs. Every medical school and virtually every major hospital and medical society are participating in this highly significant endeavor.

Mr. FLOOD. They are not very excited about it.

Dr. STEWART. I am sure there may be specific areas where they are not excited. But when we had a conference on the regional medical program here, this generated a tremendous amount of excitement.

Mr. FLOOD. I know it did then, then it just died out.

Do you have these people doing too many things?

Dr. STEWART. No, I think we are asking them to do something that is new and strange. It should not be new and strange, but it is.

Mr. FLOOD. All of the local medical societies are very interested out through the small towns.

Dr. STEWART. Correct.

Mr. FLOOD. But you are not breaking through in the metropolitan centers.

Dr. STEWART. We will pay special attention to that, Mr. Flood.

Mr. FLOOD. And the majority of the House does not come from the metropolitan centers.

Dr. STEWART. Yes, sir; I am well aware of that.

USE OF LITHIUM CARBONATE FOR TREATMENT OF MENTAL DISEASE

National Institute of Mental Health scientists have conducted studies which indicate that lithium carbonate, an inexpensive element, dramatically controls the manic-depressive psychoses, one of the most prevalent mental illnesses. The drug checks wild, manic behavior and serves as a preventive of both manic and depressed states, part of a single process. Investigations are continuing, in the hope that lithium may become an effective drug in the prevention of suicide. The drug must be given under careful supervision to control side effects, but lithium appears to be the best agent yet found for the treatment of any mental disease, scientists in the NIMH "depression project" believe.

Mr. FLOOD. What does that mean, "careful supervision?" How is it administered?

I have a boy up the street or down the street and his mother calls me. What do I do?

Dr. STEWART. At the present time this drug is still highly experimental and would have to be given under an institutional setting.

Mr. FLOOD. Suppose he is violent. What do I do?

Dr. STEWART. I think he would have to be institutionalized in a hospital where a physician can give this under close observation, because the side effects are significant. But it will calm him.

Mr. FLOOD. Suppose alcohol is involved. Psychopathic alcoholism.

Dr. STEWART. I do not think lithium carbonate is considered to be useful in alcoholism.

Mr. FLOOD. I do not mean to cure alcoholism. I mean the mental health patient in this case is an alcoholic psychopath. Is there any danger in administering this drug to an alcoholic?

Dr. STEWART. That I would not know.

Mr. FLOOD. Will you find out?

Dr. STEWART. I certainly will.

(The information follows:)

Lithium carbonate is a safe drug to use if medication is started in a hospital setting for several weeks and the blood level of lithium is carefully monitored. Patients can then be safely maintained on a stable low dose in the community if they cooperate carefully in treatment and have their lithium blood level checked at monthly intervals. If a patient were to take an overdose this could result in severe toxic symptoms, for example, vomiting, diarrhea, and collapse. Death could occur if medical attention were not readily available. For this reason the use of this drug in an alcoholic psychopath or narcotic addict might be counterindicated for two reasons. First, there is no evidence that the drug would be helpful in any conditions other than manic-depressive psychosis, and second, because an unstable individual might not cooperate properly in treatment, he might therefore get himself into a serious physical situation through improper use of the medication.

Dr. STEWART. Where other drugs merely depress symptoms, lithium seems to attack the core of the psychosis and to reverse its basic action.

In other mental health research activities, a study comparing true parents of schizophrenic patients with adoptive parents showed strong evidence of a genetic factor in schizophrenia. A new drug, cyclazocine, showed some promise of preventing the addictive effects of morphine-like drugs and may be useful in treating ambulatory patients who are highly motivated to avoid relapse to the compulsive use of narcotics.

NATIONAL CENTER FOR PREVENTION AND CONTROL OF ALCOHOLISM

A National Center for Prevention and Control of Alcoholism was established during 1966 in the National Institute of Mental Health to develop new knowledge and apply that which is already known to prevent and control this widespread and tragic affliction.

Mr. FLOOD. When I asked you a few minutes ago to find out the potential of using lithium for psychopathic alcoholics, will you find out the same thing for narcotics?

Dr. STEWART. Yes, sir.

(This information appears above.)

Since 1963, grants have been made for the construction or initial staffing of 153 community mental health centers in 42 States, Puerto Rico and the District of Columbia. These centers represent a long stride forward in the humane and constructive treatment of the mentally ill. They bring needed care into the light of community concern and community medicine. As this movement gathers strength, it promises increasing hope for many of our people who, a few years ago, would have been condemned to isolation from society.

The challenge before the American health partnership is great and insistent. The public we serve has come to expect high quality health services, readily accessible, as a right to which all are entitled. To

meet these just aspirations we need continually to strengthen our national health resources and constantly to improve our use of the resources we have. I believe that the Public Health Service, newly reorganized and strongly supported as it has been over the years by this Committee and the Congress as a whole, is equipped to deliver its full and appropriate measure of stimulus and leadership to the task of meeting the people's health needs.

Mr. FLOOD. Of course that is an excellent statement. Your statements always are. You make a good witness and these things are well prepared, informative, and, as you noticed, commanded the attention of the members.

I only have a few problems with you here and they are special programs such as the regional and heart, cancer and stroke program, because I have a special interest. Nothing has happened. Thereby hangs the tale. Your statement in my opinion is excellent.

REORGANIZATION OF PUBLIC HEALTH SERVICE

You have been telling us about reorganizing this shop of yours and I gather from this statement you are to all intents and purposes reorganized.

Dr. STEWART. Yes; as of January 1.

Mr. FLOOD. This makes sense to me and I suppose to anybody else that listens to you for some time.

SHIFT OF FOREIGN QUARANTINE SERVICE TO ATLANTA

I have only one question.

If my understanding is correct, the foreign quarantine people are being moved to Atlanta.

Dr. STEWART. Yes, sir.

Mr. FLOOD. Would it not make it more difficult to carry on liaison with the Immigration and Customs people if you put the foreign quarantine people in Atlanta.

Dr. STEWART. No, sir. The Communicable Disease Center is the location of so much of the surveillance work that goes on, the type of surveillance that goes on, and the kinds of people that work out of the Communicable Disease Center——

Mr. FLOOD. You think the movement down to Atlanta would not get them too far away from the Immigration and Customs people?

Dr. STEWART. Not at all. At the port of entry they will work with them just as they have been. What it gives them are the resources, particularly the international epidemiological resources. At the port of entry they will be working with Immigration and Naturalization; they work with Agriculture a great deal too.

AIR POLLUTION

Mr. FLOOD. I have the current issue of the Environmental Health Letter which is a pretty reliable publication. If I remember correctly the late chairman of this subcommittee, John Fogarty, said last year when you were here that Gershon Fishbein is a good reporter and you agreed and, of course, I agree.

I do not want to cross swords with our colleagues on the other side of this building, but I notice this article on the proposal to "elevate"

the air pollution program. I am no amateur with the problem of air pollution. I come from the hard-coal fields and we have what are called culm banks and underground fires, and they really pollute the air.

Dr. STEWART. I think you have reference to Senator Randolph's proposal. It proposes to elevate the air pollution program to the Secretary's Office. This program is now answerable to the Bureau of Disease Prevention and Environmental Control.

Mr. FLOOD. He is busier than you are.

Dr. STEWART. I assume it is because of the terrible importance of this problem, and they feel a higher level is more responsive. My feeling is that the real reason that people are concerned about air pollution, I mean people on the street, is that they feel it is a threat to their health and the air pollution program——

Mr. FLOOD. Do you think the soft-coal people are unhappy because you are talking about sulfur?

Dr. STEWART. The soft-coal people, I think, are concerned that we are talking about sulfur, but I am concerned about what sulfur is doing to the people on the street.

Mr. FLOOD. So am I.

Dr. STEWART. The health data are essential for development of an air pollution program. We have worked out mechanisms whereby my office and the Secretary's Office is fully informed. We have weekly meetings of a joint committee.

Mr. FLOOD. They took the water pollution control from the Secretary of HEW?

Dr. STEWART. Yes.

Mr. FLOOD. And that was obviously an invitation to do the same thing with regard to air pollution?

Dr. STEWART. The water pollution program did not stay long with the Secretary of HEW. It is now with the Secretary of the Department of the Interior. My feeling was that as soon as the water pollution program was no longer in the health agency of the Department of HEW it lost its health impact.

Mr. FLOOD. So that the division is now in Mr. Udall's Department?

Dr. STEWART. Yes.

Mr. FLOOD. If you think I have polluted air, you should see my water. I have acid polluted water and nobody can solve the problem. When I say "I" I speak of my congressional district. I wanted to know your position on elevating these things to the Secretary's Office.

Dr. STEWART. I am sure the Department has not taken any position on Senator Randolph's bill.

Mr. FLOOD. Do you have any coal, Mr. Natcher?

Mr. NATCHER. Mr. Chairman, we have six counties in my section that produce about 26 million tons a year.

Mr. FLOOD. But you are talking about soft coal.

Mr. NATCHER. This coal is selling, Mr. Chairman.

Mr. CASEY. Mr. Chairman, when you speak of medical centers, I invite you to compare my medical center in Houston with yours in Philadelphia.

Mr. FLOOD. What I meant was the number of hospitals and clinics and institutions in the whole vast Philadelphia area is probably the largest in the world, I am not speaking of one center like yours.

Mr. CASEY. And I invite you gentlemen to try gas sometimes.

Dr. STEWART. I might summarize my remarks by saying I think it is absolutely essential that the air pollution program stay in the Department of Health, Education, and Welfare.

Mr. CARDWELL. I think the Secretary would second that.

Mr. FLOOD. I third it.

Mr. CARDWELL. A formal position vis-a-vis the Randolph bill has not been taken. But I think the Secretary views it as a health problem and feels it should be with the Surgeon General.

CAIN COMMISSION RECOMMENDATION ON THE DOCTOR DRAFT

Mr. FLOOD. What will happen to the draft status of the commissioned corps?

Dr. STEWART. There has been a committee under the chairmanship of Mr. Cain that has recommended, as I understand——

Mr. FLOOD. You yourself told us last year you were working on a personnel operation to replace the commissioned corps.

Dr. STEWART. That is a separate thing. The Cain committee has been looking at the special problem of the doctor draft and it is my understanding they have recommended that the Public Health Service not recommend the draft. I think that few people understand the ramifications of the use of the draft position in the Public Health Service and what would happen if this should occur. About 63 percent of all the physicians in the Public Health Service are serving their draft obligated time and the spread of the young men is fairly even between all the bureaus. It varies between 55 and 65 percent but roughly in this area. We would not be able to provide the Indian health services, we would not be able to provide services to the Bureau of Prisons, we would not be able to provide services to the Coast Guard, and would have difficulty operating many other elements of the Public Health Service. I do not want to debate what might be called the moral issue of the draft and the opportunities people have for serving in the military or the Public Health Service. I think some of the positions we have in the Public Health Service are equally as arduous as the military, with the exception of those right in the fighting. We are so dependent that one cannot figure out what would be the alternative to try to attract physicians in the Public Health Service. We have many remote, isolated difficult positions to fill. So I think the impact would be very, very difficult for us to handle.

CONVERSION OF COMMISSION SYSTEM

Mr. FLOOD. What have you done along the line of your statement to us last year?

Dr. STEWART. It is true last year we talked about developing a new personnel bill which I like to look on as an evolution, a conversion of the commission system we have, rather than abolishing it and creating a new system. This personnel system would be an attempt to capture some of the assets we have now.

Mr. FLOOD. You told us that last year. What did you do since last year?

Dr. STEWART. I have been drafting a bill and trying to get it cleared through the executive branch.

Mr. FLOOD. It is rather a nebulous thing?

Dr. STEWART. No. I think the whole problem is that any personnel legislation is highly technical. Every phrase has a legal meaning to it. It is some 80 pages long and when you are talking about the actuarial cost of this——

Mr. FLOOD. I know. But what have you done?

Dr. STEWART. It is now in the Bureau of the Budget for clearance.

Mr. FLOOD. Being studied; is it?

Dr. STEWART. No. I think it is actually being worked on and I think it should see the light of day soon.

EFFECT OF HEW REORGANIZATION ON THE NATIONAL INSTITUTES OF HEALTH

Mr. FLOOD. In the context of this whole program, where is NIH?

Dr. STEWART. NIH is part of the Public Health Service.

Mr. FLOOD. I know, but I am hearing all kinds of stories about NIH, that it will be proliferated and part will go here and part will go there. Are they sniping at NIH?

Dr. STEWART. No. I think Dr. Shannon wrote a memorandum to the Secretary and I wrote one to the Secretary and there are all kinds of speculation going on.

Mr. FLOOD. That is why I asked the question. Where are we in reference to the Children's Bureau, and Vocational Rehabilitation and so on?

Dr. STEWART. We also know the Secretary has talked about a new structure of the Department and this is being studied at the present time. NIH, as far as I am concerned, should be a member of the health agency of the Department of Health, Education, and Welfare. As long as it is a public health service, I think it should be a part of the Public Health Service.

Mr. FLOOD. What is your thinking on having a Department of Biomedical Research?

Dr. STEWART. Outside of the context of the health agency of the Federal Government?

Mr. FLOOD. Can it stand on its own feet?

Dr. STEWART. I think it should stand on its own feet as far as it is a part of a health endeavor of the Nation. I think the public understands the idea that science and technology is a part of our society, and an important part.

Mr. FLOOD. You would not want to see it a part of the National Science Foundation, would you?

Dr. STEWART. No, I think that would be very harmful to NIH. I think it would lose its health purpose. The enabling legislation of NIH is to find the causes and cure of disease.

Mr. FLOOD. Is any decision imminent on this?

Dr. STEWART. I do not know. The Secretary has these memorandums. I do not know if it is or not.

COMPREHENSIVE HEALTH PLANNING AND SERVICES

Mr. FLOOD. You have a new program, "Comprehensive Health Planning and Services."

Dr. STEWART. Correct.

Mr. FLOOD. That easily could turn out to be the most significant program you or your predecessor has dusted off in years if it does what the title indicates. What is your evaluation of the program in terms of health benefits, and how much will this cost?

Dr. STEWART. I think it is terribly important. I am very enthusiastic about it. I think it has a lot of challenges and difficulties in it. The Comprehensive Health Planning and Public Health Services Act was a combination of changing and modifying older programs and the addition of the comprehensive health planning part, which was new. We are in a situation in our country and in many areas in the country, where the demand for health services exceeds the resources to supply them. If we implemented all our desires for mental health, for mental retardation, et cetera, we would exceed our resources in terms of physicians, nurses, and capital.

Mr. FLOOD. How many years might that go on?

Dr. STEWART. Assuming that our economy continues the way it is it might go on for a long, long time, much longer than 10 years. We are in a system where there are no unlimited resources where we can try some things out. We have to know if third party payments will come in. We have had a multiplicity of planning programs, and no mechanism as to what they would demand in resources for pulling them together, so somebody can say, "What we are planning exceeds what we can possibly supply and we have to make some choices." All this does is show what the choices are that you have, and you have to set some goals and priorities. It recognizes that we have to decide where we will move down these paths. It gives us a better idea where we are to go in the future.

Mr. FLOOD. Do you think about dollars at all in these discussions?

Dr. STEWART. When I say resource dollars I am talking about all public and private dollars. The dollars to do the planning are essentially as we proposed in the legislation. It goes from $7.5 million to roughly $20 million eventually. This is matched by the States paying at least 25 percent of the cost after 1970. Twenty-five States now have created planning commissions.

Mr. FLOOD. They are moving pretty fast.

Dr. STEWART. They are moving very fast and I think they are finding they have the same problem with tax dollars as Blue Cross has with the Blue Cross dollars, and they cannot see what direction to go at the present time.

OUTLINE OF THE PROGRAM

The comprehensive planning money in 314 (a), (b), and (c) is to support statewide and metropolitan area planning and to train some planners. This does not take an overly large amount of money. The rest of the bill is an extension of older programs. The formula grant to the State health departments that we have had since 1935 had become categorized in the categories of mental health, cancer, and the like, and if they did not use it for that purpose they could not use it for anything else. But we know that needs vary from place to place, and that the needs in Wilkes-Barre may not be the same as in some other place, so that there ought to be decisionmaking on how to use the money a little closer to the place where you live. So the idea was to pool this money and give the States flexibility in how to use it in the health area.

Then there were project grants for special kinds of health programs which themselves had been categorized in various areas. We pooled these; $62.5 million is for formula grants and $62.5 million is for project grants. Dr. Guthrie will be speaking on this in more detail when he comes before you.

Mr. FLOOD. But you are in there punching for this thing, you are an enthusiast?

Dr. STEWART. Very much so. I think comprehensive health planning is new to the health field but it is not new to industry. This has developed since World War II in the defense establishment and has crept into many other industries.

PUTTING RESEARCH INTO PRACTICE

Mr. FLOOD. As I had occasion to say to some other group here, there was a period in defense appropriations during the war when we had a proliferation of plans and designs. Every time we had a hearing we had new designs for new fighters and bombers and we sat 12 hours a day listening to them, but finally the time came when we had to say, "Look, gentlemen, we needed fighters and bombers in England last night. Let us not have any more planning." That is the old story of when do you get from the laboratory to the bedside. This is a continual criticism of getting research into practice. Where are we?

Dr. STEWART. That is a continuing process. As to the planning for a specific program, as you say, eventually we have to say, "Let's go." We have planned the Hill-Burton program and implemented it; we have planned the mental retardation program and implemented it.

Mr. FLOOD. This is what you hear about back home. Newspapers say NIH gets hundreds of millions of dollars. When will they get to Mrs. Kelly's home. She is in bed, sick.

Dr. STEWART. You have to have new knowledge. And the transfer of knowledge is a very tough area.

Mr. FLOOD. You are restating the question. I know it is a tough area.

Dr. STEWART. Some of it depends on how complicated it is to get it out.

Mr. FLOOD. What does that mean?

Dr. STEWART. It means that a vaccine, like the measles vaccine, is very easy to get out. But when you are talking about the best way to treat acute leukemia you get into difficulty, because it takes a specialized team to do it. You have to have people who know how to handle these things.

First, I think there are some things they are getting that they do not realize they are getting. Hospitals have been changing and improving. But continuing education in the country for physicians and the development of technology in the hospitals is not very good. We need to develop very much better continuing education. We need to have ways of learning how to do these things or how to use the special teams we have.

If I may, I will come back to regional medical planning because it is one device we have to bring this about. We will have a great deal of effort, through the Bureau of Health Manpower, to work in the whole area of transferring knowledge. How do you involve the doctor who has very few hours to devote to this?

I think this transfer-of-knowledge problem is one of the most acute problems in the country. The people ought to get what we know.

Mr. FLOOD. You do not have to wait until you put lace curtains on these things, do you? Are there not degrees?

Dr. STEWART. You are quite right, there are degrees. It is a rolling process, it is not yes and no. If you have an advance it should be put out. Tomorrow you might well advance some more.

Mr. FLOOD. I know that.

Dr. STEWART. But there is the other area, Mr. Flood. Sometimes when you freeze plans you end up with what you do not particularly want because of the timelag factor.

MANAGEMENT FUNDS

Mr. FLOOD. Recently I have heard a complaint or two about the fact that your Bureau Chiefs' offices are funded through management funds. They are not hidden but they don't stand out in your budget like they would if they were treated in the usual manner. Why not have a separate appropriation for each of these outfits?

Dr. STEWART. We think the management fund mechanism works very well when you have multiple operations within a unit. Principally we like it because it can contract and expand as the program contracts and expands, it is more flexible and responsive. The management fund was created in 1960 by statute and at that time it was the Bureau of State Services Management Fund, and now it has become the Public Health Service Management Fund. The NIH Management Fund had been established for some time and the Bureau of State Services Management Fund was modeled after that. This was all we needed at that time.

Mr. FLOOD. Why can we not give each bureau an appropriation?

Dr. STEWART. The main reason is that we like this flexibility of the management fund and we believe we can display to the Appropriations Committee how it is being used. There is nothing to hide. The idea is to have the flexibility.

Mr. CARDWELL. Mr. Chairman, this subject came under extensive discussion at the time of the reorganization of the Public Health Service and we did agree with the Bureau of the Budget that we would make a study of the way in which we have arranged for the financing of the administrative support appropriations of the Public Health Service and that this would be reflected in the 1969 budget. We might make a proposal to have it in "Salaries and expenses" or to continue the present arrangement.

Mr. FLOOD. I am a big believer in line items. On my other subcommittee I have to be. I do not see why this has to be a "sacred cow."

Dr. STEWART. You have complicated central services in the National Institutes of Health covering a whole series of purposes. The same is true in the Communicable Disease Center on a smaller scale. As managers we feel this is more helpful.

ENTERTAINMENT FUNDS

Mr. FLOOD. My distinguished colleague from New York should be here to ask this next question. I sat on his subcommittee during the war and he never failed to ask it. You have $2,500 for entertainment?

Dr. STEWART. Yes, $2,500 to entertain foreign visitors. We are asking for an increase from $1,000 to $2,500.

Mr. FLOOD. I know.

Dr. STEWART. The increase is requested because, for example, in the Communicable Disease Center we are involved in many international programs with Africa and other foreign countries and there has been a big increase in the number of foreign visitors. The CDC people have been taking money out of their pockets. The amount of money I have to use is principally to entertain the delegates to the World Health Organization. When I am representing the United States we usually have an event for other delegates, and also when Ministers' of Health of other nations come to this country we entertain them.

Mr. SMITH. Did you buy cigars and cigarettes for them?

Dr. STEWART. No, sir. Very few things are controlled for as well as this is.

VENEREAL DISEASE CONTROL

Mr. FLOOD. Nearby to my home town of Wilkes-Barre there is the city of Williamsport, and a distinguished lawyer from that town, Mr. S. Dale Furst, Jr., is president of the American Social Health Association. I have known him for many, many years and he has devoted himself to the matter of venereal disease control to a degree that is hard to believe. They are concerned at this time especially with the flareup of venereal disease. Every year for many, many years when the Surgeons General of the various departments of Defense come up I examine them all on venereal disease. Mr. Furst came to me knowing of my interest. After a conversation with him and some members of his association I thought I would ask you some particular questions in view of this flareup of gonorrhea and syphilis.

At this point in the record I am going to insert, if there is no objection, a letter from Attorney Furst which outlines the position of his organization with reference to these problems and I will ask you to answer the questions raised therein.

Dr. STEWART. Certainly.

(The letter referred to follows:)

FURST, MCCORMICK, MUIR, LYNN & REEDER,
Williamsport, Pa., March 14, 1967.

Hon. DANIEL J. FLOOD,
Cannon House Office Building,
Washington, D.C.

DEAR CONGRESSMAN FLOOD: First of all, I should like to express to you our gratitude for the time you gave us in your office last Friday.

For the record, we represented the American Social Health Association, a national volunteer organization which is preeminent in the field of venereal disease control. We cosponsor, and our staff prepares the Joint Statement on Venereal Disease Control, of which you have a copy, and which has appeared annually since 1954. This is the recognized statement on the position of venereal disease in the United States each year. The first Joint Statement predicted the upsurge in reported venereal disease which began in 1957 after it had been unfortunately felt that venereal disease was no longer a problem because of the discovery of penicillin.

Reported infective Syphilis increased more than three times up to fiscal 1965, and Gonorrhea has increased materially. Recently we have been encouraged that infectious Syphilis cases decreased in fiscal 1966 for the first time in almost ten years.

We are now particularly concerned with VD control for two reasons. One is that we think that the control program should be further strengthened as evi-

denced by our recommendation that Federal VD appropriations be increased from the present approximate $10,500,000 to $17,500,000 as indicated by Recommendation Number 1 of the current Joint Statement. Our second reason is that Public Law 89-749 changes completely the form of appropriation for the Public Health Service to use in strengthening public health measures in the States. There is no longer any categorical appropriation for VD control, and it would appear that the Public Health Service may provide less leadership in VD control to State and local health departments. We suggest that in your hearings you may want to direct some questions to Surgeon General Stewart and Dr. Sencer of the Communicable Disease Center about the current status of the VD control program. These gentlemen might be asked the following questions:

1. The American Public Health Association, The American Social Health Association, The American Venereal Disease Association, and The Association of State and Territorial Health Officers, with the cooperation of the American Medical Association, have prepared a Joint Statement on Today's VD Control Problem. What do you think of the Joint Statement's recommendation that the Federal VD Control expenditures be increased to $17,500,000?

2. How much of the general appropriations to the Public Health Service for fiscal 1968 will be devoted to VD control?

3. With the funds likely to be available under the current budget request, will it be possible for the Department to support an effective VD control program?

4. Will there be a change in the present relationships between the Public Health Service and the State Control programs?

5. Since the form of Federal VD appropriations and Federal participation in the VD Control program is being suddenly changed, is there likely to be ground lost because of confusion in the next few years?

6. What assurance is there under the new form of distribution of funds that States will ask for adequate amounts for effective State VD projects.

Again we wish to thank you for your time and for the understanding encouragement that you gave us. We recognize your difficult position and shall not judge your interest by any possible outcome of the committee's action if not as favorable as we should like.

Very truly yours,

S. DALE FURST, Jr.,
President, American Social Health Association.

(The answers to the questions in the foregoing letter follow:)

1. The American Public Health Association, The American Social Health Association, The American Venereal Disease Association, and The Association of State and Territorial Health Officers, with the cooperation of the American Medical Association, have prepared a Joint Statement on Today's VD Control Problem. What do you think of the Joint Statement's recommendation that the Federal VD Control expenditures be increased to $17,500,000?

We agree that $17,500,000 could be profitably used to aid in the control of venereal diseases, but within the total constraints of the Public Health Service budget we are unable to support this level of appropriation.

2. How much of the general appropriations to the Public Health Service for fiscal 1968 will be devoted to VD control?

$4,366,000 is in the budget for venereal disease control. In addition funds are available for venereal disease control activities through project grants to States in the appropriation "Comprehensive health planning and services."

3. With the funds likely to be available under the current budget request, will it be possible for the Department to support an effective VD control program?

The role of the Department is to provide leadership in VD control and to assure that national goals are met. We envisage that the funds available will certainly allow us to maintain our national leadership and encourage strong, active VD control programs in the States.

4. Will there be a change in the present relationships between the Public Health Service and the State Control programs?

We see no change in the very excellent working relationships that exist between our VD Program and their counterparts in the States. We will still have the ability to furnish Federal personnel to the States upon their request.

5. Since the form of Federal VD appropriations and Federal participation in the VD Control program is being suddenly changed, is there likely to be ground lost because of confusion in the next few years?

In an established, on-going program such as VD control we do not foresee any disruption of program activity. The staff of the VD Program and our

Regional Office staffs are currently working with and will continue to work with the States to assure that the gains we have achieved are not compromised.

6. What assurance is there under the new form of distribution of funds that States will ask for adequate amounts for effective State VD projects?

We hope that the States recognize the seriousness of the VD problem and will request the needed funds to implement effective State VD projects and the Service will continue to strive to support these requests that are in keeping with our national goals.

GRANT ARRANGEMENTS UNDER PUBLIC LAW 89–749

Mr. FLOOD. We have before us, and you've made reference to it in your statement, a completely new way of supporting several health programs in the States and communities—Comprehensive Health Planning and Public Health Services Act, Public law 89–749. Now, I'm in favor of giving the States more responsibility for planning and conducting programs which meet their health problems, but I've got some questions on just how the program will work. How does this relate to the regional medical program? How do they fit together, or do they?

Dr. STEWART. The comprehensive health planning and services envisioned by Public Law 89–749 extend laterally across all health activities, including those which relate to health in the broadest sense. The regional medical programs can be evisioned as a vertical extension uniting the medical resources of a region to achieve a specific medical purpose. The cooperative arrangements developed through regional medical progams will be a powerful instrument for achieving specific health objectives. Comprehensive health planning will serve as a point of interlock between these programs and others among a host of health and health related activities.

In summary, the comprehensive planning program seeks to assure that the whole is greater than the sum of the parts.

Mr. FLOOD. How will you, and we, know that grants for cancer control, tuberculosis, and so forth, are used for those purposes?

Dr. STEWART. Under the authorities provided in the act for formula and project grants for the delivery of health services, grant funds are not federally earmarked for specific, predetermined categorical purposes. The provision of formula grant support will be based on the acceptability of the proposed state plans and not on the basis of federally determined categories of activity. The project grants, which will be reviewed on an application by application basis, will be awarded on the basis of project merit. Thus, support of grant projects in specific categories will be the result of basic priority decisions by the State officers and grant applicants.

Mr. FLOOD. What about HEW regional office responsibility? How can they handle all this extra work?

Dr. STEWART. The responsibilities of the Public Health Service's regional health directors will necessarily increase. They will assume a large degree of operating responsibility. The workload also will increase and it will be necessary to provide appropriate support personnel.

It will be necessary to assign additional personnel with specific capabilities to the regional offices.

Mr. FLOOD. What about these other health grants we've got in this budget? We've got health grants in the Office of Education, in the

Vocational Rehabilitation Administration, in the Children's Bureau. We will be getting requests for OEO. Many are for the same kind of health services—the differences are because of age, economic, disability, but are these going to be tied in with the state health planning agency?

Dr. STEWART. The comprehensive planning program is envisioned as extending laterally across all health activities. The State and community health planning agencies provide the mechanism through which specialized programs can be coordinated and related to each other. The planning agencies will serve as focal points within the States for relating comprehensive health plans to planning outside the field of health.

EMPHYSEMA

Mr. FLOOD. Do you view emphysema as a serious health problem?

Dr. STEWART. Yes sir; we view emphysema as a very serious health problem.

Mr. FLOOD. How serious?

Dr. STEWART. During the past several years, emphysema and related chronic respiratory diseases have become the fastest rising causes of death and disability in the United States. Deaths from emphysema and chronic bronchitis have increased about 9 times in the last 20 years: from about 2,300 in 1945 to 20,208 in 1964. Beyond this, it is felt emphysema and chronic bronchitis contributed to an estimated 40,000 additional deaths that year. In other words, we can say that over 60,000 deaths in 1964 were caused, either directly or indirectly, by those two diseases. However, most authorities feel that these figures represent only the visible portion of the "iceberg," so to speak. Because of the variations in diagnosis, many deaths caused by emphysema and chronic bronchitis may well be incorrectly attributed to "heart failure" and a host of other terms.

Mr. FLOOD. The Senate asked you for a report on how PHS activities are coordinated. It was on page 19 of last year's report. Do we have that?

Dr. STEWART. The report has been prepared. I am not sure whether you have received a copy, but I will be glad to send one to you.

Mr. FLOOD. Are further actions needed to train personnel, increase research, or provide service?

Dr. STEWART. The answer is "yes" on all three counts. The accelerated rate at which the disease is increasing is proof of the need for more research, additional training of personnel, and greater service to fill the special needs of the patient, the clinician, and the research investigator.

In recent years, the characteristics of chest medicine have changed remarkably. In prior decades, respiratory diseases that represented the major health problem were infectious in nature; for example, tuberculosis. With the advent of specific chemotherapy these health problems can be controlled more effectively. Today the greatest rise in the cause of death is emphysema which is a chronic obstructive disease and requires a new physiological approach in diagnosis and treatment. With this changing picture in the nature of pulmonary diseases, a different approach must be taken in research and clinical care. Currently, there is a shortage of individuals well trained in

these disciplines and techniques. The Public Health Service and the National Tuberculosis Association sponsored a task force on emphysema and chronic bronchitis last fall, composed of national experts in this disease area. That group pointed out that in 15 of the country's medical schools, there are no teaching programs in pulmonary disease. The situation is just as bad for nurses and the allied health personnel, such as inhalation therapists, pulmonary technicians, and so forth.

The answers to these needs no doubt will be found in a course of interrelated, interdependent action. By increasing emphysema research support at medical centers, we can logically expect to learn more about the epidemiology, diagnostic techniques, cause, and treatment of the disease. And, at the same time, we could stimulate the much-needed recruitment of young physicians into the pulmonary disease field. With more qualified personnel, the patient could be assured of better prospects of prevention, or treatment and rehabilitation.

Mr. FLOOD. Where does a researcher on emphysema go for support in the PHS?

Dr. STEWART. Individuals who wish to make application for financial support of basic research projects should address their requests to the Division of Research Grants, National Institutes of Health. These research applications are then assigned to the National Heart Institute, the National Institute of Allergy and Infectious Diseases.

In the area of air pollution or occupationally related chronic lung disease, the investigator would go to the National Center for Air Pollution Control or the Occupational Health Program in the National Center for Urban and Industrial Health. For applied research, some epidemiology, and work in methodology and so forth, the investigator would go to the chronic respiratory disease control program, National Center for Chronic Disease Control.

SCHOOLS OF PUBLIC HEALTH

Mr. FLOOD. How much money is included in the budget for formula grant allocation to schools of public health?

Dr. STEWART. The budget includes $3.5 million.

Mr. FLOOD. How does this compare with the current year's figures?

Dr. STEWART. It is $250,000 less.

Mr. FLOOD. What is the current ceiling on appropriation authorization for the existing accredited schools?

Dr. STEWART. The current ceiling is $5 million.

Mr. FLOOD. Are there any new schools of public health likely to be accredited?

Dr. STEWART. There are at least two—Oklahoma, and Loma Linda, Calif.

Mr. FLOOD. Are there additional schools of public health being planned?

Dr. STEWART. There are at least five presently under discussion.

Mr. FLOOD. Are these schools the major or in some cases the only resource for training of key public health personnel in this Nation?

Dr. STEWART. Yes, they are.

Mr. FLOOD. How much did the old Bureau of State Services, the Public Health Service, and the Department of Health, Education, and Welfare request for formula grants for these schools for next year?

Dr. STEWART. The Bureau of State Service, the Public Health Service, and the Department each requested $5 million.

Mr. FLOOD. How much money is needed for the presently accredited and two schools with pending accreditation?

Dr. STEWART. Substantially in excess of the $5 million current ceiling. The schools have submitted a statement of their current needs. Furthermore, they are preparing an exhaustive analysis of the uses to which the formula grants have been put and an estimation of their long-range needs in preparation for the National Training Conference to be held late this coming summer.

BUREAU OF HEALTH MANPOWER

Mr. FLOOD. What will be the relationship of the Bureau of Health Manpower to other agencies within HEW and outside HEW, such as the Department of Labor and OEO, which also support training for several types of health workers?

Dr. STEWART. The Bureau will serve as a central point of contact for educators and others involved in planning and carrying out education and training programs for health professional and subprofessional personnel.

The Bureau will serve as one of the significant coordinating agencies within the Federal Government in the area of health manpower. Currently, members of the staff of the Bureau serve on interagency and interdepartmental working groups with representatives of such programs as manpower development and training, Office of Economic Opportunity, Office of Education, Department of Defense, Veteran's Administration and the like.

The Bureau will also constitute a national source of reliable information and projection as to manpower needs and programs designed to meet them.

Mr. FLOOD. How will continuing education and health manpower aspects of the regional medical programs and the comprehensive health program be coordinated with activities in the Bureau of Health Manpower?

Dr. STEWART. Mr. Flood, there is at present an interbureau task force preparing a statement on continuing education and the role of the PHS in its development.

Mr. FLOOD. I seem to recall from previous testimony that nursing and dental divisions are much further along with their manpower programs than the physician and allied sectors. Why is this and how will the Bureau increase the productivity and efficiency of medical and allied personnel?

Dr. STEWART. The nursing and dental divisions existed in the PHS many years before the reorganization. Physician and allied health manpower were created by the reorganization January 1, 1967, because of their significance and because they had not been emphasized by PHS in the past. These divisions, like the others, will administer significant new programs recently enacted, to provide grants to schools to improve their educational programs, to provide financial aid for students enrolled in basic and advanced training programs, and

grants for construction of facilities and programs to bring current knowledge to health professions.

Mr. FLOOD. What kinds of information are you going to gather on health manpower that will help solve some of these problems? Just making an inventory of the number of personnel won't help. How are you planning to develop trained people to fill the present gaps?

Dr. STEWART. The Bureau of Health Manpower plans to obtain information not only about the numbers of health personnel we now have and to estimate the numbers needed, but will develop information about the roles they are playing, the organizational patterns in which their knowledge and skills are used and the ways in which they can be better prepared for new tasks which are certain to develop in the field of health. This knowledge will form the basis for rendering assistance, advice and counsel to States, localities, and educational institutions on the ways to meet these manpower requirements. Infor- and the kinds of opportunities which exist to prepare them for such careers. Grants to institutions to provide traineeships in public health, nursing, and the allied health occupations are also available.

DRAFT REJECTEE PROGRAM

Mr. FLOOD. I have before me a letter from Mr. Cohen of your Department under date of March 15, 1967. This deals with the Supplemental Appropriation Act reports from the Senate and the House and the opinions of your Department's General Counsel regarding the draft rejectee program. Apparently it was not directly funded by the House or by the Senate but because of the need for the program your General Counsel suggested this could be done and it is being done. You might want to add some comment to this.

(The letter referred to follows:)

THE SECRETARY OF HEALTH, EDUCATION, AND WELFARE,
Washington, March 15, 1967.

Hon. DANIEL J. FLOOD.
House of Representatives,
Washington, D.C.

DEAR MR. FLOOD: For the past two years, the Public Health Service, in cooperation with the Vocational Rehabilitation Administration, has operated a contract program under which State and local health agencies counsel and refer for care young men rejected from military service for medical reasons. At the present time, every State, the District of Columbia, and Puerto Rico have operating health referral programs providing on-site interviews with draft rejectees in each of the seventy-five Armed Forces Examining Stations, and followup, in-depth counseling in the rejectee's home community. Approximately 450 State and local employees are currently working full-time on this effort. Just as the program is beginning to realize its full potential, however, a question has arisen concerning its continuation through the remainder of the current fiscal year.

In fiscal 1965 and 1966, the program was supported at an annual level of $5 million through a transfer of funds from the appropriation for the Office of Economic Opportunity to the Public Health Service appropriation, "Community health practice and research." This transfer was authorized by a proviso inserted in the language of the "Economic opportunity program" appropriation at the initiative of the Congress. The 1967 President's Budget proposed deletion of this transfer authority in favor of a separate activity within the OEO appropriation account entitled, "draft rejectee program." This proposal was intended to permit the Public Health Service to continue operating the selective service rejectee program at a $5 million level in fiscal year 1967 by means of a reimbursable agreement with OEO.

As contained in the Supplemental Appropriation Act for 1967, however, the Office of Economic Opportunity appropriation makes no provision for continuation of the rejectee program. The only mention of this activity in the hearings before the Labor-HEW Subcommittee of the House Appropriations Committee was a brief discussion with OEO witnesses concerning their knowledge of the program's operations. The report of the House Appropriations Committee on the Supplemental Appropriation Bill makes no mention of the program and gives no reason for its exclusion from the bill as ultimately enacted by the House of Representatives. Again in the hearings before the Senate Appropriations Committee, the program was neither discussed nor mentioned. The Senate report accompanying the Supplemental Appropriation Bill indicates in a tabulation showing the activities financed by the Office of Economic Opportunity that $5 million was appropriated for the rejectee program in fiscal 1966 and that a like amount was requested in 1967. However, there is no discussion or explanation of why funding for the program was omitted in the Senate version of the appropriation bill. Finally, the report of the committee of conference makes no reference to the selective service rejectee program.

On the basis of the above, the Department's General Counsel has concluded that although the Congress clearly failed to provide funding for the rejectee program through the "Economic opportunity program" appropriation account, there was no expression of legislative intent attending the enactment of the Supplemental Appropriation Act which would preclude continuation of the program in 1967 under the legislative authority of another Federal agency. This conclusion has been informally discussed with representatives of the General Accounting Office, and they have agreed that there is a proper basis on which the Department might assume financial responsibility for continuation of the rejectee program.

With respect to legislative authorization, the General Counsel's office has further determined that extension of the existing contracts with the several States is within the Surgeon General's authority under section 301 and related provisions of the Public Health Service Act. During the period from March 31 through June 30, 1967, 51 of the 52 health referral contracts are scheduled to expire. In many instances, however, sufficient unobligated balances will remain within the present contracts to permit their extension through the end of the fiscal year without the provision of supplemental funds. The following seven States will require additional financial resources amounting to a total of $60,079—Delaware, Maine, Ohio, Florida, Minnesota, Mississippi, and New Mexico.

To meet this need, it is our intention to make available $60,079 from within the fiscal year 1967 Public Health Service appropriation, "Community health practice and research." As mentioned earlier, this is the same appropriation account which received the funds transferred from the Office of Economic Opportunity in prior years for operation of the selective service rejectee program. This means of support is viewed purely as an interim measure. Beginning in fiscal year 1968, the rejectee program will be modified so as to permit its continuation under the authority of section 314(e) of the Public Health Service Act as contained in the recently enacted Comprehensive Health Planning and Public Health Services Amendments of 1966.

Should you have any questions concerning the selective service rejectee program, we shall be happy to furnish whatever additional information you may desire.

Sincerely,

WILBUR J. COHEN,
Acting Secretary.

(Dr. Stewart's comment on the foregoing letter follows:)

I fully endorse Mr. Cohen's letter. We have been pleased with the program progress made by the States and concerned that the program not be terminated precipitously. Because of these concerns, we are taking action to assure that funds will be made available to the States for the remainder of this fiscal year. In fiscal year 1968, the States, if they so choose, can take action to obtain continued support for this program under the authority of section 314(e) of The Comprehensive Health Planning and Public Health Service Amendments of 1966.

Mr. FLOOD. Mr. Michel.

LIFE EXPECTANCY

Mr. MICHEL. Dr. Stewart, what is the life expectancy of nonwhite males and females and white males and females? Is there much difference?

Dr. STEWART. Yes, there is a difference both between male and female and white and nonwhite.

Mr. MICHEL. Could we have that placed in the record?

Dr. STEWART. Certainly.

(The information follows:)

Life expectancy: United States, 1965

	Years
White:	
Male	67.6
Female	74.7
Both sexes	71.0
Nonwhite:	
Male	61.1
Female	67.4
Both sexes	64.1
Total:	
Male	66.8
Female	73.7
Both sexes	70.2

Mr. MICHEL. How would this compare with 5 years ago?

Dr. STEWART. Well, there has been an increase in life expectancy in all areas, white male and female and nonwhite male and female, but at different rates. The white female's life expectancy is increasing the fastest.

Mr. MICHEL. And in these four general categories what would be next, white males or nonwhite females?

Dr. STEWART. I would have to look that up. They are pretty close to each other.

POLIO

Mr. MICHEL. What State had the largest number of polio cases in 1966?

Dr. STEWART. Texas.

Mr. MICHEL. How do you account for this?

Dr. STEWART. I think it was because most of the cases occurred along the border area among Mexican-American children. There had been an immunization program several years ago but, unfortunately, not a followthrough and these children were born since then. We have worked with the State authorities in Texas since that time, and there have been immunization programs in that area.

BUFFER ZONES TO PREVENT SPREAD OF DISEASE

Mr. MICHEL. Would we need, for preventing human diseases of that kind, buffer zones as used to prevent in animal diseases for instance? For example, animals afflicted with screw-worms come across the Rio Grande and we can eradicate them in this country but if our foreign neighbors do not do the same we are vulnerable in that respect. Does that apply to human diseases?

Dr. STEWART. In certain diseases it does, but not in the case of polio. For example, we have always required smallpox vaccination for any-

one crossing the border. There has not been a smallpox case in Mexico since 1952, so we have been able to eliminate this requirement. In the case of tuberculosis we have to improve the tuberculosis programs on both sides of the border before we can do that.

ERADICATION OF CERTAIN DISEASES

Mr. MICHEL. You speak in your statement here about diseases that need no longer occur.

Dr. STEWART. This is correct.

Mr. MICHEL. What would those be?

Dr. STEWART. I do not think there needs to be any polio; I do not think there needs to be any measles eventually; I do not think there needs to be diphtheria or tetanus. Most of these have been reduced down to a small amount.

Mr. FLOOD. If the gentlemen will yield, what happened to chickenpox and whooping cough? I have a dot over my eye from chickenpox.

Dr. STEWART. Chicken pox is still there, but for whooping cough we have a vaccine which is now routine for children. However, we still have too much whooping cough occurring.

Mr. FLOOD. When I was a small child we would walk down the street and there would be quarantine signs on houses for chicken pox and so on. What happened to that practice?

Dr. STEWART. This was an apparent attempt to stop the spread by building a wall around somebody. It did not work too well. We did not have the other tools we have now when this was used. So it was as good as was possible at that time.

Mr. FLOOD. Thank you.

Mr. MICHEL. While we are on these childhood diseases, what is the incidence of mumps in children? Is that declining?

Dr. STEWART. No; it is not declining. I would have to look up what the incidence is. It is not reported very well. Mumps occurs also in adults. It is not a highly contagious disease but I think we probably will have a mumps vaccine soon.

Mr. FLOOD. Would that be used after it occurs?

Dr. STEWART. No; as a preventive.

Mumps is not a national reportable disease. Partial statistics, from those States reporting, show 33,533 for the first twelve weeks of calendar year 1966. The comparable figure for the first twelve weeks of calendar year 1967 was 46,275.

RELATIVE BUDGET EMPHASIS ON HEALTH CARE AND HEALTH PROTECTION

Mr. MICHEL. How much of your budget goes to problems related to health care as distinguished from health protection? Would there be a way of striking a percentage between those two?

Dr. STEWART. Health protection and health care?

Mr. MICHEL. Yes.

Dr. STEWART. Half a billion dollars is included in the 1968 budget for health services. The single largest item is for building hospitals under the Hill-Burton Act. And for health protection it is a quarter of a billion dollars.

Mr. MICHEL. Do you think that is a proper ratio?

Dr. STEWART. It is hard to say because the ratio is changing. In percentage increases, we are requesting in 1968 over 1967 for disease control about 21 percent, whereas in health services it is about 10 per-

cent. But you must realize there are many other elements of health services in other parts of the Federal Government—medicare, medicaid, OEO, and so on—so that one cannot make these comparisons within the Public Health Service. You have to make them Government-wide.

Mr. MICHEL. How many health protection dollars go toward health knowledge?

Dr. STEWART. I would have to look up what the research is, but I think you are getting two concepts mixed up. Research is a method or process and goes on in all bureaus of the Public Health Service. But the pooling of knowledge is largely centered in NIH. The National Institutes of Health are after what causes these things.

REORGANIZATION OF PUBLIC HEALTH SERVICE

Mr. MICHEL. Do we have in the record your new organizational chart.

Dr. STEWART. You do not.

Mr. MICHEL. Do you have one prepared?

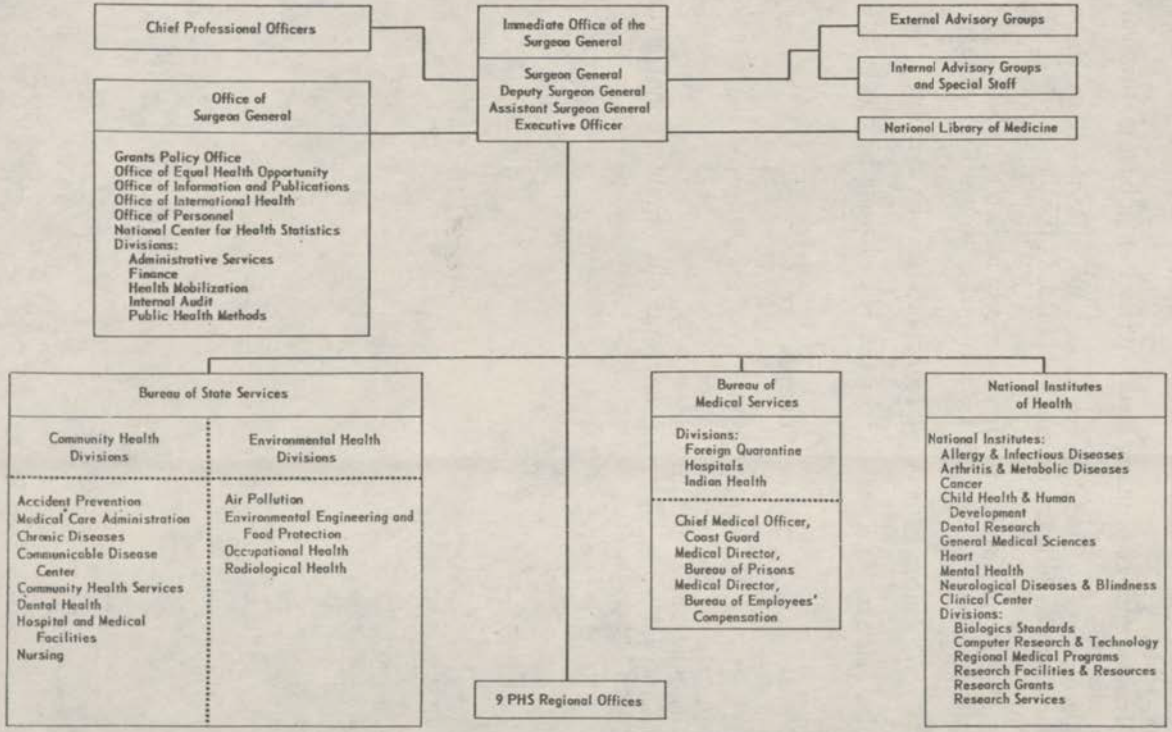
Dr. STEWART. Yes.

Mr. MICHEL. Would you put in a miniature of the new one as against the old one?

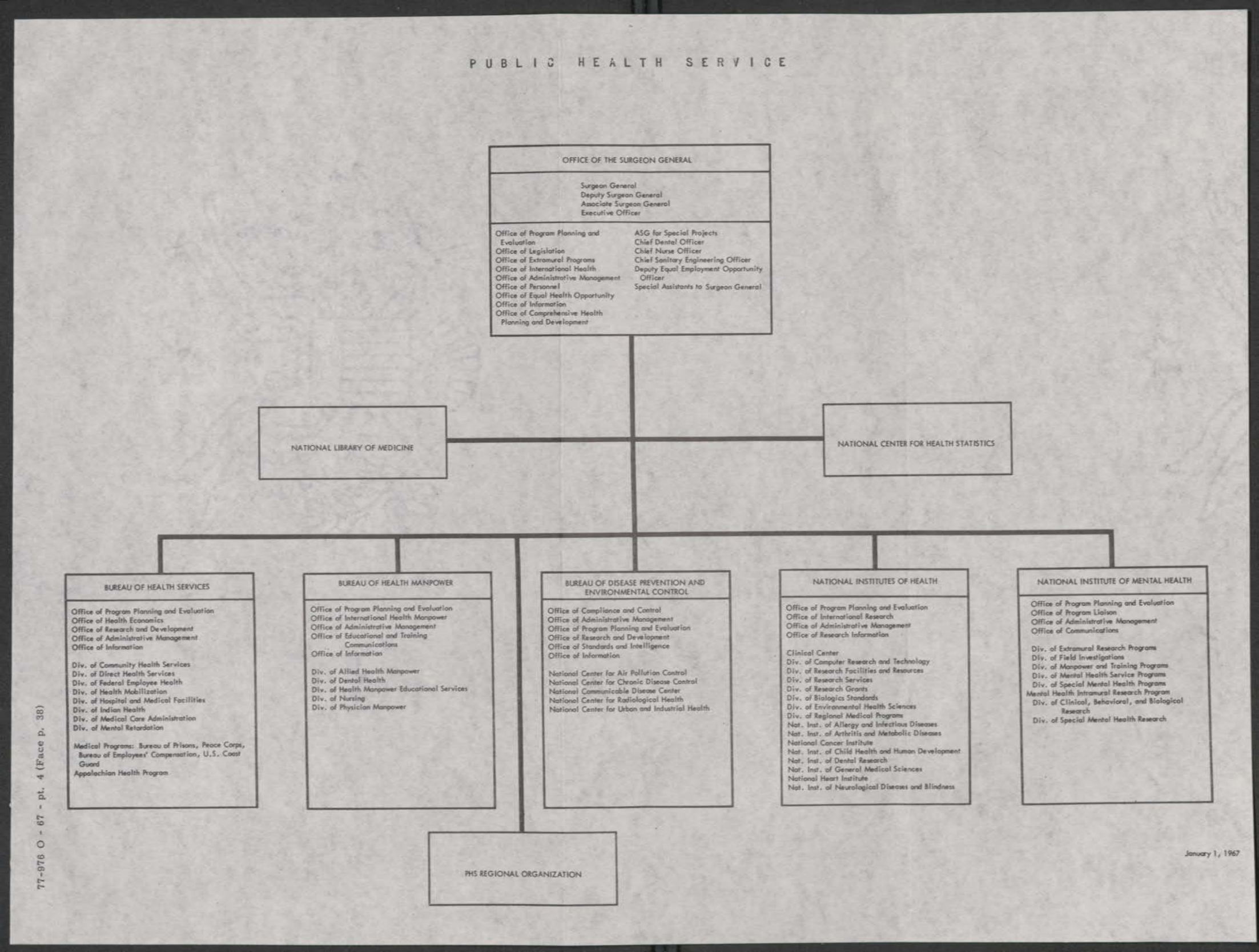
Dr. STEWART. Certainly.

(The charts showing the new and old organizational structures appear at page 38.

PUBLIC HEALTH SERVICE

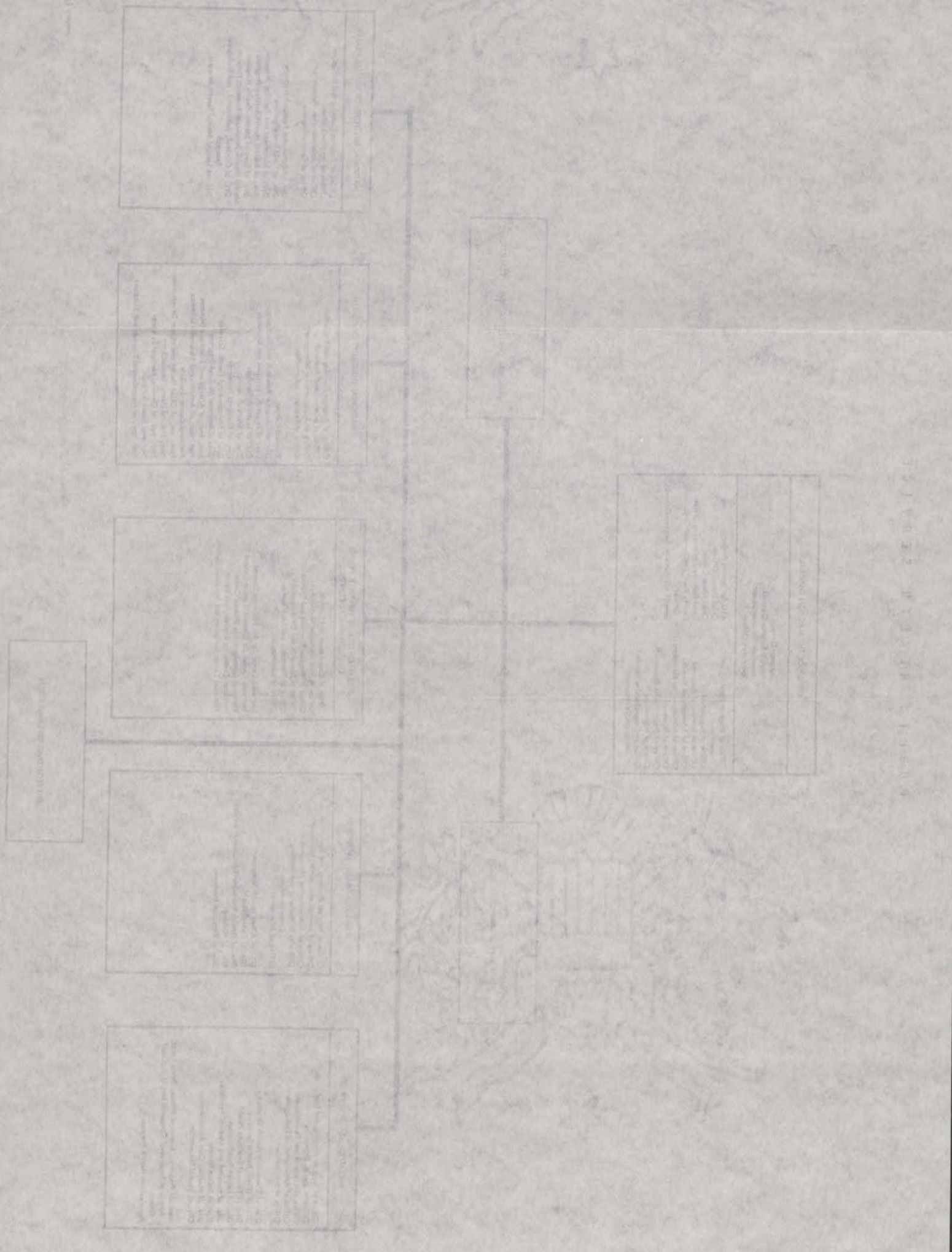


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Mr. MICHEL. What are the real significant changes in your structure?

Dr. STEWART. The significant changes are that we have organized around these four missions which I mentioned in my statement. Previously, the one that was most organized was the National Institutes of Health, and that is the one that was the least disturbed in this organizational structure. I think the reorganization reognizes that the role of the Federal Government in the health field is changing and we are emerging into the health protection and health care areas.

Mr. MICHEL. It does not signify a downgrading of NIH?

Dr. STEWART. Not at all, not at all.

Mr. MICHEL. Were there any significant changes in cost due to your new organizational setup?

Dr. STEWART. No significant changes. In the 1967 budget there were no changes in cost. In the 1968 budget there are some changes, principally in my own office to strengthen the ability to man this organization.

INCREASE REQUESTED IN SURGEON GENERAL'S OFFICE

Mr. MICHEL. How much of an increase are you requesting in your own office?

Dr. STEWART. It is about $1.5 million and about 110 positions. These are scattered through many areas.

Mr. MICHEL. That is what percentage of increase?

Dr. STEWART. It is from $7.5 million to $9 million, which is about 20 percent, and about a 12-percent increase in personnel.

Mr. MICHEL. If we put the knife to some of that increase, how will that affect your new organizational setup?

Dr. STEWART. I think it will weaken our ability to manage this large organization. We want to improve our personnel management and financial management and particularly in the management informational systems. $9 million in relationship to just under a $3 billion budget is not an unusual percent of money to put into the structure of management.

Mr. MICHEL. To sell this to some pretty hard nosed colleagues of ours, not to mention those on this subcommittee, what argument would you use for these increases? For example, you compared $9 million to $3 billion.

Dr. STEWART. There had to be some building made in the office itself. The analogy before was that it was too weak to carry out its job. Here is an organization that makes some 35,000 grants and that has a major impact on hospitals, medical schools, and everything else. One has to have an information system to know whether the policies that have been set by the Public Health Service are being carried out.

Mr. MICHEL. You are trying to sell this subcommittee on 110 increased positions because you want to be more efficient. We want to know how would we save in overall dollar expenditures by the addition of 110 new people?

Dr. STEWART. I think to really look at this you will have to look at each of the sections in this appropriation individually and make your own judgment on it. Dr. Gehrig will be defending the Salaries

and Expenses appropriation and at that time will go into it in great detail.

Mr. MICHEL. Would it be an unfair question to ask which of these specific areas you regard as most urgent? If we cannot allow the 110 new people, we have to ask the question "where are the most critical areas?"

Dr. STEWART. We hope you do not need to ask that question because we think we have a balanced, essential appropriation request before you for that office. If you do get to that question I hope you do ask which areas are our highest priorities.

Mr. MICHEL. When we get behind closed doors we probably will not be able to ask you back here. So we will have to go on what is in the record. In that case we might make the cut across the board because you told us this was a well balanced program.

Dr. STEWART. If you want our priorities in the record, I would suggest you ask that of Dr. Gehrig when he is testifying on the Salaries and Expenses appropriation.

PERSONNEL TURNOVER IN PUBLIC HEALTH SERVICE

Mr. MICHEL. Have you experienced any sizable personnel turnover in the Public Health Service?

Dr. STEWART. No; I think our turnover is about 10 percent per year.

Mr. MICHEL. That is considered to be normal?

Dr. STEWART. That is considered to be normal.

Mr. MICHEL. That would come principally in what areas?

Dr. STEWART. That is over all. Of course your turnover is always greater in the lower grades than in the higher grades. We are concerned not so much with the turnover but the difficulty of recruiting scientists and physicians and other professionals. We are not competitive in the market, so to speak, for scientists and physicians.

Mr. MICHEL. Once you have acquired those people, do you have a specific problem in holding on to them?

Dr. STEWART. We have problems at certain times. If they do join us and they are younger people, scientists or physicians, they do approach a time when they are offered many jobs, particularly in universities. Or for physicians it might be in private practice. It is difficult to hold them because of the salary difference. If they are commissioned officers we have the 20-year retirement problem.

Mr. MICHEL. Does that force you in a position of then hiring older people because this is the last move they will make and you have a better chance of keeping them? I do not mean to be demeaning those who reach a particular age, but does it in effect force you to take older people who have no other place to go? I would hope not.

Dr. STEWART. Not at all. I would rather struggle along without them. Where we have difficulty is in trying to get top managerial people for our laboratories. The most we can offer is between $22,000 and $25,000 and generally they are making between $35,000 and $40,000, so the people who join us are people who for some reason or other are willing to take a $5,000 or $10,000 cut. This takes an unusual person.

Mr. MICHEL. Why are they willing to take this cut?

Dr. STEWART. Some are at a point where they want to make a change anyway. Some find our program, I hope, exciting enough

that they want to do it—they have a commitment to public service. But we always have great difficulty filling our top positions. It is difficult for a person who has been living at $35,000 a year—and he is usually right at that stage where his children are teen age or just beyond—to step down in the sense of his income. We do have some individuals who want to do it. We are finding some help in individuals who take a leave from universities for a year. This helps a great deal but we do not have the career continuation we would like to have. The most difficult area is in the scientific and professional leadership.

RETIREMENT SYSTEM

Mr. MICHEL. You mentioned the 20-year retirement of commissioned officers. Do you mean the inducement is great enough you can keep them?

Dr. STEWART. No. The 20-year retirement is at the pleasure of the Public Health Service for commissioned officers and with the opportunities being greater and greater among people who are completing 20 years, the tendency is to leave at a rate which is beginning to interfere with the functions of the Public Health Service. This year, for the first time, the Surgeon General decided to turn down some of these, but that is not a solution to the problem. In the bill pending at the present time, an effort is being made to correct the problem of the 20-year retirement.

Mr. MICHEL. How do you do it?

Dr. STEWART. Our system at the moment is a noncontributory retirement system. It works adversely to the individual and to the organization. When you have been 12 years—or is it 15 years—in the Public Health Service you cannot afford to leave, even if you want to, because you have no retirement built up. On the other hand, when a person has 20 years he is usually at the peak of his career and yet the incentive is for him to leave in order to start his annuity payments. What I would like to see is a contributory retirement system in which the individual can leave at any time he wants and have the annuity start later in life when he needs it. That means an individual gets the retirement he has invested in and he has no feeling he must stay in. With the 20-year noncontributory retirement you can't come in after age 44 because the mandatory retirement age is 64.

Mr. MICHEL. Would this require a change in the civil service system?

Dr. STEWART. No, it would require a change in the retirement system of the present commissioned officers.

Mr. MICHEL. Of the Public Health Service?

Dr. STEWART. That is right, and it is toward the direction of the civil service retirement system. But we hope it builds in a few things that are a little better than the civil service retirement system. I must say for the record this bill is still in the Bureau of the Budget at the present time. There is a different concept behind it.

Mr. MICHEL. But have you gotten to the point where this has been proposed?

Dr. STEWART. The Department has proposed it and it is in the Bureau of the Budget for clearance.

PROVISION OF DOCTORS TO OTHER DEPARTMENTS

Mr. MICHEL. Do you provide or help obtain doctors for other departments of government?

Dr. STEWART. Yes, we do. We provide physicians for most of the other departments of government.

Mr. MICHEL. Do you get them from the outside?

Dr. STEWART. The bulk are those who are serving their 2-year obligation of Selective Service. We provide them a supervisor and a career physician. We provide physicians for the Peace Corps, for the Department of Justice, Agriculture has one or two, and FAA. We service almost every department with the exception of the Department of Defense and the VA.

Mr. MICHEL. What about the Space Administration?

Dr. STEWART. We have a few who are working on the decontamination program of the capsules that go to the moon and back. These are engineers, actually.

Mr. MICHEL. Could we have for the record the number of doctors that left in the last year and in the last 5 years?

Dr. STEWART. Including those that were serving their Selective Service time?

Mr. MICHEL. Yes.

(The information follows:)

Number of doctors leaving Public Health Service, 1962–66 [1]

	Average strength	Number leaving
Year:		
1966	2,371	575
1965	2,306	517
1964	2,281	526
1963	2,151	381
1962	1,927	378

[1] Includes those serving military obligation.

Mr. MICHEL. How many of those that are eligible for 20-year retirement have you actually asked to stay on?

Dr. STEWART. Twelve. There are two periods of time in any one year. This year, some 79 have applied for retirement with 20 years or more service but less time than they need to retire on their own, and we decided to retain 12 of the individuals.

PHS APPROPRIATIONS REQUEST BEFORE OTHER SUBCOMMITTEE

Mr. MICHEL. Are any parts of the Public Health Service requests for money heard by any other committees?

Dr. STEWART. Yes, the Indian health program.

Mr. MICHEL. Any other?

Mr. CARDWELL. Emergency health preparedness is heard by the Independent Offices Appropriations Subcommittee.

Mr. MICHEL. What is that?

Dr. STEWART. Principally the stockpiling of drugs and so on. It is part of civil defense.

Mr. MICHEL. Since there is more than one subcommittee involved, are there any instances where you requested the money from one and the personnel from another?

Dr. STEWART. I do not think so.

Mr. MICHEL. In other words, the money and the personnel have both been requested of these different subcommittees?

Dr. STEWART. They could be in a budget like the Department of Justice budget, where we are reimbursed.

Mr. MICHEL. How would that actually work?

Mr. CARDWELL. In advancements and reimbursements the Public Health Service would budget the commissioned officers detailed to FAA or the Bureau of Prisons and they would show up in our budget as reimbursements by the Department of Justice or FAA. But as to programs operated such as the emergency health preparedenss, the basic funds would be handled by one committee and the staffing by this committee. I thought that was your question. The answer is there is no such direct arrangement of that sort.

CONGRESSIONAL LIAISON OFFICE

Mr. MICHEL. You have a congressional liaison office, do you not?

Dr. STEWART. Yes, an information office.

Mr. MICHEL. Do they have much of a workload?

Dr. STEWART. Yes.

Mr. MICHEL. How many people are detailed to that job?

Dr. STEWART. There are eight.

Mr. MICHEL. What is the nature of the congressional inquiries in that shop?

Dr. STEWART. That shop does several things. One is, when a report is asked on a health bill in Congress and it has to do with the health field, we are asked to draft a report to go to the Secretary's office. That runs about 1,000 to 1,200 a year at the present time. Secondly, on health bills where the testimony will be given by Department witnesses, there is a good deal of developing, getting testimony together, working with the staff on who the witnesses will be, and this type of thing.

Mr. MICHEL. Would you say more of the function of that office was in support of the excutive branch in presentations to the Congress rather than inquiries from the Congress?

Dr. STEWART. No. We receive a great many letters from Congress requesting staff documents or technical information and we have to follow up and see that they get the right reply. We are just beginning to work out this function, but we are hoping to have it so it will serve you in finding what you are looking for in the Public Health Service.

AMERICAN MERCHANT SEAMEN IN PUBLIC HEALTH SERVICE HOSPITALS

Mr. MICHEL. How many American merchant seamen would be in the Public Health Service hospitals? Will you supply that for the record?

Dr. STEWART. Certainly.

The average daily patient load of American merchant seamen for the period July 1, 1966 through February 28, 1967 was 1,279 in the general medical and surgical hospitals and 165 in the psychiatric hospitals.

Our most recent report, the census for the month of February 1967, indicates that there were 1,346 American merchant seamen in the general medical and surgical hospitals and 162 in the psychiatric hospitals.

NOTE.—Inasmuch as American merchant seamen are eligible for care at our Leprosarium and since they are eligible for such care without identification as to American merchant seamen status, our records do not reflect the number of American merchant seamen who have been or who are currently hospitalized at the Carville Leprosarium.

Mr. MICHEL. Do we have in the record the number of merchant seamen who have been hospitalized in Public Health Service hospitals in the past year?

Dr. STEWART. We have the data.

Mr. MICHEL. Would you supply that for the record?

Dr. STEWART. Yes, sir.

(The information follows:)

For fiscal year 1966, there were 22,204 American merchant seamen hospitalized in our general medical and surgical hospitals, and, in our psychiatric hospitals, there were 276 American merchant seamen.

CLOSING PHS HOSPITALS

Mr. MICHEL. Last year you were contemplating closing facilities.

Dr. STEWART. There was a proposal to close six or seven hospitals, I believe. We ended up by closing two, in Chicago where we converted, and we closed one in Memphis, Tenn.

Mr. MICHEL. Where are the ones you were considering closing and did not?

Dr. STEWART. Savannah, Detroit, Galveston, and Boston.

Mr. MICHEL. What changed your mind in those installations as distinguished from the two that were closed?

Dr. STEWART. The proposal was to close the hospitals and then there was a great deal of concern about the closing of these hospitals. There was a study done by the Office of Science and Technology on the use of the whole hospital system. It concluded that the hospital system made a major contribution to the Public Health Service and should be kept open. But in the meantime we had closed Memphis and converted Chicago.

Mr. MICHEL. Is there any need to reopen them?

Dr. STEWART. I do not think so. The Chicago hospital is not a good building itself. It is very old. The one in Memphis was quite small and with the flow of traffic it was different than it used to be, but we are trying to take care of the merchant seamen and the Coast Guard in these hospitals. Our hospitals are a central source for the training of the professional specialists who then go on and serve in the Indian hospitals or Coast Guard. Also, they can be used for research.

NIH uses some of them as clinical resources. At the Baltimore hospital, for example, there is chemotherapy research underway. So the structure is changing. They are changing more into a VA-like hospital with affiliation with the university in the area, with the add-on that we are training our personnel on station. So they are an essential part of the Public Health Service.

Mr. CARDWELL. I think, Mr. Michel, the primary distinction between those that remained open and those that were closed centers, on the

original premise that was behind the proposal to close the hospitals, and that was the VA be able to give priority to merchant seamen, and the Comptroller General ruled they could not do this and the hospitals that remained open were in some measure held open because the VA could not serve them as originally anticipated. So this has been traced to each of the locations to get to the answer.

Mr. MICHEL. If we have a constituent in the Coast Guard or in the merchant marine who is in one of those hospitals and the relatives do not think he is getting the kind of attention which he deserves, and we make a call to one of those hospitals to find out how our patient is doing, are your people well enough aware that they ought to at least talk to us and that we ought to be able to have a rapport without a doctor saying this is a real private relationship here between doctor and patient?

Dr. STEWART. They certainly should have that rapport. If you know of any place where this has happened, I would like to know about it and we will take care of it.

TOTAL U.S. INVESTMENT IN MEDICAL RESEARCH

Mr. MICHEL. Do you have any idea of what the nationwide expenditure is for medical research?

Dr. STEWART. Yes.

Mr. MICHEL. What is that?

Dr. STEWART. I think the investment in medical research is about $2 billion.

Mr. MICHEL. Is that in the last year?

Dr. STEWART. Yes.

Mr. MICHEL. How would that compare with the year before?

Dr. STEWART. It has probably gone up a couple hundred million.

Dr. SHANNON. It is three or four percent higher.

Dr. STEWART. Dr. Shannon will have some charts on this.

Mr. MICHEL. Would it be an appropriate question for you as to how many research centers we are supporting globally as distinguished from just right here in this country?

Dr. STEWART. I think it would be more appropriate for Dr. Shannon.

INFANT MORTALITY RESEARCH PROJECT IN NIGERIA

Mr. MICHEL. We have a study on infant mortality, I think, in Nigeria. Are there any results of that study out?

Dr. STEWART. I would have to look it up.

Mr. MICHEL. May we have something supplied for the record here? We have a research program going on in Nigeria and I remember specifically because I took a trip there a couple of years ago.

Dr. STEWART. We will have that for you.

Mr. MICHEL. I am curious to know if we are getting some good out of these projects.

(The information follows:)

The question raised by Mr. Michel refers to the research grant supported by the National Institute of Arthritis and Metabolic Diseases at the University of Ibadan, Nigeria, with Dr. Joseph C. Edozien as principal investigator. The grant was titled, "Nutrition Research" and had as its main objective the characterization of the biochemical aspects of the disease kwashiorkor in children.

Kwashiorkor is a serious disease caused by chronic malnutrition, which is very common in developing countries around the world. There are multiple dietary factors involved in the causation of this disease and the resulting metabolic changes in the body are complex.

Support of research into this disease is of importance not only to develop a more effective regimen of treatment and prevention, but also to gain more fundamental knowledge of the body's metabolic processes.

An internationally recognized authority on nutrition research, Dr. Edozien has made significant contributions to the understanding of kwashiorkor as a result of this research project. Further kowledge has been gained of the metabolic processes of the body and of the metabolic abnormalities of the chronically malnourished child.

Funding of Dr. Edozien's grant was discontinued in January of 1967 because of his inability to continue working at Ibadan as a result of the political unrest in Nigeria. However, Dr. Edozien has discussed with the staff of the Arthritis and Metabolic Diseases Institute his plans, to continue his investigations at a proposed new university and medical school in Midwestern Nigeria.

Mr. MICHEL. Doctor, is there any need for emergency funds to implement the Hill-Burton hospital construction program?

Dr. STEWART. Emergency funds?

Mr. MICHEL. Right.

Dr. STEWART. No, sir; I do not think there is any need for emergency funds. We have before you a request which we think meets the need for the Hill-Burton program. I believe it is up to the authorization.

HOSPITAL UTILIZATION

Mr. MICHEL. What is the hospital bed load now as compared to a year ago nationwide?

Dr. STEWART. The use of hospitals has been going up for some time.

Mr. MICHEL. It is going up?

Dr. STEWART. It has been going up for some time. The admission rates have gone up, length of stay has come down. So the net of this has been a gradual increase in the bed-days per capita. It is about 12 bed-days per capita in the country now at the present time. There has been an impact of Medicare on length of stay at the present time.

Mr. MICHEL. How much of an impact?

Dr. STEWART. Apparently the average length of stay for people over 65 was 14 days and it looks like it has gone up a day and a half so far to 15 and one-half days. That is the average length of time of the number of people over 65 who are hospitalized in any one year. So there has been a significant impact.

Mr. MICHEL. Would that suggest, in any way, that there are actually, because of Medicare, more people over 65 going to the hospital that would not have gone to the hospital in the first place?

Dr. STEWART. You do not know what it really suggests. It may have been they should have stayed longer in the first place to get their proper medical care, but because of the financial need before medicare, they could not. Or maybe because the financial mechanism permits some laxity in when you discharge a patient.

Mr. FLOOD. Is it not true generally speaking, over a period of years the length of stay for the average patient of younger years has been dramatically reduced?

Dr. STEWART. Yes, dramatically reduced until a few years ago when it reached a leveling off point.

Mr. MICHEL. The Chairman said specifically younger people.

Dr. STEWART. Yes.

Mr. MICHEL. I would ask you to clarify that. Does that mean for the younger people it is still going down and for older people going up?

Dr. STEWART. It has leveled off in the last few years to about 7 days, about half in the younger people to what it is over 65. It is too early yet to know the reason for the length of stay. It may be for perfectly sound health reasons, or maybe for other reasons.

Mr. MICHEL. You have not had a long experience under medicare. Next year we hope to ask roughly the same question.

UTILIZATION COMMITTEES

Dr. STEWART. Medicare also requires the hospitals to have a utilization committee, which is something new in this country, in which the doctors must review the reasons for length of stay which was set at 21 days in the Medicare Act.

Mr. FLOOD. If the gentleman will yield again, speaking of this utilization committee, do you know what the directors are afraid of? I am sure you do. They are afraid one of these days you or Congress or somebody is going to insist that a certain percentage or a certain number of these utilization committees be comprised of civilians.

Do you know of that concern?

Dr. STEWART. No, and I cannot really conceive of that, because the judgment you are asking them to make is, are there medical reasons for this person to stay in the hospital, and it seems to me that judgment can only be made by the physicians themselves.

I think the implementation of the utilization committee has been a very salutary part of medicare.

Mr. FLOOD. I have said exactly the same thing to them, but I wanted to hear you say so.

AIR POLLUTION

Mr. MICHEL. Let me turn to air pollution.

In what nine areas of the country were interstate abatement actions initiated?

Supply it for the record.

Dr. STEWART. Certainly.

(The information follows:)

NINE INTERSTATE ABATEMENT ACTIONS INITIATED

New York City Metropolitan Area.
Ticonderoga, N.Y., on the New York-Vermont border.
Selbyville, Del., on the Maryland-Delaware border.
Kansas City, Mo.
Lewiston-Clarkston on the Washington-Idaho border.
Washington, D.C. area.
Huntington-Ashland, W. Va.-Ky.-Ohio.
Ironton, Ohio-Ky.
Parkersburg-Marietta, W. Va.-Ohio.

Mr. MICHEL. What are the other interstate areas where the air pollution was measured to determine the need for additional enforcement action?

(The information follows:)

INTERSTATE AND INTERNATIONAL AIR POLLUTION SOURCE AREAS

(NOTE.—There are actually 19 areas where air pollution was measured to determine the need for additional enforcement action. The listing below is in alphabetical order and does not indicate priority of importance.)

1. Beaumont-Port Arthur, Tex.-La.
2. Buffalo, N.Y.-Ontario, Canada.
3. Chattanooga, Tenn.-Ga.
4. Chicago S.M.S.A., Ill.-Ind.
5. Columbus, Ga.-Ala.
6. Davenport-Rock Island-Moline, Iowa-Ill.
7. Detroit-Windsor, Mich.-Ontario, Canada.
8. Duluth-Superior, Minn.-Wis.
9. El Paso, Tex.-N. Mex.-Mexico.
10. Fernandina Beach-St. Marys, Fla.-Ga.
11. Memphis, Tenn.-Ark.
12. Paducah, Ky.-Ill.
13. Philadelphia, Pa.-N.J.
14. Portsmouth, Ohio-Ky.
15. St. Croix River, Minn.-Wis.
16. St. Louis, Mo.-Ill.
17. Texarkana, Tex.-Ark.
18. Toledo, Ohio-Mich.
19. Wilmington, Del.-N.J.-Md.

Mr. MICHEL. What is the total amount being requested for air pollution research in the budget?

Dr. STEWART. $8.6 million for research grants.

Mr. MICHEL. How does that compare with last year?

Dr. STEWART. $6.2 million.

Mr. MICHEL. And the year before?

Dr. STEWART. I do not have that figure.

Then there is direct operation research where we are asking $18.3 million in 1968 compared to $12.6 million in 1967.

Mr. MICHEL. What are these latter two figures basically for?

Dr. STEWART. This is the direct research that we run in our own laboratories or under contract. The bulk of it is contract work, where we contract in order to carry out this research.

Mr. MICHEL. Are the contracts with universities, private organizations, or companies?

Dr. STEWART. It may be contracts with companies or with private organizations or with universities.

Mr. MICHEL. Would you mind putting in the 10 largest contracts for the record?

Dr. STEWART. Certainly.

(The information follows:)

1967 Contracts Awarded through March 1967

University of Southern California: Conduct a study of the biological effects upon animals of exposure to ambient air having high concentrations of automotive exhausts	$253,511
University of California: Conduct studies of effects of photochemical air pollutants on small animals, insects, and plants	173,728
Esso Research and Engineering Co.: Study effects of automobile exhaust recirculation on the emission of nitrogen oxides in the exhaust	165,262
University of Southern California: Conduct an epidemiological and laboratory study concerning the relationships between upper respiratory infections in selected groups and air pollution in the Los Angeles area	104,388
University of Southern California: Design, conduct, and evaluate a study of the effects of air pollution upon the respiratory tract of patients with chronic diseases	89,045
Illinois Institute of Technology: Conduct studies to determine the effects of exposure to atmospheric pollutants on the susceptibility of animals to respiratory diseases	84,400
Southwest Research Institute: Investigation of diesel-powered vehicle odor and smoke	80,644
Sperry Rand Research Center: Determine the capabilities of millimeter wave radiometers for remotely measuring temperature profiles pertinent to air pollution	62,709
AVCO Corp.: Preparation of criteria for removal of SO_2 from flue gas	59,338
Los Angeles County Air Pollution Control District: Conduct an air sampling study in conjunction with exposure of animals to determine biological effects of automotive emissions as air pollutants	53,309

WATER RESEARCH

Mr. MICHEL. What is the total amount you are requesting for water pollution?

Dr. STEWART. I do not administer water pollution. We have one water area in the Public Health Service. This is quality of drinking water supplies that comes out through the old interstate watering points for interstate transportation. These water quality standards for drinking water supplies have served as standards in all of the cities of the United States.

Mr. MICHEL. How much is involved in research?

Dr. STEWART. I cannot tell you for sure because we have it in food and water. It is $2.5 million.

Mr. MICHEL. Is that an increase over last year?

Dr. STEWART. It is about $190,000 increase.

HEALTH EFFECTS OF SMOKING

Mr. MICHEL. Let me turn to tobacco research. What is the total overall budget on the health effects of smoking?

Dr. STEWART. We have the smoking and health activity, which is the Clearinghouse for Smoking and Health, some studies in the social aspects of smoking, and some information and public education programs. This is a little over $2 million.

Mr. MICHEL. What are the social aspects of smoking studies? What is that all about?

Dr. STEWART. I think smoking cigarettes is the heart of our social pattern in this country. It is a behavioral pattern which reflects some of our own values. It would be interesting to know what it is teenagers think they are doing when they start smoking. Is it at all

possible to have any influence on this at all? Or what are the things that are influencing it?

We have a lot of opinions. I have my own on why.

Mr. MICHEL. Does that suggest these studies are actually making some case studies or gathering of statistics and interviews with young people to determine why they do and why they do not smoke?

Dr. STEWART. Some of it is gathering statistics on smoking habits, what the rate is of those beginning to smoke cigarettes and by age groups and patterns, if we can find patterns in this.

Mr. FLOOD. What is your opinion?

Dr. STEWART. My own opinion is that smoking cigarettes is an adult behavioral pattern which is identified with manliness or adult behavior, and that teenagers are attempting to try to become adults, men and women, and they are in kind of a risk-taking type of period in their development, and so I think it becomes a symbol of this sort of thing—they begin to smoke. That is just my opinion. I do not know how sound that is at all.

Mr. FLOOD. Your opinion is what I asked for.

Mr. MICHEL. Any of us who participated in athletics in high school and college are quite aware that invariably a coach is going to rule out smoking for his athletes. Have there been any specific studies to find enough good successful high school and college baseball, football, and basketball players who smoke and whose record of longwindedness or shortwindedness can be compared with those who have not smoked?

Dr. STEWART. I do not have any——

Mr. MICHEL. Why is it that all coaches have laid down that rule. I think it is a good thing.

Dr. STEWART. I think it is a conventional rule. We do have some pictures of athletes who helped advertise cigarettes who since died of lung cancer.

Mr. FLOOD. There is no doubt in my mind whatsoever. That is the reason I do not smoke.

Dr. STEWART. I am sure there is evidence. I just do not know it offhand.

I would also imagine this depends on how much you smoke rather than on whether you do or do not.

Mr. FLOOD. That $2 million or whatever you were talking about there, does that include your information to the public on whether or not smoking is good or bad?

Dr. STEWART. Yes; this is the National Clearing House of Smoking and Health which has the information program. It does not include all of the research work that the National Cancer Institute is doing in trying to find the carcinogenic agents in cigarettes and tobaccos.

Mr. MICHEL. Let me put another question to you on this subject in a general way.

PHS PRESENTATION OF SMOKING AND HEALTH ISSUES

Is the Public Health Service actually presenting the facts about smoking and health or is it presenting those facts which agree with its theories about smoking and ignoring other facts which do not support its theories?

In other words, when Dr. Terry was Surgeon General, he would give us pretty much his views and what PHS felt, but ignored the arguments on the other side of the question.

Dr. STEWART. The study that Dr. Terry had which resulted in the report on smoking and health was done by as good a group of scientific people as you could put together. They looked at both sides of the data and came to the conclusion there is a cause-effect relationship between cigarette smoking and lung cancer. We have continued to check the same type of information on both sides.

In our opinion, it still supports, in fact strongly supports, the conclusion the scientific group had. We are required, you know, to bring this up to date to the Congress this July.

Mr. MICHEL. What are the long-range plans for this National Clearing House?

Dr. STEWART. I think our long-range plans are to use this as our focal point for collecting the information. One of the jobs is to collect the information for the report to Congress in July.

More important, I think, it is the center for action for doing what we can to try to change the cigarette consumption in the country or to seek a safer cigarette.

Mr. MICHEL. Do you think it is possible to bring down the rate of smoking among the public?

Obviosuly up to this point—it tailed off and built back up again and I guess as many people smoke as ever before.

Dr. STEWART. The cigarette sales are about what they have been before, not quite up to where it was. But within this there have been shifts. The number of men smokers have declined and the number of women smokers have gone up. In special groups like physicians, the amount of smoking has gone down by half of what it was. I am not sure whether or when we will be able to change it. There have been changes in the past in behavioral patterns which were entrenched. Chewing tobacco, for example, was a well-intrenched habit in this country and it virtually disappeared. Also, I think we should pursue all avenues of trying to find a safer cigarette.

SUPPLY OF PHYSICIANS

Mr. MICHEL. Let me turn a moment to health manpower.

How many students are being helped through loans, opportunity grants, and trainingships where you can identify their goal as eventually being general practice as doctors in the medical profession?

Dr. STEWART. I cannot give you any idea of what their goals are in their minds. This is helping the man when he is in medical school. Whereas he may state a series of goals he has at that time, we have studies which show much of this changes and that 85 to 86 or 87 percent of them will eventually specialize irrespective of whether they are supported by the Federal Government or not.

We have not had enough time yet to know whether the forgiveness feature of practicing in a rural area will have any impact on this or not.

Mr. MICHEL. How many students do we have in the universities currently studying to be doctors?

Dr. STEWART. We are graduating about 7,400 or 7,500 a year at the present time.

Mr. MICHEL. And that is compared with what figure last year.

Dr. STEWART. It has gone up from about 7,200 to 7,400. It has gone up about a thousand graduates in the last 10 or 15 years, 6,900 to 7,500. We are shooting for 11,000 by 1975.

Mr. MICHEL. Eleven thousand what?

Dr. STEWART. Graduates.

Mr. MICHEL. A year?

Dr. STEWART. Yes.

Mr. MICHEL. As compared to what now?

Dr. STEWART. About 7,500.

Mr. MICHEL. Will this be adequate to fill the needs of a growing population by that time?

Dr. STEWART. No. It will probably keep us where we are at the present time, maybe a little better than that.

Mr. MICHEL. Are you concerned about that figure then?

Dr. STEWART. Yes, we are very much concerned, for several reasons. We add on another 1,500 or 1,600 graduates from foreign schools in this country every year beyond this 7,800, and about 20 percent of the physicians in this country who are licensed are now graduates of foreign schools. We are a rather importing nation.

Mr. FLOOD. Of course, many of these are Americans.

Dr. STEWART. Some are citizens of the United States that went overseas, but the large share of them are not. This is a gap area in which you find people from other countries coming in. I do not think you can depend on it as a way to supply our needs in the future.

The other is the uncertainty of demand. Will the demand continue to increase as it has been. The third thing is are we using physicians the most efficient way at the present time? Here seems to be the biggest possibility of improving our supply by improving the way people are used, where they are, and how they practice medicine.

Mr. MICHEL. Are there any studies being made on how the length of training doctors today could be shortened?

Dr. STEWART. There are studies and there are experiments going on. Northwestern University has a 6-year program instead of the usual seven to eight. Tufts and Boston University have a 6-year plan.

Mr. MICHEL. Do you think it can be accomplished?

Dr. STEWART. I think there is the possibility that it could be shortened some.

It also depends on what happens with the intern year. There is a great deal of feeling that the internship is kind of an anachronism now. It used to be the first introduction to clinical medicine. Now exposure to clinical medicine happens so early in the medical schools the internship period kind of dangles. If you want to fuse this with the postgraduate years, you might be able to save some time here. I think there are possibilities.

Mr. MICHEL. How many would-be medical students were turned away from universities last year?

Dr. STEWART. If I recall, there were three applications for every position, but that does not mean all three were qualified for it. We do know there were qualified applications that there were not places for.

Dr. FENNINGER. Probably 60 percent of all people who applied are admitted.

Mr. MICHEL. What is the washout rate?

Dr. STEWART. Roughly 10 percent.

Mr. MICHEL. That is all.

Mr. FLOOD. We will recess for lunch and come back at 2 o'clock, gentlemen.

COST OF MEDICINE

Mr. FLOOD. General, just one thing I want to ask you before Mr. Natcher takes the witness. It concerns a committee of 22 persons representing various neighborhood organizations of my county Economic Opportunity Commission that met with me during the Easter recess. It is a first-class operation, no politics, no nonsense. This is good. I set this up myself and it is working and functioning. We have more than our share of the poor. We have these neighborhood organizations set up all over the county. They discussed a number of things, but the big thing without any question was the high cost of medication, the high cost of medicine.

I personally ran onto this by coincidence during the week. I have to take a multivitamin capsule. I will not say from what drugstore, but I purchased a jar about that big. I did not know up to that time how much it was costing me, since my office had been ordering it. I found out it cost $8.25. The big complaint of these people was how is a poor person or even the average person going to pay for this medicine?

Dr. STEWART. Mr. Chairman, I share their concern about the price of drugs.

The Department, in its look at all medical care costs this last year, with a report to the President on medical care costs, is now forming a group to take a good look at drug prices. It has a lot of ramifications. These range from the flow of drugs from the manufacturer to wholesaler and retailer, the lack of competition between various outlets within the community, the prescribing practices of physicians themselves, the whole set of ramifications in this which we need to take a hard look at.

Mr. FLOOD. You are awfully late taking a look at this.

Suppose one of those poor people had the same operation I had. You know the one I had. I have been buying these things for 5 years Good Friday. I was operated on 5 years ago Good Friday. I do not know how much I spent on these in 5 years. Suppose one of these poor fellows had to do that.

What are you going to do?

Dr. STEWART. This is part of the reason why we want to do this study.

Mr. FLOOD. Why are you so late?

Dr. STEWART. I do not know why we are so late.

Mr. FLOOD. You do not know?

If you do not know, who in the world does? Why are you so late?

Why isn't this study already done?

Dr. STEWART. I cannot answer that. I do not know. We are just starting to look at it right now.

Mr. FLOOD. Are these people right?

I had not thought much about it. But these people tell me this is a desperate problem.

Dr. STEWART. I think the problem right now is, we do not know whether it is right or not. We do not know whether this price is necessary in order to provide this type of medication.

Mr. FLOOD. Suppose it is necessary, what are we going to do about it?

Dr. STEWART. I think then, assuming we know what the prices are and whether it is absolutely necessary——

Mr. FLOOD. Suppose they are not getting gypped by the druggist. Suppose this is strictly legitimate from the manufacturer down to the corner drugstore; what do they do if the answer is this is perfectly honest, perfectly legitimate, there is no racket?

Dr. STEWART. The suggestion has been made, as a first step, to include drugs in the benefits of medicare. They are not included now.

Mr. FLOOD. You mean the act would have to be amended?

Dr. STEWART. To provide the payments for the drugs outside of the hospital. The hospital drugs are covered. This would be a beginning.

If we had good data on this, I do not know but that insurers who insure the working population may begin to add this as a benefit. It is a difficult area to get the data to make the calculation from.

Mr. FLOOD. These people are interested in today.

Who is going to pay for that? That is expensive.

THIRD PARTY PAYMENTS

Dr. STEWART. I assume that sometime very soon they will begin to see this in the mechanisms we have for payment in this country, third-party payment.

Mr. FLOOD. What is third-party payment, for the record?

Dr. STEWART. Third-party payment is where the individual pays to an insurance firm while he is well in order to be protected when he gets ill. It pays part of his hospital bills and part of his doctor bills.

In some instances the insurer is the Government, where the welfare is acting on behalf of the individual, or medicare and the insurance approach. It means payment is through the third party, not the person receiving the care.

Mr. FLOOD. This looks to me plain as the nose on your face. Social security was born x number of years ago.

You would never recognize the original bill this morning and the same thing will have to happen to medicare, will it not, in the next 20 to 30 years?

Dr. STEWART. We are down on two social policy paths, one is the use of social insurance, and the other is medicaid, the general revenue support of a certain level of income group, and we really have not decided which path is the way we are going to go.

DRUG PRICES

Mr. FLOOD. With further reference to the cost of medicine, I would like the record to show that I have before me a report to the President on medical care prices by the Department of Health, Education, and Welfare dated February 1967. On page 16 thereof I see a chart which indicates very clearly that the medical care price index has been going up dramatically. There is also a pronounced increase in all other

medical care services including physicians' fees. But during the same period of time, from 1961 through 1966, there is practically no increase in the cost of drugs and prescriptions. This does not mean they are not expensive, but there has been no increase worthy of mention in the cost of drugs and prescriptions as contrasted to medical care and physicians' fees, I will insert from that same document pages 35, 36, and 37 with reference to drug prices.

(The pages follow:)

V. Drug Prices

Drug prices have not been major contributors to rising medical prices. The drug component of the Consumer Price Index increased 13.3 percent over the period 1950 to 1965, or somewhat less than 1 percent per year on the average. There was no appreciable change in the drug component of the CPI during the 6-year period ending December 1966. The prices of prescription drug items in the CPI (as contrasted with over-the-counter drug items) actually declined by 11.7 percent between 1960 and 1966.

Industry sources give a slightly different picture. The average retail price per prescription, reported in The American Druggist, increased at an annual rate of about 2.3 percent between 1955 and 1965, and at slightly less than 1 percent per year between 1960 and 1965.

The "average prescription price" reflects the use of new drug products, and changes in the quantities and prices of drugs prescribed. In contrast, the CPI reflects changes in the unit price of the same or similar drug items over periods of time. It is difficult to adjust the drug component of the CPI for the rapid changes in the character of the drugs prescribed. By the time a prescription item is incorporated into the index, its price may have fallen to a lower level than in previous years. In the interim, newer drugs are being prescribed at a higher price level, and the drugs included in the CPI may not reflect such price movements. Most of the difference between the increase in the "average prescription price" and the change in the drug component of the CPI can be attributed to the use of new and improved drug products and changes in the quantities prescribed.

Consumer Expenditures on Drugs

Drug expenditures account for a substantial proportion of total consumer expenditures for medical care. However, the rapid increase in hospital charges and physicians' fees has led to a decline in the proportion of the consumer's medical care dollar spent on drugs. Drug expenditures accounted for about 20 percent of consumer medical care expenditures in 1950 and 16.4 percent in 1964.

Despite the fact that drug prices have not risen as rapidly as the CPI, the percentage of disposable income spent on drugs increased from 0.8 percent in 1950 to 1 percent in 1964. Therefore, there was a significant increase in the use of drugs by the average consumer.

In recent years, there has been a marked increase in the use of prescription drugs as opposed to over-the-counter drug items. In 1959, the average American family purchased 11 drug prescriptions and spent $33 on prescription drugs. By 1965, the number of prescriptions per family has risen to 14, and average family expenditures on prescription drugs were $46.

There are at least five reasons why there has been a sharp increase in consumer expenditures for drugs during the postwar period:

1. Drugs, which have declined in price relative to the prices of other forms of medical care, have been substituted by more expensive forms of medical care.

2. Families spend more on drugs as their income increases. In the year ending June 30, 1965, for example, the per capita expenditure for prescribed drugs in families with incomes over $10,000 was 22 percent greater than the

comparable outlay for individuals where the family income fell between $4,000 and $7,000.

3. The efficacy of drugs has improved significantly in recent years. Modern advances in drug therapy have contributed to the control of such diseases as tuberculosis and syphilis.

4. There has been an increase in consumers' desires for certain kinds of drugs. For instance, from 1952 to 1963, the retail sales of sedatives and tranquilizers increased 535 percent.

5. The increase in the proportion of elderly persons in the population has resulted in an increase in the demand for drugs. Average expenditures on all drug items by persons aged 65 and over are 2½ times as high as those for the entire population.

REASONS FOR CONCERN ABOUT THE COST OF DRUGS

The cost of drugs imposes a major financial burden upon many American families. A large proportion of total drug expenditures are incurred by persons who are high users of medical care. For example, in 1962, 10 percent of those persons over the age of 65 incurred 40 percent of the expenditures on drugs by all persons over the age of 65. But out-of-hospital drug costs are generally not covered by health insurance. In 1965, about 3 million persons were enrolled in plans providing drug insurance coverage. However, 80 percent of these individuals had only partial coverage. Another 53 million persons were enrolled in plans which generally provided partial drug coverage after their drug expenditures exceeded a sizable deductible provision.

Although average drug prices are not rising appreciably, there is ample evidence that they are higher than they would be if there were greater price competition in the industry, either at the manufacturing or at the retail level. The pharmaceutical industry is characterized by high concentration, high advertising costs, and intense nonprice competition.

Drug manufacturers attempt to differentiate their brand names from the generic name of the drug through intensive advertising campaigns. For the 22 major pharmaceutical companies, the Kefauver Committee found that the selling expenditures of drug manufacturers accounted for 25 percent of the total sales dollar. The drug industry spends about $3,000 per doctor per year in advertising to the medical profession. Since the rapid advances in drug therapy during recent years have made it impossible for any physician in private practice to read and evaluate all of the information on new drugs, doctors obtain a great deal of their information about the efficacy of drugs from the manufacturer. The "detail men" of pharmaceutical companies provide a major source of new information to physicians on the advantages or disadvantages of their drug products.

A physician frequently prescribes a costly brand-name product when an equivalent lower-cost drug could be made available to his patient under the generic name. The doctor may be unaware of the existence of the less expensive drug, or he may be more familiar with the effects and dosage of the brand-name product. He may also be uncertain about whether two drugs with same generic name are actually equivalent in therapeutic value. Although there are a number of different sources and formularies which describe the merits of many drugs, there exists no official or authoritative compendium which a doctor can consult for information about the efficacy of a drug. Moreover, even if the doctor prescribes a drug by its generic name, the pharmacist has no incentive to give the consumer the least-cost generic drug.

Brand-name prescribing raises the cost of drugs not only to patients but also to the taxpayer when drug costs are covered by public programs. There is considerable sentiment in Congress to require or encourage generic purchasing or prescribing of drugs under all Federally financed programs. Before such legislation becomes feasible, however, doubts about the therapeutic equivalence of drugs with the same generic name must be erased. A major study should be undertaken of the most frequently prescribed drugs to determine the efficacy of brand-name products and their supposed generic equivalents.

Mr. FLOOD. Mr. Natcher?

A SAFER CIGARETTE

Mr. NATCHER. Dr. Stewart, I was very much interested in Mr. Michel's questions and your answers concerning tobacco, especially your observations concerning a safer cigarette.

As you know, my home State is Kentucky, and Kentucky is the second largest producer of tobacco in the United States. Last year we produced about $247 million worth of tobacco.

According to a recent article in the National Observer, the Public Health Service now is in the process of formulating a program which will be submitted to the proper officials which will have for its purpose the creation of a safer cigarette. Just what type of a program do you have underway concerning a safer cigarette, Dr. Stewart?

Dr. STEWART. It is two pronged in a sense, Mr. Natcher.

One is the support of the bill before the Congress for the labeling of tar and nicotine on the cigarette packages. There is a crude correlation between the tar and nicotine level and the amount of carcinogenic materials taken in.

The other is the effort that the Division of Environmental Sciences of NIH is going to get into on carcinogenic substance in cigarettes, trying to pin down closer what it is within the smoke that is going in, with the idea of moving toward a safer cigarette.

Dr. Shannon can elaborate on this later on. Dr. Kotin is the head of the Division.

Mr. NATCHER. A little later on I will take it up both with Dr. Shannon and also Dr. Kotin.

Do you have a copy or any information concerning this particular program with you, Dr. Stewart, or do you have anything in the justifications concerning this particular program concerning a safer cigarette?

Dr. STEWART. I do not recall. I do not have anything with me.

Mr. CARDWELL. I do not think so, Mr. Natcher.

Dr. STEWART. I believe it is in the general terms about the Division.

Mr. NATCHER. Would you at this point in the record, Mr. Chairman with your permission, file a short statement concerning this particular program as it pertains to a safer cigarette?

Dr. STEWART. Yes, sir.

(The information follows:)

There is reason to believe that the development of a less hazardous cigarette is potentially within reach. While it may be argued that at present we are not necessarily aware of all toxic components or irritants in cigarette smoke, sufficient data and technological information are available to permit delineation of a research program at this time. Present knowledge of constituents of cigarette smoke has permitted an identification of several classes of compounds that may be related to the toxicologic effect of cigarette smoke. Moreover, it is now technically possible to remove or reduce certain constituents that are thought to be responsible in part for the hazardous properties of cigarette smoke. For certain other constituents, techniques can be developed.

In the view of the Division of Environmental Health Sciences of NIH, research aimed at developing a less hazardous cigarette can appropriately be pursued in the following directions:

(A) Further elaboration of principles on which to base processes for reducing the load of carcinogenic and co-carcinogenic materials;

(B) Studies aimed at minimizing possibility that treatments of tobacco may introduce new and unexpected hazards such as formation of carcinogenic nitrosamines;

(C) Improvement of cigarette filters and other means for reducing exposure to hazardous components of cigarette smoke;

(D) Continued exploration of techniques for protecting the tracheobronchial tree from irritants in smoke by filtration and other means;

(E) Identification of conditions that may aggravate the hazards associated with cigarette smoking, such as upper respiratory infection, smoking in air contaminated with specific types of dusts, etc.;

(F) Increased efforts to learn about pyrolysis and oxidation products of pesticides used on tobacco that have high persistence and to search for low-residue replacements;

(G) Determination of potential toxicity produced by fungi found frequently in association with tobacco;

(H) Identification of metabolic characteristics of hosts with apparently higher threshold of resistance to hazardous components of cigarette smoke.

SURGEON GENERAL'S ADVISORY COMMITTEE ON SMOKING AND HEALTH

Mr. NATCHER. In answer to Mr. Michel's questions, you briefly mentioned the Surgeon General's Advisory Committee on Smoking and Health.

When was that?

Dr. STEWART. 1964.

Mr. NATCHER. January of 1964?

Dr. STEWART. January 1964, yes.

Mr. NATCHER. Who selected the Committee?

Dr. STEWART. As I understand, the Committee was selected by the tobacco industry and the Department, at least the names were suggested and agreed upon among themselves.

Mr. NATCHER. How many members did they have on the Committee, do you recall?

Dr. STEWART. I believe there were 22 if I have the right number.

NATIONAL CLEARING HOUSE ON SMOKING AND HEALTH

Mr. NATCHER. When was the National Clearing House on Smoking and Health established?

Dr. STEWART. It was established in 1965, I think.

Mr. NATCHER. Did this follow shortly after the Advisory Committee's report?

Dr. STEWART. After the Advisory Committee's report, one of the functions that we established was the National Clearing House for Smoking and Health.

I think I have the wrong year. I believe it was in 1966 that the National Clearing House on Smoking and Health was established.

Mr. NATCHER. Do we have anything in the Advisory Committee's report concerning the establishment of this type of a committee or council or any group?

Dr. STEWART. No sir, not in the Advisory Committee's report.

This was the Department's implementation of doing something about the problem that had been cited in the Surgeon General's Report on Smoking and Health.

Mr. NATCHER. What type of program do you have under way in the National Clearing House, Dr. Stewart?

Dr. STEWART. First, it is acting as a clearing house. It is keeping up with the studies and reports that have occurred since the Advisory Committee, reviewing the reports to keep the data up to date, on which we will then submit a report to the Congress this July as required.

Secondly, they are supporting studies of smoking habits. We had a survey done just about the time the report came out and we are having surveys now to see whether there has been any change in smoking habits by age distribution around the country, by sex, this sort of study.

Thirdly, we are trying to support some studies on the behavior of smokers, why they take up cigarette smoking, why is it so difficult to discontinue cigarette smoking, what are the factors that can be identified where we might be able to assist in this process.

And fourth, we participate in public education programs related to the dangers of cigarette smoking, usually through the Inter-Agency Committee on Smoking and Health, or through organizations like the National Education Association, or PTA's, this type of organization.

While the emphasis is not entirely on children and youth, it is heavily on children and youth, the educational program.

Those are the four parts of the program of the Clearing House on Smoking and Health.

Mr. NATCHER. What cooperating agencies do you have with the National Clearing House?

Dr. STEWART. This Inter-Agency Committee on Smoking and Health is made up of the Public Health Service and Children's Bureau in the Federal Government, the American Cancer Society, American Heart Association, and several other groups like those.

We also have been cooperating with the National Education Association and the Congress of Parents & Teachers.

There may be others I neglected to mention.

COMMUNITY LABORATORIES

Mr. NATCHER. Dr. Stewart, do you intend to set up any community laboratories under the operation of the national clearinghouse?

Dr. STEWART. Community laboratories to study the smoking habits or behavioral patterns, this sort of thing?

Mr. NATCHER. Any of the programs you have just outlined.

Dr. STEWART. I do not think we do it as a direct operation. It would probably be through some kind of organization. A school health program, or a school system area, or a local chapter of a Heart Association or Cancer Society, or something like this.

This would be the most likely pattern.

PROJECTED GROWTH OF ANTISMOKING PROGRAM

Mr. NATCHER. Dr. Stewart, just how far has the Public Health Service expanded its antismoking program campaign? How far has it been expanded in the last year?

Dr. STEWART. If you are speaking from the appropriation standpoint, we are asking for the same amount of money in 1968 as we had in 1967.

Mr. NATCHER. Do you intend to carry out approximately the same type of program this year as the one in operation in fiscal year 1967?

Dr. STEWART. As far as the program that we outlined for the Clearinghouse on Smoking and Health, that is so. As far as the search for a safer cigarette, the carcinogenic cause, I think we have an increased effort in this in the NIH.

Mr. NATCHER. The overall amount is $2.1 million, for the Clearinghouse on Smoking and Health?

Dr. STEWART. $2,075,000.

BUDGETED WORK ON CARCINOGENESIS

Mr. NATCHER. And then, Dr. Stewart, in NIH or anywhere else in this budget, what amounts do you have in there that go directly or indirectly toward use of tobacco?

Dr. STEWART. This is difficult to identify, Mr. Natcher, because it may be in a carcinogenesis program in which they are looking at many areas. I believe we have been using a figure of around $6 or $7 million in total, but it is not identified as tobacco or cigarettes, it is the whole field of carcinogenesis, of which this is a part.

Mr. NATCHER. Is that the approximate amount you had in the budget for fiscal 1967?

Dr. STEWART. It is somewhat increased in the effort in carcinogenesis.

Mr. NATCHER. How much—approximately $2 million?

Mr. CARDWELL. I do not think it would be that much.

Dr. STEWART. I do not think it would be that much; no. I do not know exactly what the increase would be. I can get it.

Mr. NATCHER. Suppose at this point in the record you insert that figure.

Dr. STEWART. I think you have to understand there is not a labeled item called tobacco in the NIH budget; this is part of the research effort in the whole field of carcinogenesis.

Mr. CARDWELL. The concern is primarily with something else. The use of tobacco is incidental to the end objective.

Dr. STEWART. It is the products that are perhaps the carcinogenic substance within the smoked cigarettes.

(The information follows:)

CARCINOGENESIS RESEARCH

Carcinogenesis research includes studies on viruses, radiation and chemicals as factors in the causation of cancer. Chemical carcinogenesis is concerned with studies of chemicals which may cause cancer, and includes chemicals to which man may be exposed through his work, in his food, or through day-to-day living. Some of the chemicals studied are in tobacco and its smoke.

The investment in research includes programs specifically on chemicals as well as more basic research important to an understanding of how chemicals lead to cancer. In 1967 under Etiology the budget calls for expenditures of $6,940,000 and in 1968, $7,591,000. In addition, it is estimated that approximately $3.0 million will be spent in 1967 for chemical carcinogenesis, principally through Research Grants. In 1968 the amounts are expected to remain at about the same level.

Activities related directly to smoking and cancer principally carried out through grants and contracts total $770,000 in 1967 and about the same amount in 1968.

Mr. NATCHER. Can you give us an idea of the appropriations for the future as far as this subject is concerned, Dr. Stewart?

Dr. STEWART. I cannot give you any idea. I think we will pursue the field of carcinogenesis just as hard as we can, the limitation here being on ideas and competence that we can support.

ANTICIPATED SCOPE OF NATIONAL CLEARINGHOUSE PROGRAM

Mr. NATCHER. As far as the Clearinghouse is concerned, your figure of $2 million plus for the Clearinghouse, what do you have in mind from the standpoint of the program and the operation of the Clearinghouse in the figure?

Dr. STEWART. I would see the Clearinghouse growing some, but I do not think it will ever be a tremendously large organization because I think most of this effort really depends on what you might call the community of effort in the Nation.

The increasing effort that is being made by organizations like national education organizations and the Cancer Society, I think will be the larger part of this effort. I do think we will probably see some expansion in the Clearinghouse on smoking and health as a guide, as a measure of what in effect is happening, as a study group and as a collector of information and disseminator of information.

QUESTION OF CIGARETTE SMOKING AS A CAUSE OF CANCER

Mr. NATCHER. Do you believe, Dr. Stewart, that because of attempts to establish that cigarette smoking has a definite role in causing lung cancer, there is now a widespread impression that we have actually discovered the cause of this form of cancer?

Dr. STEWART. I would not use the word "attempt".

It seems to me that the burden of proof was in the report of the Surgeon General, in which it said there is a cause and effect relationship between cigarette smoking and lung cancer.

This does not mean that we know what it is in the cigarette smoke—the specific etiological agent in the smoke—that causes the cancer.

Mr. NATCHER. Are you sure right at that point that cigarette smoking causes cancer?

Do you have anything to base that on?

Dr. STEWART. We think we have sufficient evidence to base the fact that there is cause and effect relationship between cigarette smoking and lung cancer.

We also know that in cigarette smoke there are substances which are carcinogenic. We do not know which substance, and it probably may not be which one, it may be a body of substances, within the smoke which is specifically the etiological agent of lung cancer we are talking about. This is where we are at the present time.

TOTAL NUMBER OF PEOPLE SMOKING

Mr. NATCHER. How many people in this country are smoking? Do you have any idea?

About 70 million?

Dr. STEWART. That is close enough.

DEATHS FROM CANCER

Mr. NATCHER. Can you give the committee some idea as to the number of deaths we had from cancer in the years 1962, 1963, and 1964?

Dr. STEWART. There were approximately 50,000 deaths from lung cancer.

Mr. NATCHER. What year?

Dr. STEWART. That would be 1965, somewhere around there.

Mr. NATCHER. Do you have any figures on 1962?

Dr. STEWART. No, but the rate has been going up, the number of deaths has been going up for some years.

ASSOCIATION OF CIGARETTE SMOKING WITH CARDIOVASCULAR DISEASE

Mr. NATCHER. Do you have any definite proof that heart disease might be caused from smoking?

Dr. STEWART. We do not have definite proof on the same cause and effect relationship that we have in lung cancer. But we do have evidence that there is an association of cigarette smoking with cardiovascular disease, that those who are heavy cigarette smokers are more likely to have cardiovascular diseases than those who are not.

ANTISMOKING CAMPAIGN IN THE SCHOOLS

Mr. NATCHER. How are you proceeding in the Public Health Service from the standpoint of conducting in the schools an antismoking campaign?

Just what are you doing?

Dr. STEWART. Most of our work is through the National Education Association and Interagency Committee on Smoking and Health, which now has chapters in States and cities, and through the Parent Teachers Associations, and the Children's Bureau.

Mr. NATCHER. Can you give me some idea as to the amount you expend for this purpose?

Dr. STEWART. It would come—our expenditure would come from the $2 million we are talking about.

Mr. NATCHER. What part of the $2 million? Do you have any idea?

Dr. STEWART. I would have to get that.

Mr. NATCHER. Suppose you do, and Mr. Chairman, with your permission, I would like to have it submitted at this point.

(The information follows:)

An estimated $832,000 of the National Clearinghouse's budget is expended directly or indirectly for programs in schools and colleges.

NATIONAL INTERAGENCY COUNCIL ON SMOKING AND HEALTH

Mr. NATCHER. What control, if any, does the Public Health Service have over the National Interagency Council on Smoking and Health?

Dr. STEWART. We have no control. We are a member.

Mr. NATCHER. Is this the committee that was set up during the tenure of Dr. Terry?

Dr. STEWART. Yes, it was.

Mr. NATCHER. Is he a member of it?

Dr. STEWART. Yes, he is a member.

Mr. NATCHER. Who is the chairman, do you know?

Dr. STEWART. I believe Dr. Terry is the chairman right now.

Mr. NATCHER. Do they have paid employees in this Interagency Council?

Dr. STEWART. I do not know. I do not think so, but I do not know.

Mr. NATCHER. Do they have headquarters here in Washington or in Maryland or Virginia?

Dr. STEWART. It is in Washington.

FINANCIAL SUPPORT OF NATIONAL INTERAGENCY COUNCIL ON SMOKING AND HEALTH

Mr. NATCHER. As far as the Public Health Service is concerned, you are not assisting the National Interagency Council as far as funds are concerned?

Dr. STEWART. We may have been providing them some funds, yes.

Mr. NATCHER. Give the committee some idea as to how much, Dr. Stewart.

Can you tell me approximately how much you have expended for this purpose?

Dr. STEWART. No, sir, Mr. Natcher, I cannot. I would have to get a breakdown of this for you.

Mr. NATCHER. Suppose you place the breakdown in the record at this point, please.

(The information follows:)

No Federal funds go for the operation of the National Interagency Council, although secretarial service is provided. The Council's budget, which this year is $8,100, is contributed by its private agency members.

Mr. NATCHER. For instance, in 1966, Dr. Stewart, as you know a meeting of the Interagency Council was held here in Washington.

Dr. STEWART. Correct.

Mr. NATCHER. I believe it was in May of 1966.

Dr. STEWART. Correct.

Mr. NATCHER. Some $14,000 was expended.

Did you put that money up?

Dr. STEWART. I do not know; I would have to find out.

Mr. NATCHER. I wonder if you would find out, and at this point in the record, place a short statement as to that amount.

Dr. STEWART. We will.

(The information follows:)

A meeting of State and local interagency councils on smoking and health was sponsored by the National Interagency Council and was held in May 1966. It was financed by the Clearinghouse through a $14,000 contract with the University of Maryland.

Mr. NATCHER. Do you have a number of grants outstanding at the present time or contracts which directly or indirectly support the National Interagency Council, grants or contracts, Dr. Stewart, either?

Dr. STEWART. Mr. Natcher, I would have to find out. I do not know.

Mr. NATCHER. I wonder if you would place at this point in the record a statement concerning any grants or contracts that you now have in existence or that you have had at any time in the past with the Council, please.

Dr. STEWART. We certainly will.

(The information follows:)

No contracts or grants have been made to the National Interagency Council.

Mr. NATCHER. Dr. Stewart, do you know whether or not per diem has been paid for travel expense for the members of the Interagency Council?

Dr. STEWART. No, I would have to find this out.

Mr. NATCHER. Suppose you do, and place your answer in the record here.

Dr. STEWART. I certainly will.

(The information follows:)

The Federal Government has not paid travel expenses for members attending meetings or other activities of the Interagency Council, except in the case of its own employees representing the Federal members of the Council. Each member agency provides for the travel expenses of its own representatives. The Council's budget provides for reimbursement of expenses of members-at-large, if required.

PHS DIRECT CONTRACTS WITH MEMBERS OF INTERAGENCY COUNCIL

Dr. NATCHER. Does the Public Health Service contract directly with any of the members on the National Interagency Council for services, any of them?

Dr. STEWART. It is possible.

Mr. NATCHER. Including Dr. Terry?

Dr. STEWART. I do not know about Dr. Terry as an individual, but we may have contracts with the American Cancer Society or the American Heart Association. I do not know whether we have any at this particular moment.

Mr. NATCHER. With the National Interagency Council?

Dr. STEWART. You said with any of the members.

Mr. NATCHER. When I say members, I mean the members of this Council.

Dr. STEWART. Individual members?

Mr. NATCHER. Individual members.

Dr. STEWART. Not to my knowledge, but again, I would like to look this up.

Mr. NATCHER. Right at this point, Dr. Stewart, if you would place any information regarding individual members and at the same time give me a breakdown as to the agencies that are members of the Council concerning the amounts.

Dr. STEWART. I certainly will.

(The information follows:)

There are no contracts or grants with members-at-large of the National Interagency Council. Contracts and/or grants in the field of smoking and health are now in existence with the following organizational members, in the amounts shown:

Contracts:	
National Congress of Parents & Teachers	$86,700
American Association for Health, Physical Education & Recreation	71,947
American College Health Association	59,438
Grants:	
American Public Health Association	62,600
American Cancer Society for World Conference on Smoking & Health	75,000
Reimbursement agreement: U.S. Children's Bureau	75,000

Mr. NATCHER. I believe you had a figure last year of $213,990. Do you know about that?

Dr. STEWART. No, sir, I do not.

Mr. NATCHER. Do any of you know anything about this figure so far as the Interagency Council is concerned?

Dr. STEWART. No, sir, I do not.

Mr. NATCHER. The information you will submit will probably give some information on that particular amount.

PHS FINANCIAL SUPPORT OF PUBLICATIONS

Dr. Stewart, are you subsidizing any periodicals at the present time?

Dr. STEWART. I would imagine we are, yes.

Mr. NATCHER. I wish at this point in the record you would place a list of the publications that you are subsidizing or that you are paying to these different organizations for the services that they are rendering.

Dr. STEWART. May I ask, for clarification, are you talking about contracts or grants that have publications as a part of the cost?

Mr. NATCHER. I am interested in that information and in addition to that any publications that are rendering services either for the Interagency Council, the Clearinghouse, or the Public Health Service, for tobacco, directly or indirectly.

Dr. STEWART. With that as a focus, I will see what we have.

(The following was submitted for the record:)

A grant to the American Public Health Association provides partial support for the periodical "Medical Bulletin on Tobacco." In addition, grants and/or contracts to other agencies provide support for various individual publications necessary for carrying out the contract. Among these is the National Congress for Parents and Teachers, which has published several leaflets; the University of Illinois, which has developed material for its research projects; and the San Diego community laboratory which has issued some leaflets, posters, and other such materials.

The National Interagency Council publishes a bi-monthly newsletter which is supported out of the Council's budget. The Clearinghouse shares the secretrial and editorial work in this publication.

CLEARINGHOUSE PERSONNEL SERVICE ON INTERAGENCY COUNCIL

Mr. NATCHER. Do any of the people in the Clearinghouse serve as officers or in any capacity with the Interagency Council?

Dr. STEWART. I do not know, Mr. Natcher. I would have to get that.

Mr. NATCHER. Suppose you do and place that in the record at this point, please.

(The information follows:)

Dr. Daniel Horn, Director of the National Clearinghouse for Smoking and Health, is now serving as secretary.

Mr. NATCHER. At one time did we have a former Secretary of the National Interagency Council who was an Assistant Surgeon General, Dr. Guthrie?

Dr. STEWART. Dr. Guthrie I think served as Secretary of the Interagency Council, yes.

Mr. NATCHER. Is he still serving in any capacity?

Dr. STEWART. Yes, he is.

Mr. NATCHER. I believe you stated that the Interagency Council also includes the Office of Education, the Children's Bureau——

Dr. STEWART. I believe the Children's Bureau. I do not believe the Office of Education, but I am not sure of that last point.

Mr. NATCHER. And also the Public Health Service?

Dr. STEWART. Yes.

Mr. NATCHER. Dr. Stewart, if a grant has been made to the Interagency Council, will you provide for the record just what does the contract provide or the agreement that you make in regard to the grant, and what services they are rendering generally?

Dr. STEWART. Yes, sir.

(The information follows:)

No grants or contracts have been made to the National Interagency Council.

ENVIRONMENTAL HEALTH SCIENCES CENTERS

Mr. NATCHER. The Division of Environmental Health Sciences has been spending quite a sum to support institutes for environmental health sciences and has requested more money for this purpose in 1968.

Dr. STEWART. That is correct.

Mr. NATCHER. I understand the purpose of the training centers of these institutes but I am not quite sure what is being done at this time.

Dr. STEWART. These centers are being established. At the present time we have so little information on environmental contaminants of any nature, chemical or physical, as to the effect of low doses over a long time. For instance, take lead. There is a level of lead in the air and in the water. It is below the dose that causes any acute symptoms but we do not know if this is having any effect over a lifetime. There have been developed over the last 15 years methods of studying the effects of such things at a molecular level and the idea was to establish this type of effort because we are increasingly being exposed to small doses of a variety of chemicals that are being added to our air and water daily. The feeling is that you need these university centers not only to get a broader approach to the problem but to train people to work in these fields. It is a rather new and emerging field.

Mr. FLOOD. If I may interrupt, there is nothing new in the scientific field about molecular attraction, is there? What is new about that?

Dr. STEWART. I think we have a better understanding of things at a molecular level than we ever had before, and we have tools we did not have until the last two decades. I know some in the scientific world are getting tired of the pitch in molecular biology, but I think it is very exciting.

Mr. FLOOD. By "tools" do you mean you had a hardware bottleneck that you have broken through?

Dr. STEWART. No, it was really the development of the methods of how to do this. You have to have sophisticated instruments to do these things. Some of these centers range closer toward the problems of how it is in the environment, how much dosage are you getting, and some range down to the specific molecular level. I think it is a very significant and important effort that we have to have or we will never know where that threshold is that we can live with at the low levels.

Mr. NATCHER. As I understand, the university institute concept was suggested and recommended by various advisory commissions, including the National Research Council and also the Environmental Health Committee and perhaps other groups. Why do we need both the university institutes and the national center?

Dr. STEWART. As to why we need both, I think it is terribly important that we have this kind of bifurcation in a sense. The universities are the seat of our development of knowledge and training of people. The Government needs this for our technicians and it will have more direction to the immediacy of the problem, whereas the universities have more freedom. I do not think it is an either/or thing. It is a feeding back and forth for the Nation to do something about environmental contaminants.

Mr. NATCHER. Do the advisory groups advise that this be the working order?

Dr. STEWART. Yes. This goes back several years in developing these centers. It was part of the whole effort to increase the efforts of the Nation in this environmental contamination field. I imagine it was in 1960 when it first began to be discussed.

Mr. NATCHER. How many university institutes do we have in existence at the present time?

Dr. STEWART. I do not know that number.

Mr. NATCHER. Seven?

Dr. STEWART. It is somewhere in that order.

Mr. NATCHER. Seven or eight. Put the exact figure in the record at this point.

Dr. STEWART. Yes. You will be able to explore that in greater detail when Dr. Shannon comes before you. We are continuing six and starting two new ones in 1967, and in 1968 we will add two or three more, so we are in the order of seven or eight centers.

NIH SHARE OF NATIONAL HEALTH RESEARCH

Mr. NATCHER. As I understand, 40 percent of the Nation's health research is directly supported by the National Institutes of Health. Is that about right?

Dr. STEWART. That is about right, yes.

Mr. NATCHER. Does NIH have about 20,000 contracts with various research institutes? Is that too many?

Dr. STEWART. I think that is a little low. These are grants and not contracts.

Mr. NATCHER. They are grants and not contracts?

Dr. STEWART. Yes.

Mr. NATCHER. What would the approximate number be?

Dr. STEWART. I think it is in the order of 25,000, roughly, or 20,000 to 22,000.

Mr. NATCHER. Thank you very much, Dr. Stewart.

Mr. FLOOD. Mr. Shriver.

NOISE ABATEMENT

Mr. SHRIVER. Dr. Stewart, on page 3 of your statement you say: "The noise and stress of the metropolis do undefined but undeniable damage to physical and mental well-being." What could be done

about this? I think it is a health problem. I had a letter today from a constitutent calling this to my attention. What can be done and what is being done about this?

Dr. STEWART. What is being done at the moment is really defining the problem. We know that noise at a certain intensity will cause physical harm, and we know that noise causes psychological misgivings, you do not like to live with all that noise around you.

Mr. FLOOD. Do you not measure that by decibels at so many feet?

Dr. STEWART. Yes. It is an energy measurement. You have it two ways. You have an intense sound and the level of sound you live with over a long period of time. There have been attempts to try to change the sound levels of certain things. In the airplanes they tried to do something about the jet noises at takeoff. They talked about rubber-tired subway trains, things like this. I do not think we have a solution as yet. There has been a report by the Office of Technology on the invasion of privacy in terms of thin walls in an apartment building and such as that, but no concrete efforts have been made.

Mr. SHRIVER. Are you intending to get into more of these problems in the coming year?

Dr. STEWART. Yes. We have some studies going on in our installation at Cincinnati on the effect of noises on hearing losses, such as people playing in bands who seem to have a hearing loss due to being exposed for a period of time.

HOSPITAL IMPROVEMENT

Mr. SHRIVER. You make reference in your statement to the fact you are stimulating the development of new approaches in hospitals and communities receiving your support. What are these?

Dr. STEWART. Some of these I was discussing with the chairman this morning, the use of computers for the actual reading of tests, the use of computers for recordkeeping, the organization of the out-patient department, how can you get a better organization so you can use your personnel more efficiently; possibly centralized facilities for laboratory and electrocardiograms; on all of these there are some studies going on.

PARTNERSHIP WITH THE COMMUNITIES

Mr. SHRIVER. I want to commend your statement on the new kind of partnership with the communities and the statement you made with reference to the program placing a larger responsibility on the communities for determining what their own needs are, because there is a difference as between communities in my own State, so I think it is significant you are endeavoring to do this; it is encouraging.

HOSPITAL CONSTRUCTION NEEDS

You mentioned the Hill-Burton hospital planning and construction fund, and you reviewed how much had been spent in the past. How much more is needed in spending to meet the need today under Hill-Burton? It seems to me it will be enormous.

Dr. STEWART. We calculate that the modernization need alone, for the hospital plant in this country, is about $10 billion. Then you

have the increased number of hospital beds needed because of the population increase. These would be new beds.

Mr. FLOOD. You mean new beds in old hospitals or new hospitals or both?

Dr. STEWART. The modernization would be——

Mr. FLOOD. New beds in old institutions?

Dr. STEWART. Or the replacement of one that was obsolete. We estimate that would be about a $10 billion need. Then there would be the new beds in addition to that for the general population growth in the country.

Mr. SHRIVER. If the Federal Government is going to take its responsibility in this connection in the coming year, 1968, how much would be required to meet that need?

Dr. STEWART. The request before you for Hill-Burton is the maximum authorization.

Mr. SHRIVER. Is that adequate?

Dr. STEWART. It is not adequate. I think the President has recognized the fact we need to take a new look at the health facilities, and a commission has been appointed for that purpose.

Mr. SHRIVER. The States have this information, do they not?

Dr. STEWART. They have the information but we have been using a formula of so many beds per population and we have not looked at the utilization. I think there is a need for a hard look at this whole thing including the extended care nursing home facilities area, and this will be done by this Commission on Health Facilities.

MISSOURI AND KANSAS PROGRAMS IN CANCER AND HEART DISEASE

Mr. SHRIVER. This morning when the chairman was discussing with you heart disease and cancer you mentioned some States that are doing a particularly good job. I think you mentioned Missouri and Kansas. Would you review in the record what you had in mind in relation to those two States?

Dr. STEWART. Well, Missouri and Kansas have moved from the planning to the operation stage faster than most areas. Part of this I think is because the universities in that area—and many other places, not just Kansas and Missouri—have had a community responsibility by being a State university for some time. It is a tradition of the university. So it was a little easier to do the planning job. Also, some imagination went into the efforts in this area so we are looking forward to seeing how they operate.

Mr. SHRIVER. That is all I have, Mr. Chairman.

Mr. FLOOD. Mr. Smith.

PUBLIC HEALTH SERVICE RETIREMENT SYSTEM

Mr. SMITH. Dr. Stewart, some of the professional people in your shop are permitted to retire in 20 years. What number of people are involved and how do they compare with those not under that policy?

Dr. STEWART. There are about 5,000 commissioned officers of the Public Health Service, of which half are Regular corps and half Reserve corps.

Mr. SMITH. So about one-half of the professional people are in that category?

Dr. STEWART. We have 35,000 employees, so the commissioned officers are about one-seventh of the total.

Mr. SMITH. Have you found that the turnover in the last couple of years among those that have reached the 20 years is greater among the commissioned officers than the others?

Dr. STEWART. This I cannot tell because we have very few professionals, like physicians, in the civil service. They are almost all commissioned. The 20-year retirement was put in as a device for recruitment. It was also put in with the idea you could not have everybody leave at 20 years.

Mr. SMITH. But they have a right to leave after what period?

Dr. STEWART. Thirty years and 25 years at a certain age.

Mr. SMITH. What is the retirement pay?

Dr. STEWART. One-half base pay at 20 years and three-fourths base pay at 30 years.

Mr. SMITH. So actually someone who stayed 20 years and retired at age 45, in effect, considering longevity, he receives benefits valuable enough to equal having received about an additional $15,000 a year during the 20 years he worked?

Dr. STEWART. I am not sure I am following your figures. I would have to get our actuary to tell me whether this is right. I do not know.

Mr. SMITH. So unless this policy is changed it is obvious that you will face a crisis with these people, that they cannot afford not to retire?

Dr. STEWART. The 20-year retirement is worrisome in two ways. One is, this is at the peak of their ability, where there is great attraction to work somewhere else so far as pay goes.

Mr. SMITH. They cannot draw their retirement and stay with you at the same pay?

Dr. STEWART. Not under the Dual Compensation Act.

Mr. SMITH. Are you proposing any change in the Dual Compensation Act?

Dr. STEWART. No; we are proposing a change in our system so we do not have the noncontributory retirement, so that whenever a person chooses to leave he takes his investment with him and the annuity begins at age 62 or age 65. Twenty-year retirement is a choice on the part of the Surgeon General, whether the officer's leaving would be to the detriment of the Public Health Service.

Mr. SMITH. I cannot imagine many cases where it would not be to the detriment of the Public Health Service.

Dr. STEWART. Each case varies. It depends on the area they are coming from. If you lose all your chief surgeons in one year it is rough.

Mr. SMITH. But a man with that experience and education must have some versatility?

Dr. STEWART. There is no question about that. You are losing men who are in their late forties or early fifties, at their peak.

Mr. SMITH. The other possibility is an increase in the number of professional people so that replacements are available, and that is not likely to happen.

Dr. STEWART. I think the competitive situation will continue for sometime in the future.

MEDICAL MANPOWER NEEDS

Mr. SMITH. With reference to the medical schools, which is the source of this material, what is the need with regard to the number of graduates and number of classrooms?

Dr. STEWART. We have set a goal of from 20 to 25 schools, depending on the size, between now and 1975.

Mr. SMITH. What about expanding existing schools?

Dr. STEWART. Either new or expanding existing schools.

Mr. SMITH. You are only talking about an increase of 25 percent?

Dr. STWART. We are talking about an increase of about 2,500 graduates.

Mr. SMITH. There is no possibility that would meet the backlog?

Dr. STEWART. I do not think so. Nobody knows what the ultimate need is. As long as the demand exceeds the supply we will have that situation.

CONSTRUCTION NEEDS FOR MEDICAL SCHOOLS

Mr. SMITH. With regard to construction funds, what is the need in dollars?

Dr. STEWART. I cannot give you the need in dollars. I could give you an estimate of it.

Mr. FLOOD. Is that the construction of brand new facilities?

Mr. SMITH. And expansion. You see, this is pretty basic, to know that figure and also to know the anticipated revenues from non-Federal sources to see what the gap is. Does someone have that figure?

Dr. STEWART. We have what it costs per student place, the Federal Government capital expenditures.

Mr. SMITH. In view of the slowness and in many cases I understand downright reluctance of medical schools to expand to meet the need, have you considered establishing medical schools in connection with hospitals operated by the Public Health Service?

Dr. STEWART. No, I have not considered that at all. I think a medical school has to have a firm university base. I think it has to have its feet in science.

Mr. SMITH. I do not mean in connection with the hospitals exclusively, but in connection with universities also.

Dr. STEWART. I do not think operating a medical school by the Federal Government would do more than the universities can do.

Mr. SMITH. Why haven't universities been expanding enough to take care of more of the need?

Dr. STEWART. I think the effort has been pretty good.

Mr. FLOOD. I have before me an excerpt from the Wall Street Journal of Tuesday, January 17, 1967, written by Jonathan Spivak entitled "New Medical 'Specialist': the GP." I will read just a paragraph or so to give you the idea. The article is written about the new medical school at Hershey, Pa. and reads in part as follows:

This famed cocoamaking community will soon be the setting for an adventuresome experiment in medical education.

As you know, it is being built from the ground up and ground has been broken. (Continuing reading:)

The Pennsylvania State College of Medicine, which opens this fall, will seek solutions to one of the nation's most pressing medical problems—training doctors

dedicated to the art of general medical practice and capable of caring for the entire family.

Then it goes on to state, paradoxically as it may seem, that they now will create a medical specialist, this GP. I am sure this will be an interesting adjunct to the record, Mr. Smith.

(The article referred to follows:)

[From the Wall Street Journal, Tuesday, Jan. 17, 1967]

NEW MEDICAL "SPECIALIST": THE GP

[BY JONATHAN SPIVAK]

HERSHEY, PA.—This famed cocoamaking community will soon be the setting for an adventuresome experiment in medical education.

The Pennsylvania State College of Medicine, which opens this fall, will seek solutions to one of the nation's most pressing medical problems—training doctors dedicated to the art of general medical practice and capable of caring for the entire family.

The spread of medical specialization has already drastically diminished the rolls of the American general practitioner. There are only 72,000 now, compared with 112,000 three decades ago. The GP is outnumbered by the specialist three to one and the fragmentation of medical care continues unabated. "The threat is not that the GP is being demeaned; he is not being replaced," declares Dr. Raymond Pruitt, Baylor University's vice president for medical affairs.

To help reverse this trend, Penn State Dean George T. Harrell has persuaded three local general practitioners to join the new medical school as fulltime faculty, forming a Department of Family and Community Medicine. The local doctors, now taking refresher training for their professorial chores, will continue to care for their own 2,000 patients at the school. Offices and examining rooms are being provided, as well as access to the new 350-bed hospital being built at the Hershey Medical Center.

"Here we will try to define the area of competence of the general practitioner," says Dr. Harrell. As part of their training, students will participate in the care of the same families for four years, ministering to minor ailments, handling emotional upsets and managing chronic medical difficulties.

COPING WITH NON-MEDICAL NEEDS

Dr. Harrell's hope is to interest students in the rewards of routine family practice or, at least, infuse them with a personal concern for patients, however specialized their subsequent careers. Courses in religion, sociology and other such subjects will be emphasized, to develop the physician's ability to cope with his patient's non-medical needs.

Traditionally, medical schools have concentrated on the coldly clinical aspects of medicine, particularly training in the diagnosis and treatment of the acutely ill. Usually the student sees the patients only briefly in the hospital; there is scant emphasis on preventive or follow-up care or on the medical needs of other family members. Education efforts at the hospital's outpatient clinic, which most closely approximates the GP's practice, are usually poorly organized and often ignored. What's missing is a stress on providing comprehensive, continuous care.

But now many leading medical educators, at Penn State, Harvard, Vanderbilt, Baylor and elsewhere, are beginning to grapple with the problem of properly preparing students for general practice.

The best approach, many experts agree, is to elevate general practice to a specialty itself—paradoxical as that may sound—because specialty status promises more pay and prestige. Instead of a catch-all year of hospital internship after medical school, the student receives three or four years of residency training in family practice.

The influential American Medical Association and the American Academy of General Practice, the GPs' professional group, favor the change. But the details are already being debated.

One issue: Who sets the educational standards? The General Practice Academy insists it should have the major role, but many medical educators lean to the internal-medicine specialist. Clearly, family-practice training will draw heavily

on the talent of the internist, who deals mainly in the diagnosis of disease. But many internists become specialists in the ailments of a single organ, such as liver or lung. The family physician doesn't need such an intimate knowledge of infrequent afflictions. But he does need some training in obstetrics, pediatrics and emergency surgery, plus a grounding in psychiatry, because many of his patients will have emotional as well as physical complaints.

Whatever their educational content, the family-practice programs will encounter organizational obstacles. Many medical-school deans are eager to start, but their department heads, specialists themselves and frequently more powerful personages, may feel more allegiance to their specialty organizations than to the school.

Also, where will the added faculty come from? Experienced private practitioners may hesitate to return to the campus. Talented young graduates may be unwilling to immerse themselves in routine medical care concerns when academic advancement and research renown repose in the specialties.

The toughest task, though, will be insuring that prospective family doctors acquire practical experience by treating patients. To do this, the medical school must take on responsibility for care of a large group of local residents; Dr. Stanley Olson, who heads a family-practice program at Vanderbilt, estimates the desired number at about 5,000. Many schools will hesitate, however. Extension from teaching into service is likely to stir savage struggles with local practitioners. One way schools can minimize "town versus gown" rivalries is to limit care to the poor or to patients referred by local doctors. But a full-fledged family-practice program almost inevitably invades the private practitioner's domain.

Better education alone won't solve all of the general practitioner's problems, medical men point out. Family practice must be made more satisfying, personally and professionally. "You could set up general practice programs in every school in the country, but if that was the only thing that was done you'd still not solve the problem," declares Dr. Robert Marston, an associate director of the Government's National Institutes of Health.

In many parts of the country the GP has trouble acquiring hospital privileges; thus, the specialist automatically takes over when the GP's patient becomes seriously ill. Even in rendering routine care the GP is handicapped by a lack of convenient, dependable X-ray and laboratory facilities. Much of his time is consumed in counseling patients, for which he cannot command high fees.

The GP's temptation is great to perform costly surgery, particularly high-frequency operations like appendectomies and tonsillectomies. Yet his formal surgical training is slight, his skills acquired largely by practice; regularly he risks encountering dangerous unforeseen complications.

Some medical men discount the prospect of promoting family practice to a specialty. Given the many difficulties the general practitioner encounters, it may be that "you are asking for a second class citizen," in the words of Dr. Arthur Richardson, dean of the Emory University School of Medicine. It's argued that a well-trained non-MD, perhaps even a professional nurse, could with equal effectiveness perform the basic functions, tending to patients' minor problems and channeling the more severely ill to suitable specialists. Or medical schools could begin providing relatively quick and inexpensive training for cadres of GPs to provide such fundamental treatment.

Still, steps could be taken to lighten the family physician's load and make his career as a specialist more challenging. Non-professional assistants could take over some of his duties, such as giving nutritional and prenatal advice and taking routine histories. The physician would be free to serve more patients, spend more time with the acutely ill, make his medical judgments more deliberately.

More widely available post-graduate education could keep the practicing doctor abreast of medical developments; brief refresher courses already are offered at medical centers and elsewhere. Teaching aids such as closed-circuit television could be installed in his office. But many educators insist that more radical remedies are required, that changes in medical practice come too fast and reach too far to be mastered by such makeshifts.

DOCTOR WOULD RETURN TO SCHOOL

So there's growing support for some system that would regularly return the family doctor to medical school for months or a year at a time, at government expense (Dr. James Shannon, NIH director, is one advocate). Young residents

could be dispatched to care for the doctor's patients, as the final preparation for their own private practices.

Even more directly could the Government help GPs render better service. Indeed, this is one aim of the NIH heart-cancer-stroke program now getting under way. The NIH wants to export high standards of urban medical care to smaller communities. Modern X-ray machines and laboratory equipment could be provided so local practitioners are assured high-quality diagnostic help; special units for care of heart patients and others acutely ill could be installed at local hospitals; the list is probably limitless.

Also, the GP of the future may be a member of a many-specialist medical group, coordinating the care his patients receive from other medical men. At Houston's famed Methodist Hospital, for example, this role is filled by a doctor known as the general internist. "He's the key to my care," says Hospital Administrator Ted Bowen. "He's the one I related to."

Thus, the trend toward specialization may increase, not diminish, the patient's preference for a general medical adviser. How well today's educators succeed in overcoming the doctor's distaste for general practice could be the key to the public's satisfaction with medical care in the decades ahead.

WOMEN DOCTORS

Mr. SMITH. How many women are becoming doctors?

Dr. STEWART. The number of women going into medicine has not changed very much. The percent has stayed about the same. As far as I know there is no attempt by the medical schools to discriminate.

Mr. FLOOD. If the gentleman will yield, will you insert at this point in the record, as best you can, the percentage of female general practitioners in Russia?

Dr. STEWART. Female general practitioners?

Mr. FLOOD. Yes, in Russia.

Dr. STEWART. Most of the generalists in medicine are women. We will get the number.

(The information follows:)

From a "Report of the U.S. delegation on hospital systems planning, 1966": The total number of physicians in Russia in 1965 was 523,000, of which 70 to 75 percent were females (366,000 to 392,000).

Mr. SMITH. For some reason in this country we are very, very low in the percentage of women physicians compared to men, as compared to other countries. And they have been found to be very good practitioners, have they not?

Dr. STEWART. They certainly are. They tend to go into certain fields, pediatrics and obstetrics, but not entirely.

Mr. SMITH. What is the reason for the percentage being so low?

Dr. STEWART. I think one reason is the arduousness of the training, the length of time, and raising families.

Mr. SMITH. The same thing applies to nurses, too.

Dr. STEWART. That is correct.

PROPOSED LOAN REPAYMENT SCHEDULES FOR NURSES

Mr. SMITH. I have had a bill on general education and I am submitting a new one for the health professions which permits a man or woman to pay back a loan at the rate of 5 percent of his net taxable income per year, so the woman would not have the reluctance to take a loan carrying a rigid schedule of repayment. You have all the statistics we need on page 14 regarding the number of students and so forth, but could not the number of students be expanded at least to the ex-

tent there were schools to take care of them if we had a more flexible repayment method?

Dr. STEWART. You are speaking of nurses?

Mr. SMITH. Yes.

Dr. STEWART. I think you are correct, there has been a reluctance on the part of girls to take loans because they think this is an obstacle to marriage, but I think nurses are going to schools to the extent of the capacity at the present time. I think it would act as an incentive for girls to take loans and go into nursing.

Mr. SMITH. The top administrator of a nursing school in Iowa told me they are expanding by 100 percent the number of nurses they will train, but she said there is some reluctance on the part of some schools to expand because they do not know how many students will seek enrollment. She said there is no question that many, many women would apply if the available loans did not have such a rigid repayment schedule that they hesitate to become obligated, women don't know for sure whether they will be available to work or raising a family. They don't want to be tied down that much.

Dr. STEWART. I think there has been some reluctance on the part of schools to expand because they do not know if they will get the young women to come in, and some young women do not want to be burdened with debt.

Mr. SMITH. With regard to the amount of money necessary or requested for these loans, could you answer that?

Dr. STEWART. Dr. Fenninger from the Bureau of Health Manpower will have that answer.

BASIC MANAGEMENT AT THE NATIONAL INSTITUTES OF HEALTH

Mr. SMITH. There has been some talk for some time, a couple of committees of the House looked into this, and I think people in NIH have agreed, that partly due to the pressure caused by having to spend increasing amounts of money, NIH has not been able to or has not given adequate attention to basic management problems. At your level have you done anything to help in this problem?

Dr. STEWART. I think this feeling may have come from a period of a couple of years ago when there were some studies of NIH, particularly the Wooldridge report. That report indicated that the scientific program was working very well but there were problems particularly in the contract area, in the developmental area at NIH. Dr. Shannon has been looking at this very closely.

Mr. SMITH. My question was, is there something in your office you could do to help overcome this problem?

Dr. STEWART. I think there is a lot we can do in my office. One of them is the development of a management information system for the whole Public Health Service.

Mr. SMITH. Are you doing that?

Dr. STEWART. We will do it if the proposal we have before the committee goes through.

Mr. SMITH. How will that help overcome the problem specifically in NIH?

Dr. STEWART. At the moment we have policies of how we will manage things. We have no way of getting the information as to carry-

ing out these policies through a variety of programs in NIH, to see in fact that the policies are being followed. NIH has an elaborate information system of their own for grants and some of the other bureaus have information systems. They are not additive into a total information service.

Mr. SMITH. You are talking about reviewing grants?

Dr. STEWART. No; reviewing policies. We do have reviews at a higher level on certain kinds of things, at my office or sometime in the Secretary's office. But what I am more interested in is that after certain policies are established for handling grants or contracts that we have information on whether the policy was carried out. The way it is now, we find out about it by knowing who is doing what or if there is an exception taken you find out after the exception is taken. We need information upon which to base our judgment on whether the policies are being implemented and what these policies need to be.

Mr. SMITH. In this matter of transferring knowledge, are you setting up a study now? Is that what you need?

Dr. STEWART. No. I was stating that in reference to the heart disease, cancer, and stroke amendments. That was aimed at the transfer of knowledge in the treatment of people with these diseases.

PATENT POLICY

Mr. SMITH. Is enough being done to protect taxpayers from having royalties on new drugs discovered through funds of NIH or of the Federal Government?

Dr. STEWART. This would come under the Department's patent policy, which says if it is supported by a grant it is a public patent.

Mr. SMITH. I will get into this more specifically later, but I would like for you to state if you really think there is enough being done to be assured that information the Government has paid for is not being patented by others. In other words, if you do not patent it somebody else may patent it. It is also a matter of your not patenting it and they might go ahead.

Dr. STEWART. Our function is to make sure there is a report of invention, and there is difficulty in getting reports of invention. We have to work hard to see that the inventors report any inventions.

Mr. CARDWELL. Once a determination is made that an invention is patentable, a decision is then made whether it can be patented by the individual involved or thrown in the public domain. Usually it is thrown in the public domain and once that is done it cannot be patented by anyone else, it becomes public property.

Mr. SMITH. I am thinking of one particular instance, where they have a lot of Government contracts but for some reason the patentable discoveries are always what they did with their funds.

Mr. CARDWELL. You mean the thing that distinguishes what they did on their own and what they did with Federal support is a very narrow line?

Mr. SMITH. Yes, and if it is patentable they can keep the competition out.

HOSPITAL ADMINISTRATION

Mr. SMITH. Is there not still a problem of doctors being tied down with nonmedical matters that should not absorb their valuable time?

Dr. STEWART. There is a feeling that this is so. There are very little data to quantitate this. There has been a study in the field of pediatrics that indicates a great deal of the work of a pediatrician does not come in his training as a pediatrician.

Mr. SMITH. I was thinking also in terms of hospital administrators. Assuming it is true, is the reason because there are not enough hospital administrators or because doctors are reluctant to delegate responsibility relative to the administration of hospitals?

Dr. STEWART. I think it grew out of the reluctance of doctors to give up hospital administration, but I do not think the field is as strong as it should be.

Mr. SMITH. Are you saying there are not enough hospital administrators to fill the gap?

Dr. STEWART. I think there is a shortage of well trained hospital administrators.

Mr. SMITH. Is that something that should be included in the proposed act? I think physicians find themselves making decisions that could have been made by somebody else.

Dr. STEWART. If you are talking about decisions that relate to patient care but really have to do with administration, we have not parceled out what the decisions are that could be done by somebody else without risking the patient care area. We have made studies of the utilization of nurses but we have not done much on the utilization of physicians.

Mr. FLOOD. I have been advised by nurses' spokesmen that as much as 40 percent of their time is devoted to paperwork that some technician or aid could do as well. I go to the hospital every 6 months, sometimes every 3 months, for a checkup and I ran my own survey and these RN's agreed that generally speaking 40 percent of the time they are tied down sitting in a chair with paper when they should be devoting that time to patients.

Dr. STEWART. This has been looked at a great deal. You have two questions. One is, was it necessary to do all the recording in the first place. The second is, could you use a different type of person to do that. In some wards there is a ward clerk.

Mr. FLOOD. This particular institution is trying to get a ward administrator that would relieve them of this sort of thing.

Dr. STEWART. I think, Mr. Chairman, sorting out the skills needed to do a certain job, all the way from the professional to the clerical, will have a greater effect on the nurses than the physicians.

Mr. FLOOD. Mr. Hull.

CLEARINGHOUSE FOR SMOKING AND HEALTH

Mr. HULL. Dr. Stewart, do you still agree with the following, which is a quotation taken from the text of one of your speeches delivered to the Eighth Annual American Cancer Society Science Writer's Seminar on March 29, 1966:

The central purpose behind the Public Health Service's Clearinghouse for Smoking and Health is to collect, evaluate and disseminate available facts about smoking, and, where the facts are lacking, to support research to obtain them.

Dr. STEWART. That is correct.

Mr. HULL. Do you agree that the clearinghouse should disseminate facts about smoking without exaggeration or distortion?

Dr. STEWART. Yes.

Mr. HULL. Is it your position that the clearinghouse, and indeed the entire Public Health Service, are disseminating facts about smoking without exaggeration or distortion?

Dr. STEWART. Yes.

ESTIMATING DEATHS DUE TO SMOKING

Mr. HULL. Dr. Stewart, the Surgeon General's Advisory Committee found that "excess deaths" due to cigarette smoking "cannot be accurately estimated." The Vice Chairman of the Surgeon General's Advisory Committee, former Assistant Surgeon General Hundley, said that it might be as misleading as it was informing to try to calculate the total number of excess deaths causally related to cigarette smoking in the U.S. population.

In the light of these statements, why did you say in March of 1966 that "at least 125,000 premature deaths, and maybe as many as 300,000 deaths, in the United States a year are due to cigaratte smoking"?

Dr. STEWART. Did I say "due to"?

Mr. HULL. Yes, implying that cigarette smoking is actually causing between 125,000 and 300,000 premature deaths a year.

Dr. STEWART. The Surgeon General's report established a cause and effect relationship between lung cancer and cigarette smoking. There are about 50,000 deaths a year from lung carcer. It went on to say there was an association between cigarette smoking and cardiovascular disease and pulmonary disease.

Mr. FLOOD. Will you show the fatality rate between men and women?

Dr. STEWART. Yes.

(The information follows:)

Dr. Morton Levin of the Roswell Park Memorial Institute in 1965 reported a study which indicated that based on 1962 death rates, 1960 populations, and the results of the major epidemiological studies, there were 227,000 excess deaths among male cigarette smokers over the numbers which would have occurred if these men had died at the same rates as nonsmokers of the same age. Since the number of men 18 and over has increased more than 10% since 1960, a current estimate for excess deaths among men is about 250,000. There is now good evidence to show that cigarette smoking bears a significant relationship to mortality among women in the same categories as those experienced by men, but considering the lower proportion of smokers and especially the lower proportion of smokers among older women, the number of excess deaths among women is probably not more than 50,000. The combined estimates for men and women bring the total to 300,000.

Mr. HULL. Yet the Surgeon General's Advisory Committee would not make any estimate—even with respect to the three diseases as to which cigarette smoking was claimed to be one of the causes—cancer of the lung, cancer of the larynx, and chronic bronchitis.

Dr. STEWART. They said there was a cause and effect relationship between cigarette smoking and lung cancer, but they did not say it was the sole cause of lung cancer. Lung cancer does occur in nonsmokers. But they said it was of sufficient importance as a cause and effect relationship that we must take public health measures at this time.

Mr. HULL. Is it not a fact, Dr. Stewart, that this figure of 300,000 excess deaths is bandied about by various officials of the Public Health Service; and is it not a fact that this figure is mostly made up of deaths from emphysema, heart disease, cancers of the esophagus and bladder, and other diseases not causally related to smoking by the Surgeon General's Committee?

Dr. STEWART. I think the fact there are 50,000 deaths a year from lung cancer, and the fact there is a cause and effect relationship between lung cancer and cigarette smoking, warrants attention.

Mr. HULL. Here is a story in the Washington Star of yesterday wherein Dr. Beatty said 37,000 deaths occur annually from lung cancer related to tobacco use and 250,000 deaths annually associated with smoking.

Dr. STEWART. Yes.

Mr. HULL. So you have not gotten your figures up very well.

Dr. STEWART. It depends what year one is using. I can get the exact figures.

Mr. HULL. Fine. I would like to have them.

(The information follows:)

Number of deaths from diseases causally related to or associated with smoking, United States, 1965

The Advisory Committee on Smoking and Health concluded that tobacco usage is causally related to the following four diseases:

	Number of deaths in 1965
Total	55,306
Cancer of the lung	48,483
Cancer of the larynx	2,629
Cancer of the lip	172
Chronic bronchitis	4,022

There are eight causes or groups of causes of death for which the Advisory Committee found evidence of an association with tobacco use:

	Number of deaths in 1965
Total	843,541
Arteriosclerotic heart disease, including coronary artery disease	559,293
Cirrhosis of liver	24,715
Emphysema	18,664
Ulcer of stomach	18,027
Cancer of the esophagus	5,542
Cancer of parts of oral cavity other than lip	6,329
Cancer of bladder and other urinary organs	8,267
Specified noncoronary cariodvascular diseases	202,704

The Division of Vital Statistics has no information which would indicate the proportion of these deaths actually caused by smoking.

PUBLIC HEALTH SERVICE BOOKLETS ON SMOKING

Mr. HULL. I have examined with great interest various booklets issued by the Public Health Service with respect to the effects of smoking. Is it your position that the so-called facts disseminated therein are presented without exaggeration or distortion?

Dr. STEWART. Yes.

Mr. HULL. In the Public Health Service publication No. 1103–b entitled "Smoking and the Heart" the statement appears:

Cigarette smoking has been chiefly implicated in coronary heart disease—a disease of the arteries which nourish the heart itself.

How do you square this statement with the statement appearing on page 39 of the Advisory Committee's report:

Male cigarette smokers have a higher death rate from coronary artery disease than nonsmoking males, but it is not clear that the association has causal significance.

Dr. STEWART. I think the statements are the same. One is that there is an implication of a serious enough degree that action should be taken. The other is you cannot carry it all the way down to cause and effect. Epidemiological studies have always shown an association of increased mortality from coronary disease among smokers as compared to nonsmokers.

Mr. HULL. When you speak of smokers do you mean someone who smokes a single cigarette or a package smoker?

Dr. STEWART. In the case of cancer there is a relationship between the amount one smokes and lung cancer.

Mr. HULL. Where do you get that information?

Dr. STEWART. There is information as to whether they smoke one pack a day or two packs a day. The more they smoke and the longer they smoke the higher the incidence of lung cancer.

Mr. HULL. In its literature or propaganda, is the Public Health Service telling both sides of the story or accentuating only the negative?

Dr. STEWART. I think it is telling both sides of the story.

Mr. HULL. Dr. Stewart, I have reference to the recent Swedish twin study, which I am sure you are familiar with, indicating that no causal relationship exists between smoking and heart disease. Have you included this in your literature?

Dr. STEWART. I can't say, Mr. Hull. I don't recall the study at the moment but the function of the National Clearinghouse on Smoking and Health is to include all studies in their review and publication.

Mr. HULL. The study I referred to has been reported by the press of this country under such headlines as "Smoking Gets Reprieve on Coronaries;" "Study Questions Tie of Smoking, Heart Ills;" "Smoking, Heart Ills not Linked," March 14, 1967.

BASIC PURPOSE OF CLEARINGHOUSE

Now, Dr. Stewart, let us turn to the basic purpose and some of the activities of the clearinghouse. Dr. Daniel Horn, chief of the Clearinghouse, stated in a speech given February 17, 1965, to the American Association of School Administrators, that smoking gives us a good opportunity to explore our ability to influence behavior change. Is this a basic purpose of the Clearinghouse, to act as a Great White Father in Washington, to influence the behavior patterns of the American people?

Dr. STEWART. It is a purpose of the Public Health Service to do what it can to see if we can change people's behavior in regard to cigarette smoking. The Clearinghouse is supporting studies which attempt to understand what the behavior of cigarette smoking is, so we would have some way of doing it.

There is no intention of being a Great White Father, or coercion. In my opinion, people who smoke cigarettes or don't smoke cigarettes make their decisions themselves.

Mr. HULL. I think they should have the right to.

Dr. STEWART. But in order to make a decision of such nature, one has to be informed and it is our job to inform.

Mr. HULL. Do you have any programs for behavior of beatniks and all of these characters who roam the streets?

Dr. STEWART. Not that I know of.

Mr. HULL. Don't you think it important that you have some of those?

Dr. STEWART. Well, I don't know that the beatniks are any greater cigarette smokers than anybody else.

Mr. HULL. I am not talking about cigarettes. I think they are "LSD-ers" and "marihuana-ers."

Dr. STEWART. We are studying problems of drug abuse and narcotic addiction.

Mr. HULL. How far should Government go beyond making proven facts available in supporting research?

Dr. STEWART. I think the Government should go far enough that it should support research and should see that people are fully informed.

Mr. HULL. How far?

Dr. STEWART. I think that is as far as it needs to go.

SAN DIEGO COMMUNITY LABORATORY GRANT

Mr. HULL. Dr. Stewart, the Public Health Service extended a grant to the tune of $166,570 to the San Diego Community Laboratory which, according to its own statement, placed subliminal articles in the various media which don't identify the project as such, but which we hope will over 5 years provide a constant barrage of smoking and antismoking propaganda for the community.

Do you think it is proper for the Public Health Service to authorize and direct these sneak attacks against the minds of American citizens?

Dr. STEWART. I am not familiar with the study being conducted.

Mr. HULL. Will you familiarize yourself with it and give us your answer?

Dr. STEWART. I certainly will.

(The information follows:)

The San Diego Interagency Council on Smoking and Health has informed the Surgeon General that all material emanating from its program is identified as to its sponsorship.

Mr. HULL. Dr. Daniel Horn has said that the San Diego project's purpose was to test methods by which organized community action can reduce cigarette smoking. Would the Surgeon General agree with that statement?

Dr. STEWART. Yes, I see nothing wrong with organized community action to change any behavior that will improve the health of the people of that community.

Mr. HULL. Roy L. Davis, Chief of the Community Program Development Section of the National Clearinghouse has referred to the San Diego program as one of two 5-year, $5 million projects. He said

separate commissions are forging ahead to develop programs for schools, industry, public media, military and professional and lay groups. If his reference to $5 million is correct, then where is the money in the budget?

Dr. STEWART. I wonder if his reference to $5 million isn't over a 5-year period. But I don't know.

Mr. HULL. It is one of two 5-year, $5 million projects.

Dr. STEWART. I would have to find out what the source of funds is.

Mr. HULL. I wish you would.

How many such $5 million programs are planned?

Dr. STEWART. That I would have to find out too.

(The information follows:)

The Public Health Service has no present plans for any $5-million community project, or for any community laboratories other than Syracuse, New York, and San Diego, Calif. Programs in Syracuse and San Diego are planned at a level of approximately $200,000 each per year which will total $1 million each, over a period of 5 years.

Mr. HULL. Dr. Arnold Flick stated in a speech to a military group in San Diego that he thought perhaps this program could be sold on the basis that lighting cigarettes at night could be a good way to give away their position to the enemy and that one could make a plain military case for not using cigarettes.

This sounds like a followup on the ban of distribution of free cigarettes to wounded veterans imposed, according to Alice Widener's syndicated newspaper column, because of an educational campaign initiated by the Department of Health, Education, and Welfare.

Does the Surgeon General agree with bans on free cigarettes to the Armed Forces?

Dr. STEWART. I don't think I agree with the ban on free cigarettes to the Armed Forces.

Mr. HULL. You don't think you do?

Dr. STEWART. No.

Mr. HULL. You don't then?

Dr. STEWART. I don't agree with the ban. I would also like to couple that, though, with an information program which explains to the soldiers who are getting the free cigarettes what the implications are.

Mr. HULL. I am satisfied they know.

SURVEY ON ATTITUDES TOWARD CIGARETTE SMOKING

Dr. Stewart, as of July 11, 1966, the National Clearinghouse has awarded contracts totaling over half a million dollars to send people out to ask people how they felt about cigarette smoking. Does it take a half million dollars to find out what people think about smoking?

Dr. STEWART. I would have to find out about that.

Mr. HULL. Get me some information on that.

Dr. STEWART. I certainly will.

(The information follows:)

The surveys on smoking behavior were designed to provide those who are concerned with the problem of smoking and health at the policy, administrative, or program level with essential kinds of data and findings.

One of these is a resurvey in 1966 of respondents first interviewed in 1964 as an epidemiological approach to determining what kinds of people have changed their smoking habits and why. The surveys also include a current evaluation of

the national problem, and baseline data for the evaluation of progress in the community laboratories in San Diego, California, and Syracuse, New York. These serve both as basic research approaches to the problem and as evaluating procedures for guiding and for judging the effectiveness of program efforts. Another seeks to identify the problem in college students and the remainder are designed to identify the role of health professionals in approaching the solution to the cigarette smoking problem.

Mr. HULL. One contract awarded the clearinghouse went to the Onondaga County Inter-Agency Council for work which included psychosocial studies and research related to the motivational and behavioral aspects of cigarette smoking.

Is this an indication that the Public Health Service thinks there is something peculiar about the motives or behavior of people who smoke cigarettes, that they are soft in the head or something?

Dr. STEWART. No, sir, the word "peculiar" wouldn't be attached to that, but certainly cigarette smoking is a form of behavior and most behavior has some sort of motivational factors behind it.

COST OF ANTI-SMOKING MATERIAL

Mr. HULL. Would you estimate how much has been spent by the Public Health Service in the preparation, printing, and distribution of antismoking material?

Dr. STEWART. I would have to get that for you.

Mr. HULL. Will you get that material for me?

Dr. STEWART. Yes.

(The information follows:)

Direct expenditures for printed and visual materials providing information to the public on the effects of cigarette smoking are estimated at $85,000 for the current fiscal year.

Mr. HULL. How much is allocated in the 1968 Public Health Service budget for the preparation, printing, and distribution of this type of material? I would like to have the same figures on that.

Dr. STEWART. I would have to have a breakdown of the figures we have.

(The information follows:)

Present plans for fiscal 1968 involve no increase over the expenditure levels of FY 1967 for printed and visual materials, which is an estimated $85,000.

GOVERNMENT RESPONSIBILITY RE ANTISMOKING PROGRAM

Mr. HULL. Do you honestly feel, inasmuch as you have a warning printed on every package of cigarettes in this country, that there is really a need for more federally financed material to convey the notion that cigarette smoking may be hazardous to your health?

Dr. STEWART. Yes, sir, I think there is a big need for as much information as possible because one is making an important decision when they decide to smoke cigarettes or not.

Mr. HULL. Do you think they come to some decision when they smoke their first cigarette?

Dr. STEWART. I think so.

Mr. HULL. Is it not reasonable to conclude that the Government has fulfilled its responsibility to inform the people and treat the decision whether to smoke or not as a matter of individual choice?

Dr. STEWART. Yes, it is a matter of individual choice, but one has to be fully informed in order to make choices.

Mr. HULL. Apparently you feel that this is not a matter of individual choice and the Government has the right to ram its theories down the throats of our citizens?

Dr. STEWART. No, I think the Government has the obligation to make sure that the individuals are informed of the facts about cigarette smoking and lung cancer.

Mr. HULL. Dr. Horn has estimated that some 40 million smokers might be persuaded to give up smoking if effective ways could be found to assist or persuade them. Is that true?

Dr. STEWART. I don't know whether that is true or not.

Mr. HULL. Would you find out how he arrived at those figures?

Dr. STEWART. Yes, sir, I will.

(The information follows:)

The National Survey conducted in late 1964, indicated there were about 48 million adult cigarette smokers. The Survey showed that of these 26.5 million have tried to give up smoking at one time or another (9 million once, 17.5 million more than once). In addition to the 26.5 million who have tried to quit, there were another 7.5 million who had seriously considered quitting but had never actually made the attempt.

This leaves 14 million who have never tried to quit or considered it seriously. Even in this group, 3.5 million express concern about the effect of cigarettes on their own health, leaving 10.5 million "unconcerned" and 8 million who say they would not try to give up smoking even if there were an easy way to do so. The other 40 million all show some potentiality for change if they decide that change is both desirable and feasible.

Mr. HULL. What, if anything, do you think the Government ought to do for these 40 million people to assist them to give up smoking beyond telling them about the possible risk?

Dr. STEWART. I think if they are fully informed, I think that is what the Government's obligation is. I do not think prohibition will work.

Mr. HULL. The Chief of the Clearinghouse Community Program Development Section said in a speech at San Francisco, November 1, 1966:

The goal is to find the pertinent data that can be used for influencing smokers to stop smoking and nonsmokers not to start.

Isn't influencing smokers going beyond dissemination of the facts?

Dr. STEWART. Yes, it is, but I think any well-informed person is influenced by the information that he has.

Mr. HULL. What about the balance of the smokers? What should be done for them?

Dr. STEWART. I think every effort should be made to see that they understand what the implications of smoking cigarettes and lung cancer are and then they will have to make up their minds as to whether they can stop or not. It is a difficult thing to do.

Mr. HULL. How many billions do you think you will be able to spend educating all these people over the years?

Dr. STEWART. I think there will be a great deal of effort made. I don't think it will all be Federal expenditure.

Mr. HULL. Do you agree with the conclusion of the Surgeon General's Advisory Committee that cigarette smoking is not an addiction?

Dr. STEWART. Yes, I don't think it is an addiction.

Mr. HULL. Smoking is a habit or pattern of behavior?

Dr. STEWART. That is right.

Mr. HULL. Do you think it is the proper role of the Public Health Service to do more than suggest to adult smokers that they alter their habits or behavior?

Dr. STEWART. I think they should do as much as they can to influence this without coercion.

Mr. HULL. The clearinghouse Director, Dr. Daniel Horn, suggests that the whole social environment surrounding smoking must be changed so that smoking will no longer be socially acceptable. Isn't the Public Health Service exceeding both its responsibility and authority in undertaking to change the social mores of the Nation?

Dr. STEWART. No, I think from a public health standpoint there is plenty of evidence in the past that we have accomplished public health measures by changing social values, by influencing social values.

Certainly the shift from chewing tobacco to smoking tobacco was part of this change in social value.

Mr. HULL. There are plenty of people who chew now and use snuff.

Dr. STEWART. But is quite different than it was when it was prevalent 40 years ago.

Mr. HULL. Perhaps it is impatience which is leading Dr. Horn to make references to 300,000 premature deaths and illnesses resulting from cigarette smoke.

He gave a speech in Philadelphia to conclude that anyone who did not work to create a new environment was to be accused of "irresponsible behavior."

Dr. STEWART. I think that is going further than I would want to go.

Mr. HULL. It may be that the programs now being promoted are the result of impatience, as well as frustrations, from his remarks.

Dr. STEWART. I think the programs are being promoted because of a real concern for the health of the American people. I think this is our concern. One can get impatient——

Mr. HULL. You understand, I want cigarettes to be nonharmful. If you can find that they are really creating a problem, I would go with you 1,000 percent, but I hate to see one industry be made a whipping boy all the time.

PROJECTED PLANS FOR CLEARINGHOUSE ACTIVITY

I have read of proposals for a 5-year plan to step up clearinghouse activities costing anywhere from $47 million to $115 million. Are there such plans?

Dr. STEWART. I am not aware of any plan like that.

Mr. HULL. If you are, will you furnish materials on it?

Dr. STEWART. I certainly will.

(The information follows:)

The article in Business Week referred to a study (known as a program memorandum) carried on in cancer and other health fields by our Department. This and other studies were undertaken primarily to learn how to apply the methodology of cost-benefit and cost-effectiveness techniques to health program planning.

In order to carry out this exercise, several assumptions and rough estimates based on current information, which is extremely limited, had to be made to develop cost-benefit comparisons of alternative programs. As part of the process, five alternative five-year programs were hypothesized. Since the main pur-

pose of the exercise was to make cost-benefit comparisons, no details of the alternative programs were developed. The $47 million anti-smoking education program mentioned in the Business Week article was one of the five-year alternative programs proposed for this exercise. The statistics presented in the article for this hypothetical $47 million five-year program are illustrative of cost-benefit data that would result from the estimates and assumptions made.

In the study itself the following statement is made with regard to the data: "It should be very clearly understood that the estimates of both cost and benefit presented in this program analysis should in no way be considered precise. A most important part of our current activities is the development of measures and the testing of estimates. Material presented here represents our best estimates on the basis of what is now known. It is subject to adjustment as measurement techniques become more precise."

We have not recommended funding of this $47 million anti-smoking education program because of the recognition of the limited data on which it was based. In our appropriations request for fiscal year 1968 for smoking and health, we are asking for $2.1 million. Pilot projects financed by these funds will enable us to test, among other things, the assumptions on which the various alternative programs were based.

Mr. HULL. This was reported in Business Week in a tobacco report.

Dr. STEWART. You have now given the reference. I am sure that is the program memoranda we prepared for the Department on our trial on program planning and budgeting systems of last year.

Mr. HULL. Will you get us the source for the record?

Dr. STEWART. I will get that; yes.

(The information follows:)

(Reference: "Program Analysis, 1966–3, Disease Control Programs, Cancer, October 1966" OS DHEW, Office of Asst. Secty for Program Coordination, GPO 918–799).

SAFER CIGARETTE

Mr. HULL. A recent article in the National Observer stated that the Public Health Service is urging the administration to ask Congress for a 10-year, $50 million research and development program to create a safer cigarette.

Is this the first part of this program that would cost $3 or $4 million in each of the 3 years? Has that question been asked? If not, furnish information for the record on it.

(The information follows:)

Operating units of the Public Health Service frequently advance proposals for major program efforts. These are considered along with other proposals of similar scope, and decisions are made to pursue the program proposed, to not pursue it, or to modify and then implement. One such recent staff proposal called for a major research program on various aspects of the tobacco and health program involving several Institutes and Divisions of the National Institutes of Health. This proposal is still under discussion, both at the Institute level and in the Office of the Surgeon General. It is emphasized that the proposal is intended to present opportunities and needs as seen by program staff. PHS review is incomplete, both as to priorities and technical accuracy. The proposal at this point is not reflected in any formal budget presentation.

I. SMOKING AND CARDIOVASCULAR DISEASES (NHI)

A number of important research questions relating to the cardiovascular and cardiopulmonary effects of smoking were identified by a special panel of invited consultants following the release of Smoking and Health, the report of the Advisory Committee to the Surgeon General. A statement of the panel's findings is included as Appendix A.

The National Heart Institute has made some progress toward these research goals within its established programs, but a major research effort in this area would require additional funds and staff for implementation.

The Heart Institute's programs of research support and direct operations have revealed significant new findings since the Surgeon General's report to confirm a detrimental effect of smoking in coronary heart disease. The mortality of cigarette smokers is found to be approximately twice that of non-smokers, leading to an estimated excess mortality from this disease of nearly 95,000 premature deaths among male cigarette smokers.

A disturbing finding relating to this increased mortality from coronary heart disease is an apparent excess of sudden deaths among cigarette smokers who develop an acute heart attack, whereas heart attacks occurring in non-smokers carry a lower fatality rate.

Further association of smoking with hypertension, cerebrovascular disease, peripheral vascular disease, emphysema, and chronic pulmonary disease indicates the importance of expanding research efforts to determine the mechanisms of such effects. From such knowledge can come measures to counteract these noxious effects, and selective removal of chemical compounds from smoke may become possible to eliminate the harmful components.

An expanded research program could be undertaken through the Heart Institute's Extramural Programs and through its direct Collaborative Studies Program to answer many of the research questions which still deserve further investigation concerning smoking and cardiovascular and pulmonary diseases. The major area for attention would be directed toward smoking effects which relate to

> Coronary heart disease; acute myocardial infarction and sudden death; cardiac arrhythmias; cerebral-vascular disease; hypertension; peripheral vascular occlusive disease; emphysema and chronic pulmonary disease.

Expanded Research Supported by Grants

At the present time 59 Heart Institute research grants support investigators who conduct research that has some important aspect relating to smoking. The underlying disease problems that are being studied are primarily atherosclerosis peripheral vascular diseases, and pulmonary diseases. Currently active NHI research grants concerned with smoking are listed in Appendix B.

Since the fundamental relationship of adverse effects of smoking in these diseases is not yet known, the extramural pogram would emphasize expanded studies of basic nature to seek a better understanding of mechanisms of action of smoke and smoke components on the cardiovascular system.

Provided with the necessary funds and staff, the Heart Institute's extramural grant programs would undertake the expansion of research effort in several identifiable areas including:

(1) Physiological effects of smoking on the circulation with special emphasis on the coronary, peripheral and micro-circulations. Recently developed techniques have enhanced the feasibility of such investigations.

(2) The effects of smoking on blood clotting. Such studies have been receiving increased attention, but there is still a great need for carefully controlled investigations of the alterations in clotting mechanisms, platelet dynamics, and fibrinolysis.

(3) The effects of smoking on oxygen and lipid metabolism. These metabolic effects are believed to be related to the processes of atherogenesis and clotting.

(4) Experimental pathologic changes induced by smoking. Studies of the effects of smoking on atherogenesis, on the endothelial surface, and on the vasa vasorum of vessels are especially desirable. A number of animal species (especially pigs and some primates) may serve as suitable experimental models.

(5) The pharmacology of smoke components. Sophisticated techniques now exist for studying the absorption, metabolism, and toxicology of nicotine, carbon monoxide, and other components and for relating the effects of these compounds to cardiorespiratory phenomena.

(6) The effects of smoke components on respiratory tissues. In particular, the opportunity exists to differentiate the effects of gaseous vs. particulate components of smoke.

(7) The epidemiology of chronic cardiopulmonary diseases. Such plans are already underway and include clinical-pathological correlations in a variety of environmental circumstances. Smoking, as an important risk factor, will be an important part of such long-term protocols.

To implement these expanded research activities through the extramural program will require additional funds. To provide the necessary program focus and coordination the recruitment of a staff medical officer with experience and training in cardiopulmonary diseases would be advisable. A conservative

estimate of additional research grant funds to implement this program is given below:

Fiscal year 1968	$750,000
Fiscal year 1969	1,250,000
Fiscal year 1970	1,500,000
Fiscal year 1971	2,000,000
Fiscal year 1972	2,000,000

Expanded Direct Research Through Direct Operations

The Collaborative Studies Program of the Heart Institute has previously provided some of the major evidence for the Surgeon General's Report on Smoking and Health identifying a significant excess mortality from coronary heart disease associated with cigarette smoking.

These research findings also revealed a reduction of excess coronary disease mortality among discontinued cigarette smokers approaching the lower rate of non-smokers. This apparent favorable effect resulting from discontinuation of smoking requires confirmation since it suggests that the mechanisms through which the deleterious cardiovascular effects of smoking are mediated may be reversible or alterable.

An increased risk of sudden death from coronary heart disease for cigarette smokers has been found in the Framingham Study. The possibility that abnormal arrhythmias or abnormalities of clotting mechanisms are involved in this lethal consequence is suggested. Reasonably definitive information could be obtained to answer these questions by special studies in the populations under direct medical observation within the Collaborative Studies Program. These studies would require special laboratory procedures for the measurement of coagulation factors and special electrocardiographic equipment for telemonitoring of subjects who are smokers and control groups of non-smokers. Both of these areas of coagulation studies and telemonitoring studies have been suggested by the panel of invited consultants as important for further investigation.

Another research area suggested by the panel of consultants relates to epidemiological studies among subsegments of populations who are low in competing risk factors, such as serum lipid levels or blood pressure levels to demonstrate the isolated contribution of smoking to coronary disease in the absence of these other known risk factors.

Such studies could be easily engrafted within two major epidemiological studies now getting under way in Puerto Rico and in Hiroshima, Japan. The cost would be mainly that for added interviewer time and increased costs related to data processing from these studies.

The relationship of cigarette smoking to emphysema and chronic respiratory disease has been revealed in the Heart Institute's study of U.S. Government life insurance policyholders and further data should be forthcoming from the U.S.-U.K.-Norway study of cardiorespiratory disease among migrants to the United States compared with siblings who remain in the U.K. or Norway.

Further studies applying more sophisticated pulmonary function measurements could be undertaken in some of the ongoing long-term population studies to provide better data on this relationship of cigarette smoking to chronic pulmonary disease. Considerable direct measurement data could be obtained at the relatively modest additional cost of installation of equipment for pulmonary function studies and personnel to conduct these studies. A minimum of one physician with training in cardiopulmonary physiology and one technician would be needed for each study population.

In summary, the Collaborative Studies Program has direct research activities relating to smoking and cardiorespiratory disease to some degree in each of the following population studies. The scope of research described relating to smoking and health could be appreciably increased if funds and staff positions were made available:

1. Framingham prospective study of 5,128 adults.
2. U.S. Government Life Insurance Policyholders prospective study of 300,000 males started by Dr. Harold Dorn.
3. P.L. 480 Project Israel involving 10,000 males age 40 and over.
4. P.L. 480 Project Yugoslavia involving 2 population areas and 11,000 males.
5. Ischemic heart disease investigation of Puerto Rico in the study design stage to encompass 10,000 males age 45–64.

6. US-UK-Norway study of cardiorespiratory disease among migrants to the USA and siblings remaining in the UK or Norway.

7. Comparative study of coronary heart disease and cerebrovascular disease among Japanese in Hiroshima and Japanese descent men in Hawaii.

A recapitulation of the types of smoking investigations recommended by the panel of consultants which could be undertaken by direct studies within the above populations is listed below:

1. Studies of the effects of discontinuation of cigarette smoking upon the morbidity and mortality from coronory heart disease.

2. Studies of coagulation factors among smokers, discontinued smokers and non-smokers in a general population. The effect of smoking and periods of abstinence from smoking upon coagulation parameters.

3. Studies of factors related to sudden death among cigarette smokers and non-smokers including electrical disturbances of heart rhythm among coronary prone smokers and non-smokers.

4. Studies of the independent contribution of cigarette smoking to coronary disease risk.

5. Studies of the relationship of cigarette smoking to pulmonary function changes and emphysema in defined populations.

Estimated minimum additional personnel and funds required for implementation of the above research program are given below for each of the next 5 years:

	Positions	Funds
Fiscal year:		
1968	+8	$140,000
1969	+12	180,000
1970	+12	190,000
1971	+12	200,000
1972	+12	200,000

Professional and Public Information Activities

There has been a considerable interest and demand for educational materials relating to smoking and cardiovascular diseases since the Surgeon General's Report on Smoking and Health.

The Heart Information Center has been cooperating with the National Clearing House on Smoking in many of these activities but it could expand its informational role by developing an exhibit for use at major national medical meetings based on new data from Heart Institute studies.

The preparation of such an exhibit, travel for presentation at national meetings and continued development of new public information materials would be possible with the addition of $15,000 in F.Y. 1968.

Summary of staff and budget estimates for expanded research program in smoking and cardiovascular diseases

Fiscal year	Personnel	Direct funds	Grant funds	Total
1968	9	155,000	750,000	905,000
1969	13	180,000	1,250,000	1,430,000
1970	13	190,000	1,500,900	1,690,000
1971	13	200,000	2,000,000	2,200,000
1972	13	200,000	2,000,000	2,200,000

II. SMOKING, CANCERS, AND PULMONARY DISEASES

There is reason to believe that the development of a less hazardous cigarette is within potential reach. While it may be argued that at present we are not necessarily aware of many of the toxic components, carcinogenic agents, co-carcinogenic agents, or irritants in cigarette smoke, sufficient data, as well as technological information, are available to permit delineation of a definitive research program at this time. Present knowledge of constituents of cigarette smoke has permitted an identification of several classes of compounds which may be related to the toxicologic effect of cigarette smoke. The increased risk to inflammatory, degenerative, and neoplastic diseases of the upper and lower res-

piratory tract associated with excessive cigarette smoking is thoroughly documented epidemiologically. In addition, certain disease entities relating to the genitourinary and the gastrointestinal tracts have also been linked with increased risk in cigarette smokers.

In the general area of carcinogenesis, it has been repeatedly shown that a relationship exists between the dose of a tumorigenic agent and the response in terms of tumor yield in the experimental animal and risk on the basis of epidemiological studies. Specifically, a relationship of this type has also been demonstrated for cigarette smoke and for its condensate. Retrospective as well as prospective studies have clearly demonstrated a correlation between the number of cigarettes smoked and the duration of smoking with the relative risk to the development of degenerative as well as neoplastic disease of the lung. In experimental studies, whole smoke condensate, as well as many of the identified individual constituents, have been shown to be carcinogenic in conventional experiments in carcinogenesis and cytotoxic in acute and subacute toxicologic studies. It is accordingly reasonable to conclude that the extent of exposure to smoke condensate in the experimental animal or man has a critical influence on experimental tumor yield in the laboratory and the degree of risk in the human population. Efforts directed toward reducing the carcinogenic hazard associated with cigarette smoking can arbitrarily be grouped into two main areas: (1) preparation of a safer cigarette, and (2) attempts at host modification.

Safer cigarettes.—It is now technically possible to remove or reduce certain constituents of cigarette smoke that are thought to be responsible in part for the carcinogenic properties of cigarette smoke. For certain other constituents, techniques can be developed. Finally, known variations in the chemical composition of the tobacco leaf itself also offer an opportunity to exploit differences toward the goal of reducing individual hazardous components. The general approaches are listed in Appendix C. A list of specific agents with their role and action by chemical groupings is given in Appendix D, with an appraisal of the feasibility of reducing their presence in cigarette smoke. It must be emphasized that the relative contribution of individual components within each group of agents is essentially unknown, although an attempt at such evaluation has been undertaken. It is to be noted, however, that unsuspected carcinogenic agents as well as irritants may be identified in the future. It is therefore unreasonable to assume that removal of all of the currently known hazardous materials in cigarette smoke condensate constitutes the exclusive goal.

Host modification or host buffering approaches.—It is widely recognized that all persons exposed to a carcinogenic environment are not at equal risk to the development of cancer. This generalization applies also to the association of cigarette smoking with lung cancer. Even after correcting for competing causes of death and other ancillary factors, it can be stated that smokers who do not develop lung cancer outnumber those who are afflicted with this disease. Moreover, this is also true of those within the carcinogenic dose range, i.e., the pack to 2-pack-a-day smoker for 10 or 20 years. While we are unaware of the specific factors that are determinant in establishing susceptibility or resistance to the carcinogenic effect of smoke, there is evidence for the modying effect of certain host factors. There is therefore a need to identify those biological factors that characterize susceptibility and resistance to the toxic and carcinogenc effects of cigarette smoke as reflected by epidemiological studies. The resulting data could provide a base for attempts at host modification to protect target tissues from the harmful constituents of cigarette smoke.

Expanded research through direct operations, including contracts

Activities of the NCI and the DEHS in the field of smoking and health will continue to be pursued in large measure through support of investigations by contract and through cooperative activities with the U.S. Department of Agriculture. With additional funds and positions, the NCI and DEHS would move to build up an inhouse staff that is active in the smoking and health field and that would exercise responsibility for developing and managing an expanded program of contract-supported research in the following areas:

(1) Characterization of chemical agents in processed tobacco and the products of tobacco combustion that are (a) carcinogenic, (b) cocarcinogenic, (c) precursors of carcinogens or which, because of certain biological effects, facilitate the action of carcinogenic agents.

(2) Comparative analytical and chemical studies of cigarette, pipe, and cigar tobacco in their native states, as well as bioassay studies aimed at quantitating the carcinogenic effect of various fractions of tobacco.

(3) Analytical studies for the presence of secondary growth inhibitor, insecticide, herbicide, and fungicide residues, utilizing recently developed microquantitative techniques to be followed by bioassay studies on the effects of these residues.

(4) Bioassay studies in animals exposed under conditions aimed at duplicating as nearly as possible the circumstances of human exposure. Total body exposure experiments in which exposure to cigarette smoke would be studied in combination with other environmental factors.

(5) Investigation of physical characteristics of the smoke with respect to particle size, surface activity, solubility, and aggregation.

(6) Studies of the irritant effect of cigarette smoke on respiratory epithelium, as determined by qualitative and quantitative alterations in the chemical and physical properties of mucus and by inhibitory effect on ciliary activity.

(7) Further research on the use of parasympatheticomimetic agents to prevent retention and accumulation of tobacco condensate on the respiratory epithelium in experimental animals. Efforts to apply this animal model to man merit detailed study.

(8) Assessment, in association with research at USDA, of the biological effects of modifying the tobacco composition and physical conditions of combustion.

(9) Utilization of a clinical research facility to delineate the metabolic characteristics for smokers versus non-smokers, for healthy smokers versus smokers with disease states attributed to high consumption of cigarettes, and for smokers according to sex and age at start of smoking.

The additional funds and positions needed to implement the foregoing research program over the next five years may be estimated as follows:

Fiscal year	Positions	Funds
1968	2	$825,000
1969	18	1,900,000
1970	36	3,500,000
1971	38	6,025,000
1972	40	10,550,000

Cooperative research.—Recent increases in the study of the agrictultural and agronomical aspects of tobacco growth offer the opportunity to take data resulting from the laboratory and from clinical observations and to use them as a basis for recommendations to scientists in the field of agronomy. Through annual fund transfers from the Public Health Service, the USDA could be asked (1) to prepare tobacco under controlled conditions with known pesticide, herbicide, and antisuckering treatments; (2) to study effects of tobacco grown under conditions in which soil sterilants have been used; and, (3) to alter by genetic manipulation the ratios in tobacco leaf of such components as proteins, mucopolysaccharides, alkaloids, and lipids, as well as to reduce or eliminate carcinogenic precursors through studies of the genetic factors in the tobacco plant which control leaf composition.

An estimate of the funds that would be required for this purpose follows:

	Funds
Fiscal year 1968	$250,000
Fiscal year 1969	250,000
Fiscal year 1970	1,500,000
Fiscal year 1971	1,500,000
Fiscal year 1972	500,000

Summary.—The foregoing embodies a broad approach to the problem of smoking and health with particular emphasis on a safer cigarette and enhancement of host defenses. This will require the application of a wide spectrum of techniques involving many disciplines. The experimental and the human population laboratory are indispensable to its design and implementation. It should be possible to measure accomplishment in three distinct temporal phases.

(1) During the first two to three years, chemical, analytical, and technological studies should progress sufficiently to permit evaluation not only of progress in terms of data collection, but also in terms of relevance to the ultimate goal—a safer cigarette.

(2) The second phase would encompass a two- to four-year period. At this time the application of basic, analytical data to biological systems should be forthcoming. During this interval, laboratory models for the testing and bio-

assay of toxicity and carcinogenic potency, the biological effect of individual components of cigarette smoke, as well as the total condensate, should be achieved. Studies in this area will extend from a detailed fundamental study at the molecular level to bioassay at the experimental total-body-exposure level.

(3) The third phase of the study will require from five to ten years to complete and assess result. This study would be predominantly an epidemiologic and biometric one in which the effect of modification of the cigarette and, as a corollary, alteration in the cigarette smoke condensate can be measured in terms of reduction in risk to degenerative and neoplastic diseases of the lung and other anatomic sites associated with cigarette smoking.

In order to carry out such a program, close and intensive cooperation between the DEHS, the NCI, and a large number of universities, research institutes, laboratories, and private industries will be necessary. The central role of the DEHS is apparent in view of its accessibility to vital records, large populations, as well as its capability to serve as a hub of a large number of cooperating research activities. While the three phases have been discussed individually, it is obvious there will be continuous and significant overlap so that, in essence, a continuum of research will evolve.

As indicated earlier, there will be joint planning and implementation by the NCI and the DEHS. Careful attention will be given to phasing and to funding between the two organizations. For example, facility projections in Bethesda and in the Research Triangle take into account joint programming in the carcinogenesis area. The same would hold true for research in the field of smoking and health. The precise funding levels for NCI and DEHS will depend upon the rates at which facilities and staffing can accommodate program expansion in the smoking and health area. Determinations of the amounts to be requested for this purpose in each of the appropriations will be made at points closer in time to the need for such decisions.

Assuming the availability of physical plant, the overall funding of these activities under direct operations including contracts would rise from $825,000 to $3.5 million in the first three years. The fourth and fifth years would probably require an appreciable increase to about $6 million and $10.6 million, respectively, because at that time the application of laboratory data to the human population laboratory would have begun. Analytical procedures devised and standardized in the experimental laboratory will hopefully be ready for application to man. Further, it is at that time that population bases will be established for the ultimate determination of the success, as measured by reduction in hazard incidental to the development of the safer cigarette or the application of host modifying techniques. Annual funding for the fifth to tenth years would be in the range of $2-3 million. While laboratory procedures would probably occupy a significantly smaller percentage of the requested funds, the great cost associated with the study of human populations and their followup would more than utilize the estimated amounts.

Expanded research supported by grants

The NCI administers during the present fiscal year 12 grant-supported projects that include some research related to one or another aspects of smoking and health (Appendix E). The total expenditure for these grants is less than $500,000. With additional funds, the NCI and DEHS could stimulate an enlarged and broadened extramural effort in areas such as the following:

(1) Determination of the role of induced enzymes in alteration of carcinogens present in cigarette smoke could be accomplished through study of metabolism and metabolic end products in human populations. Techniques available for enzyme study in experimental animals could be studied for applicability to research in the respiratory and the hepatobiliary systems.

(2) Antecedent or concomitant disease in the target organ or organ systems. Through the use of techniques employing graded trauma or target sites, the role of injury in the ultimate development of a neoplasm could be evaluated and its applicability to man determined.

(3) Efforts could be directed toward increased refinement in the techniques of separation and identification of tobacco smoke constituents, i.e., gas chromotography, mass spectrometry, neutron activation analysis.

(4) Investigation of local and systemic factors concerned with entry and action of carcinogenic agents. Studies would be directed toward the intact host, particularly in relation to anatomic and metabolic fate of carcinogens with special emphasis on sites of elective localization, detoxification, and excretion.

(5) Synthesis of analogs of carcinogenic compounds in tobacco for use in studying competition for receptor sites.

The estimated level of additional funds that would be needed for extramural activities in each of the five succeeding years is as follows:

	Funds
Fiscal year 1968	$500,000
Fiscal year 1969	1,000,000
Fiscal year 1970	1,250,000
Fiscal year 1971	1,500,000
Fiscal year 1972	1,500,000

III. SUMMARY OF ESTIMATES

	Fiscal year				
	1968	1969	1970	1971	1972
NHI:					
Grants	$750,000	$1,250,000	$1,500,000	$2,000,000	$2,000,000
Direct operations	140,000	180,000	190,000	200,000	200,000
Subtotal	890,000	1,430,000	1,690,000	2,200,000	2,200,000
Positions	8	12	12	12	12
NCI-DEHS:					
Grants	$500,000	$1,000,000	$1,250,000	$1,500,000	$1,500,000
Direct operations:					
Inhouse and contracts	825,000	1,900,000	3,500,000	6,025,000	10,550,000
Fund transfer to other agencies	250,000	250,000	1,500,000	1,500,000	500,000
Subtotal	1,575,000	3,150,000	6,250,000	9,025,000	12,550,000
Positions	2	18	36	38	40
Total:					
Funds	$2,465,000	$4,580,000	$7,940,000	$11,225,000	$14,750,000
Positions	10	30	48	50	52

APPENDIX A

FURTHER RESEARCH AREAS—SMOKING AND CARDIOVASCULAR DISEASE

A group of invited consultants and members of the National Heart Institute met on January 24, 1964 to consider the types of research which would further knowledge of the relation of smoking to cardiovascular effects and cardiovascular diseases. Names of the participants are attached.

The following research questions were identified to be important ones deserving of further investigation:

Physiology and pathologic physiology

1. *Coronary circulation.*—Although the available evidence does not suggest that nicotine or smoking causes coronary vasoconstriction, the possibility that acute and transient vasoconstriction may occur has not been investigated thoroughly. Currently available techniques (cine angiographic and radio-isotopic) could be used to investigate this question. The possibility that the coronary arteries of patients with coronary heart disease have altered reactivity from normal vessels should be explored.

2. *Effects of smoking on regional, peripheral and micro-circulation.*—Advanced techniques could be employed to provide further evidence of the effects of smoking on regional circulation including viscera, muscles, the retinal vessels, and the smaller vessels of the brain. Autoradiographic studies of the local cerebral circulation in animals seem especially promising.

3. *Chronic circulatory effects of smoking.*—Long-term monitoring using telemetry or other portable devices could be used to compare smokers and nonsmokers with regard to such measurements as twenty-four hour heart rate, blood pressure and the occurrence of rhythm disturbances. Studies of these characteristics on a comparative basis in individuals during periods of smoking and periods of abstinence from smoking would be desirable.

Hematology (including coagulation)

1. *Clotting proclivity.*—Despite the difficult methodologic problems in the field of "hypercoagulability", investigation into possible qualitative and quantitative differences of individuals during metabolically controlled periods of smoking and non-smoking or between smokers and non-smokers with regard to coagulation measurements should be given high priority. Determination of alterations in platelets and platelet dynamics, clotting factors and fibrinolytic activity would be of interest. The study of the acute effects of smoking on coagulation mechanisms under highly controlled circumstances would be highly desirable.

Metabolism

1. *Intermediary metabolism.*—The excess mortality in cigarette smokers from diseases in organs which do not come into direct contact with tobacco smoke might be due to a hypothetical deleterious effect of smoking on all body tissues. This hypothesis might be investigated by studying the effect of smoking on enzyme systems, protein synthesis and the metabolism of subcellular particles. If physiologic quantities of nicotine or other tobacco products could be shown to be general "proptoplasmic toxins", the nonspecific increase in mortality from many causes might be partially explained.

2. *Oxygen metabolism.*—The suggestion that oxygen debt during exercise differs in smokers and non-smokers should be pursued. If this is confirmed, the relative role of carbon monoxide and intracellular metabolism should be determined.

3. *Lipid metabolism.*—The long-term significance of the acute rises in unesterified (free) fatty acids which occur during smoking should be determined if possible. The influence of lipid changes on coagulation mechanisms may be important.

Pathology

1. *Clinicopathologic correlation.*—Uniformly graded autopsy material should be correlated with smoking histories so that quantitative and qualitative differences between smokers and non-smokers may be detected, especially in younger age groups. Such correlations are needed with the respect to coronary atherosclerosis, peripheral atherosclerosis and atherosclerotic aortic aneurysm.

2. *Experimental pathology.*—Studies which might reveal an influence of smoking upon atherogenesis or upon the endothelial surface, or upon vasa vasorum would be desirable. Electron microscopy is one of the possibilities for studying vessel wall effects. Primates might be particularly useful for this and other research.

Epidemiology

1. *Prospective clinical trial.*—Evidence that men who have stopped smoking cigarettes have a lower coronary death rate than those who continued smoking deserves confirmation. The random allocation of a population of current smokers into smoking and non-smoking categories is necessary in order to perform the definitive epidemiological study of smoking and coronary heart disease. No other form of study eliminates the "constitutional hypothesis" and avoids the self-selection for smoking and not smoking. This would require a population of perhaps 100,000 current cigarette smokers who would volunteer for allocation randomly to a "continue smoking" or a "stop smoking" regimen.

The residual population of smokers among the physician membership of the AMA is suggested as one group for exploration. The use of volunteer physicians in such a study would overcome the problem of "informed consent" and would have other unique advantages from a methodologic standpoint. The development of a prospective study in which subjects would be randomly assigned to the "continue to smoke" or "quit smoking" category should be given high priority. Populations in which such a study might be successfully carried out should be identified and the methodology explored to accomplish such a study.

2. *Population studies.*—Further descriptive epidemiological studies should be performed to clarify certain issues. The correlation between smoking and the incidence of cerebral vascular and peripheral vascular diseases should be investigated further. The morbidity and mortality experience of subjects who have ceased smoking should be defined more clearly, perhaps by pooling of data from current studies. It would be profitable to determine whether the correlation between smoking and coronary heart disease is present in certain special populations, such as patients with diabetes mellitus, or hyperlipidemias. This correlation should also be sought in unique populations such as Japan (where smoking is common and coronary heart disease is uncommon) and Israel (where

a stable and medically sophisticated population would permit an accurate long-term study of the effects of smoking on vascular disease).

Little has yet been done to study the cardiovascular effects of smoking in women.

Patients who have undergone coronary arteriography might be studied in order to compare the severity of radiographically demonstrable atherosclerotic lesions in heavy, light and non-smokers of comparable age groups.

The difference between cigarette smokers and pipe-cigar smokers in mortality from coronary heart disease should be confirmed, particularly in conjunction with studies quantitating nicotine absorption by these two routes.

Within existing epidemiological studies or in new studies an attempt should be made to select representative subsegments of the population who are *low in competing risk factors* such as serum lipid levels and blood pressure to demonstrate the isolated contribution of smoking to coronary disease in the absence of other known risk factors.

Pharmacology, toxicology, applied research

1. *Absorption and metabolism of nicotine.*—Isotopically labelled nicotine has considerable promise for use in determining the localization of inhaled nicotine. The possibility that nicotine absorbed from the mouth and gastro-intestinal tract may influence the organism in a different manner from nicotine absorbed from the respiratory tract should be explored; this might illuminate the difference in cardiovascular mortality between cigarette smokers and pipe-cigar smokers.

2. *Carbon monoxide.*—The clinical significance of the levels of carbon monoxide found in smokers needs to be defined. A differential in carbon monoxide absorption between cigarette and pipe-cigar smokers should be sought.

3. *Absorption and metabolism of other components of tobacco smoke.*—Analysis of the urine of smokers and non-smokers might permit the identification of compounds other than nicotine which are absorbed from cigarette smoke. Such isolation techniques might disclose qualitative or quantitative differences in the urinary metabolites of tobacco smoke between cigarette smokers and pipe-cigar smokers. Investigation of the urinary metabolites of tobacco smoke might also permit quantitative estimation of a given individual's exposure to tobacco smoke to validate smoking histories.

FURTHER RESEARCH AREAS—SMOKING AND NON-NEOPLASTIC PULMONARY DISEASE

Physiology and pathologic physiology

1. *Pulmonary physiology.*—Significant progress has been made in determining the effects of smoking upon pulmonary ventilation and gaseous exchange. Studies of the acute and chronic effects of smoking on the pulmonary vasculature would be especially desirable.

Pathology

1. *Clinicopathologic correlation.*—Preliminary studies describing the histopathologic characteristics of the lung in smokers and non-smokers should be confirmed. Changes in the pulmonary parenchyma and vasculature are of interest. The study of abnormalities of the pulmonary "defense mechanisms" (cilia, phagocytes and mucus production) should continue. Studies of the pulmonary alveolar surfactant also should be encouraged.

2. *Experimental pathology.*—Investigations which may illuminate the pathogenesis of the pulmonary abnormalities found in smokers would be desirable. The acute and chronic effects of tobacco smoke and its components upon the pulmonary tissues should be investigated in detail.

Epidemiology

1. *Population studies.*—Long-term morbidity and mortality (including pathologic correlation) studies of chronic broncho-pulmonary disease are needed. These should employ refined case finding techniques in order to evaluate the incidence and natural history of these diseases in smokers and non-smokers. Accurate information regarding pipe and cigar smokers also is needed. Further studies are needed of the combined effects of tobacco smoke and other inhalants.

Pharmacology, toxicology, applied research

1. *Effects of components of tobacco smoke on respiratory tissues.*—Developmental studies should be encouraged which may identify the components of

tobacco smoke which are responsible for the pulmonary and cardiovascular effects of smoking. Use of tobacco grown in C14 atmosphere may help in identifying absorption pathways in primate or other animal studies.

Experiments should be performed which may demonstrate the chronic effects of exposure of pulmonary tissues to the particulate and gaseous components of tobacco smoke. This will be especially important if techniques for selective removal of chemical components of smoke become effective. Measures to eliminate harmful components of tobacco smoke should continue.

OTHER AREAS

Reproductive system

Epidemiological methods should be employed to investigate whether the lower birth weight of fetuses born to women who smoke is due to decreased gestation time or whether it is due to retarded physical growth of the fetus. The potential effects of smoking upon the placenta also deserve investigation.

Psychological considerations

Investigations of the psychological and social factors which initiate and maintain the smoking habit are worthwhile. It would be desirable to determine the possible constitutional differences between smokers and non-smokers, and the nature of such differences. The possible value of psychometric techniques for detecting and localizing cerebral disease in the absence of clinical findings suggests further areas for investigation.

SUMMARY

The participants in this meeting agreed with the presentation and interpretation of information relating to cardiovascular disease as reported by the Advisory Committee to the Surgeon General on Smoking and Health.

It was generally agreed that smoking does produce cardiovascular effects and that there is a relationship of smoking to cardiovascular disease. An important need in research is to learn the reason for the relationship. The listing of suggestions for research is not intended to imply that these are the only worthy areas of investigation, but in the current state of knowledge, these are some specific research areas that appear to be most promising.

PARTICIPANTS

Invited consultants

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James M. Stengle, M.D., Special Assistant to Associate Director for Extramural Programs.

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*Were unable to attend this meeting but contributed to the research suggestions and in the review of this report.

APPENDIX B

ANALYSIS AND REPORTS SECTION, OPERATIONS BRANCH, EXTRAMURAL PROGRAMS, NATIONAL HEART INSTITUTE, JANUARY 13, 1967

Active research grants concerned with smoking

Grant number	Investigator and institution	Title
HE-405	Lewis Dexter, M.D., Harvard Medical School, Boston, Mass.	Circulatory dynamics in diseases of circulation.
HE-625	Isaac Starr, M.D., Pennsylvania University School of Medicine, Philadelphia, Pa.	Estimation of cardiac strength and coordination.
HE-1088	Sigmund L. Wilens, M.D., New York University Medical Center, New York, N.Y.	Factors influencing experimental atherosclerosis.
HE-1891	Caroline Thomas, M.D., Johns Hopkins University School of Medicine, Baltimore, Md.	Precursors of hypertension and coronary disease.
HE-2568	David I. Abramson, M.D., Illinois University College of Medicine, Chicago, Ill.	Vacsular responses in skin and muscle to various states.
HE-2644	John W. Eckstein, M.D., State University of Iowa College of Medicine, Iowa City, Iowa.	Venometer responses to circulatory alterations in man.
HE-2658	Roger W. Robinson, M.D., Memorial Hospital Worcester, Mass.	Coronary atherosclerosis in women.
HE-3088	Henry L. Taylor, Ph. D., Minnesota University School Public Health, Minneapolis, Minn.	Physical activity and coronary heart.
HE-316	John F. Brock, M.D., Cape Town University Medical School Observatory, South Africa.	Dietary fats, serum lipids and coronary heart disease.
HE-3429	Meyer Friedman, M.D., Mount Zion Hospital and Medical Center, San Francisco, Calif.	Central nervous system and coronary artery disease.
HE-4040	Edwin Boyle, Jr., M.D., Medical College of South Carolina, Charleston, S.C.	Cardiovascular disease in ethnic groups in South Carolina.
HE-4080	John B. Hickam, M.D., Indiana University School of Medicine, Indianapolis, Ind.	Cardiopulmonary function.
HE-4087	John M. Chapman, M.D., California University, Los Angeles, School Public Health, Los Angeles, Calif.	Los Angeles heart study.
HE-4088	Augustus E. Anderson, Jr., M.D., Baptist Memorial Hospital, Jacksonville, Fla.	Fibrosis in emphysematous and aging lungs.
HE-4672	Flaminio Fidamza, M.D., Naples University Medical School, Naples, Italy.	International Research: Epidemiology of heart disease.
HE-4697	Ancel Keys, Ph. D., Minnesota University, Minneapolis, Minn.	International heart disease epidemiology.
HE-4774	Ratko Buzina, M.D., Institute of Public Health, Zagreb, Yugoslavia.	Epidemiology of heart disease in Yugoslavia.
HE-4775	Donald D. Reid, M.D., London School Hygiene and Tropical Medicine, London, England.	Health survey of British migrants in United States.
HE-4997	Ancel Keys, Ph. D., Minnesota University, Minneapolis, Minn.	Circulatory and metabolic functions in aging man.
HE-5025	Henry Eisenberg, M.D., Connecticut State Department of Health, Hartford, Conn.	A family study of coronary heart disease.
HE-5157	Ralph R. Sommenschien, Ph. D., California University, Los Angeles, School of Medicine, Los Angeles, Calif.	Control of peripheral circulation.
HE-5491	Ernest Simonson, M.D., Minnesota University School Public Health, Minneapolis, Minn.	Electrocardiographic and constitutional correlation.
HE-5794	Sam Shapiro, Health Institute Plan of Greater New York, New York, N.Y.	Incidence and prognosis of coronary heart disease.
HE-5933	Edward A. Gaensler, M.D., Boston University School of Medicine, Boston, Mass.	Applied pulmonary physiology.
HE-5989	Alfred Kershbaum, M.D., Philadelphia General Hospital, Philadelphia, Pa.	Smoking and nicotine effects on blood lipids.
HE-6090	Christ Aravanis, M.D., Hippocrates University Hospital, Athens, Greece.	Cardiovascular follow-up in Greece.
HE-6101	Walter S. Tyler, Ph. D. California University, Davis, School of Veterinary Medicine Davis, Calif.	Chronic pulmonary emphysema.
HEP-6285	Julius H. Comroe, Jr., M.D., California University, San Francisco, School of Medicine San Francisco, Calif.	Cardiovascular-respiratory physiology and biochemistry.
HEP-6286	Stewart G. Wolf, M.D. Oklahoma University School of Medicine Oklahoma City, Okla.	Neurocardiology research program.
HEP-6304	Walter H. Pritchard, M.D., Western Reserve University School of Medicine Cleveland, Ohio.	Pathogenesis of hypertension and coronary diseases.
HEP-6308	John B. Hickam, M.D., Indiana University School of Medicine, Indianapolis, Ind.	Mechanisms and therapy of circulatory disease.

Active research grants concerned with smoking—Continued

Grant number	Investigator and institution	Title
HEP-6313	William L. Winters, Jr., M.D., Temple University School of Medicine Philadelphia, Pa.	Cardiovascular clinical research.
HEP-6315	Bernard C. Wexler, Ph. D., May Institute for Medical Research Cincinnati, Ohio.	Cardiovascular research program.
HEP-6376	Timothy J. Regan, M.D., Pollak Hospital for Chest Diseases Jersey City, N.J.	Myocardial metabolism and function.
HE-7522	Walter I. Wardwell, Ph. D., Connecticut University, Storrs, Conn.	Sociopsychological factors in myocardial infarction.
HE-7796	Lawrence E. Henkle, Jr., M.D., Cornell University Medical College, New York, N.Y.	Social mobility, personality and coronary disease.
HE-7836	Ben Freedman, M.D., Louisiana State Board Health, New Orleans, La.	Dietary-atherosclerosis study on deceased persons.
HE-7868	Kaye H. Kilburn, VA Hospital, Durham, N.C.	Structural basis of airway and vascular dynamics.
HE-8240	Stuart Bondurant, M.D., Indiana University School of Medicine, Indianapolis, Ind.	Composition and function of pulmonary surfactant.
HE-8356	Philip E. Sartwell, M.D., Johns Hopkins University School of Hygiene and Public Health, Baltimore, Md.	Follow-up studies of respiratory surveys.
HE-8481	Frederick H. Epstein, M.D., Michigan University School of Public Health, Ann Arbor, Mich.	Criteria and methods for cardiovascular epidemiology.
HE-8491	Seymour M. Farber, M.D., San Francisco General Hospital, San Francisco, Calif.	A cytologic study of air pollution effects.
HE-8752	Elinor M. Glauser, M.D., Temple University School of Medicine, Philadelphia, Pa.	Experimentally induced chronic pulmonary disease.
HEP-8932	Jerome E. Cohn, M.D., Kentucky University College of Medicine, Lexington, Ky.	Chronic lung disease: structure-function analysis.
HEP-8974	Jack P. Strong, M.D., Louisiana State University School of Medicine, New Orleans, La.	Natural and experimental atherosclerosis.
HE-9064	Frederick R. Beerel, M.D., Buffalo University Medical School, Buffalo, N.Y.	Corticosteroids in emphysema.
HE-9085	Alfred Kershbaum, M.D., Philadelphia General Hospital, Philadelphia, Pa.	Cigar and pipe smoking: metabolic-pharmacologic study.
HE-9184	Wilhelm Raab, M.D., Vermont University College of Medicine, Burlington, Vt.	Predisposition to degenerative heart disease.
HES-9426	Jeremiah Stamler, M.D., Chicago Health Department, Chicago, Ill.	Epidemiology of hypertension and atherosclerosis.
HE-9460	William S. Lovekin, M.D., New Mexico University, Albuquerque, N. Mex.	Congestive heart failure in the southwestern Indian.
HES-9686	Ivan D. Frantz, M.D., Minnesota University Medical School, Minneapolis, Minn.	Dietary change on human cardiovascular disease.
HEP-9814	Thomas Francis, Jr., M.D., Michigan University School of Public Health, Ann Arbor, Mich.	Center for research in diseases of the heart.
HE-10057	David M. Spain, M.D., Brookdale Hospital Center, Brooklyn, N.Y.	Bronchial alterations in an autopsied population.
HE-10168	Claude G. Biave, M.D., Stritch School of Medicine, Chicago, Ill.	Ultrastructure of metaplastic respiratory epithelium.
HE-10326	David C. Jenkins, Ph. D., North Carolina University School Public Health, Chapel Hill, N.C.	Behavioral factors in coronary heart disease.
HES-10711	William M. Smith, M.D., USPHS Hospital, San Francisco, Calif.	Cooperative study of treatment of hypertension.
HE-10753	Philip C. Pratt, M.D., Duke University School of Medicine, Durham, N.C.	Function-structure correlations in pulmonary disease.
HE-10790	Alfred Kershbaum, M.D., Philadelphia General Hospital, Philadelphia, Pa.	Effect of nicotine on experimental atherosclerosis.
HE-10966	Sol Levin, Ph. D., Johns Hopkins University School Hygiene and Public Health Baltimore, Md.	Life stress and coronary heart disease.

Appendix C

Technical considerations towards the production of a "safe cigarette"

A. Reduction of total smoke condensate
   1. Mechanical filtration (in most common use now)
   2. Tobacco selection
   3. Increase in porosity of cigarette paper
   4. Additives, which alter combustion temperature
   5. Variations in cigarette packing (as distinguished from packaging)
   6. Tobacco extraction (to remove lipophilic materials) (with ligroin)

B. Reduction of carcinogens in smoke
   1. Selective filtration
   2. Selective reaction
   3. Elimination of precursors (extraction)
   4. Tobacco curing modifications
   5. Change in combustion temperature
   6. Tobacco growing alterations (fertilizers, suckering agents, etc.) (fungicide)

C. Reduction of co-carcinogens in smoke
   1. Selective filtration
   2. Selective reaction
   3. Tobacco curing modifications
   4. Tobacco selection
   5. Tobacco extraction (ethanol)
   6. Additives

D. Reduction of irritants (which interfere with muco-ciliary function)
   1. Selective filtration
   2. Alteration of humectants
   3. Modification of combustion

E. Protection of muco-ciliary function by pharmacologic means
   1. Inhalation of parasympatheticomimetic agents as spray
   2. Inhalation of parasympatheticomimetic agents as part of cigarette
   3. Inhalation of mucolytic agent (acetylcysteine type of chemical)

Appendix D

Groups of chemicals in tobacco smoke, their role and action, and the current status towards their reduction

Chemical group	Role and action	Feasibility of reduction
Polycyclic hydrocarbons	Carcinogen	Poor.
Heterocyclic hydrocarbons	do	Good.
Alkylating agents:		
N-nitrosamines	do	Do.
Lactones	do	Poor.
Free radicals	Carcinogen(?)	Good.
Po^{210}	Carcinogen	Do.
Trace metals (Ni in particular)	do	Do.
Alkaloid oxidation products (cotinene)	do	Do.
Peroxides	Carcinogen(?)	Do.
Phenols, polyphenols	Carcinogen	Very good.
Do	Cocarcinogens	Do.
Aliphatic hydrocarbons	do	Good.
Aldehydes	Irritants	Do.
Acids	do	Do.
Oxides of nitrogen	do	Do.
Carbon monoxide	Poison	Poor.
Aromatic amines	(Bladder carcinogen)	Good.
Acetonitrile	Cytotoxic agent	Do.

Appendix E

National Cancer Institute

Active research grants concerned with smoking

Grant No.	Investigator and institution	Title
62-46C6373	MacMahon, Brian, M.D., Harvard School of Public Health, Boston, Mass.	Epidemiologic studies of cancer.
CA03087	Clemmesen, Johannes, D.M.S.C., Finsen Institute, Copenhagen, Denmark.	Danish and international cancer review
CA03094	Holland, Robert H., M.D., University of Texas, Southwestern Medical School, Dallas, Tex.	A study of arsenic as an environmental cause of lung cancer.
CA03842	Chapman, Warren H., M.D., University of Washington, Seattle, Wash.	Experimental bladder tumors.
CA07174	Weinhouse, Sidney, Ph. D., Temple University, Philadelphia, Pa.	Biochemical aspects of carcinogenesis.
CA07312	Tye, Russell, M.D., Kettering Laboratory, of Cincinnati, College of Medicine, Cincinnati, Ohio.	Analysis of factors in experimental lung cancer.
CA07490	Dachi, Stephen F., D.M.D., M.S.D., University of Kentucky, College of Dentistry, Lexington, Ky.	Oral manifestations of local and systemic irritants.
CA07754	Laskowski, Donald E., Ph. D., Cleveland Metropolitan General Hospital, Cleveland, Ohio.	Charge transfer complexes of carcinogens.
CA07966	Morton, Julia F., Ph. D., University of Miami, Coral Gables, Fla.	Search for possible plant causes of esophageal cancer.
CA08621	Troll. Walter, Ph. D., New York University, Medical Center, New York., N.Y.	Identification and metabolism of bladder carcinogens.
CA08783	Sunderman, F. William, M.D., University of Florida, Gainesville, Fla.	Pulmonary carcinogenesis with nickel and benzpyrene.
CA09684	Rotkin, I.D., Ph. D., Kaiser Foundation Research Institute, Oakland, Calif.	Genetic and environmental studies in cervical cancer.

Mr. Hull. Where is the reference in the budget and in your justification materials on this for the clearinghouse? Put that in the record, if you will.

Dr. Stewart. Page 120, volume V.

Mr. Hull. Why is it not clearly stated in the budget, or in the justification, that this program is going to be undertaken and that a specific amount of funds appropriated this year are to be allotted to it?

Dr. Stewart. I don't understand the question.

With regard to making cigarettes safe, this is part of the Cancer Institute's program, and the other program is part of the whole. We don't identify it as being particularly aimed at making cigarettes safe.

Mr. Hull. Has the committee ever been informed of this item in the budget? Were they provided with plans for the program?

Dr. Stewart. No; but we have been working on carcinogenesis for a good many years. Carcinogenesis is part of the attempt to find the agents that cause carcinoma and one of them is substances in cigarette smoking.

Mr. Hull. Will we get information on this?

Dr. Stewart. You will get detailed information on what is going on in the carcinogenesis area when the Cancer Institute comes here, and from the chief of the Division of Environmental Health Sciences.

Mr. Hull. The article says that the National Advisory Cancer Council has secretly endorsed this program. If they did, what is the reason for this secret endorsement?

Dr. Stewart. I don't know of any secret endorsement. The National Advisory Cancer Council has issued statements about the problems of cigarette smoking and lung cancer. They also have been advising on the programs of the Cancer Institute ever since they were formed. I don't know what would be secret about it.

Mr. HULL. Does the Surgeon General approve of this program?

Dr. STEWART. Yes, sir.

Mr. HULL. Is the program described in a more specific form in your submission to the Bureau of the Budget?

Dr. STEWART. Not in specific submission. This is a program covering a variety of areas within the Cancer Institute and within the Division of Environmental Health Sciences, which will be described in as much detail as you want when Dr. Endicott and Dr. Shannon and the others are here. They can submit materials to you, I am sure.

Mr. HULL. Do you have any other programs going we don't know anything about?

Dr. STEWART. I would imagine we have a lot of programs you don't know anything about.

Mr. HULL. Isn't the initiation of a research program to which the subcommittee will be ultimately asked to appropriate some $50 million of such importance that it ought to be reviewed in advance?

Dr. STEWART. I don't know what the $50 million has reference to, Mr. Hull.

Mr. HULL. It is making cigarettes safe.

Dr. STEWART. I think what we have confused here is the Business Week article, which referred to the publication of a program analysis paper, and the budget structure itself. There is no $50-million program in the budget identified with making a cigarette safer.

Mr. CARDWELL. In fact, it wouldn't be possible for us to establish a $50-million program without the Congress knowing about it.

DEPARTMENT OF AGRICULTURE RESEARCH ON TOBACCO

Mr. HULL. The program duplicates in large part other Government departments' research in cigarettes. Are you familiar with the Department of Agriculture program?

Dr. STEWART. I am familiar in a general sort of way and we have specific relationships with them at all times.

Mr. HULL. Isn't the purpose of that program to discover whether there is anything harmful in tobacco and cigarette smoke and, if so, to find means to remove it?

Dr. STEWART. As I understand it, they are trying to find ways of growing tobacco which would cut down the amount of carcinogenic materials, or tars, nicotine and other things in the leaf itself, the burning leaf.

Mr. HULL. I am not sure that tobacco has those components that you say it has.

Do you know that the Government is spending around $3 million a year on this Department of Agriculture program?

Dr. STEWART. How much?

Mr. HULL. $3 million.

Dr. STEWART. Yes, I knew that.

Mr. HULL. Isn't Dr. Paul Kotin, the head of the Division of Environmental Health Sciences, an adviser to that program?

Dr. STEWART. Yes, he is.

Mr. HULL. Isn't it Dr. Kotin who proposed that the Public Health Service set up a new program to develop a safer cigarette?

Dr. STEWART. Dr. Kotin has set this up within the Division of Environmental Health Sciences as part of the effort to find ways to reduce the amount of carcinogenic materials in cigarette smoke, yes. He is part of a group that has been developing a program proposal for this.

SMOKING AND HEALTH RESEARCH BY THE DEPARTMENT OF AGRICULTURE AND THE NATIONAL CANCER INSTITUTE

Mr. HULL. I am sure you're familiar with the project that was started in 1965 by the Department of Agriculture at the University of Kentucky relating to smoking and health?

Dr. STEWART. I am somewhat familiar with it, yes.

Mr. HULL. Do you know that the Government has spent around $4 million on that progam up to now and that it is continuing to spend around a million and a half dollars a year on this program alone?

Dr. STEWART. Yes, I know that.

Mr. HULL. The National Cancer Institute reported to this subcommittee last year that it is continuing to search for substances in tobacco that may be responsible for human lung cancer.

Dr. STEWART. That is correct.

Mr. HULL. How much money has been spent on that work to date and how much is allocated for it in the present budget?

Dr. STEWART. I would have to get those figures for you because they are part of the total. We can get an estimate of how much is being spent for it.

(The information follows:)

NATIONAL CANCER INSTITUTE SUPPORT OF RESEARCH ON SMOKING AND HEALTH

For the period of 1964–1967 the National Cancer Institute estimates they will have obligated a total of $2,847,945, and in 1968 are requesting a total of $770,000 for support of activities related directly to smoking and lung cancer.

OTHER SMOKING AND HEALTH RESEARCH AT THE NIH

Mr. HULL. Do you know if any of the other institutes of the National Institutes of Health are doing work to determine if there is something in cigarette smoke which may be responsible for the diseases which they are investigating?

Dr. STEWART. Most of the work is concentrated in the National Cancer Institute, or the Division of Environmental Health Sciences. There may be a little work in the epidemiological field in the Heart Institute.

Mr. HULL. Would you furnish us with that information?

Dr. STEWART. Yes, sir.

(The information follows:)

NATIONAL HEART INSTITUTE SUPPORT OF STUDIES RELATED TO SMOKING

The National Heart Institute is presently supporting 61 grant projects that include some research on the relationship of smoking to heart disease. Examples of these studies are as follows:

1. Dr. Alfred Kershbaum of the Philadelphia General Hospital, is the principal investigator on a study that involves administering nicotine daily to groups of dogs and monkeys receiving either a normal diet or a high fat

diet in order to determine the relationship between nicotine and atherosclerosis.

2. Dr. John W. Eckstein at the State University of Iowa College of Medicine is conducting a study on the response of the peripheral veins in man to intravenous nicotine as part of an overall study on venous circulation. Venous tone increased regularly after nicotine injections.

3. Dr. Julius H. Comroe, University of California School of Medicine, as part of a large study on the sympathetic nervous system in fatty acid metabolism, is conducting observations of smoking effects on fatty acid mobilization from adipose tissue.

4. Dr. John M. Chapman, at the University of California School of Public Health is studying smoking as one factor in an epidemiological survey of coronary and cerebrovascular diseases among Los Angeles civil servants. Standard interview forms on smoking habits are distributed at intervals to the nearly 2,000 subjects to ascertain changes in smoking behavior and to relate these changes to precursors of coronary disease and cerebrovascular disease.

5. Dr. Ernst Simonson of the Minnesota University School of Public Health is conducting an evaluation of smoking as one variable of the study for its effect on the electrocardiograms of normal subjects and of cardiac patients in order to improve the diagnostic accuracy of the electrocardiogram.

The Heart Institute is also conducting epidemiological investigations of smoking and its relationship to heart disease and a limited amount of research on emphysema within populations which have high and low rates of these diseases. An attempt is being made to determine the relative importance of smoking in relation to a number of other factors which may influence the rate of development of these diseases. The types of populations which are available for such investigations are:

1. Framingham-prospective study of 5,128 adults age 30–62.

2. U.S. Government Life Insurance Policyholders-prospective study of 300,000 males started by Dr. Harold Dorn.

3. P.L. 480 Project Israel involving 10,000 males age 40 and over.

4. US-UK-Norway study of cardiorespiratory disease among migrants to the USA and siblings remaining in the UK or Norway.

5. Epidemiological study of 10,000 men age 45–64 in Puerto Rico.

6. Cooperative Study of Japanese and Japanese-Americans between Hiroshima, Honolulu and San Francisco.

Mr. HULL. If such work is going on, how much is being spent in each of the National Institutes of Health in attempting to discover substances in tobacco smoke which may be responsible for human disease?

Furnish that for the record.

(The information follows:)

NATIONAL INSTITUTES OF HEALTH SUPPORT OF RESEARCH ON SMOKING AND HEALTH

In fiscal year 1967 it is estimated that the National Institutes of Health are providing $1,175,000 for research devoted to specific studies of the relationship of tobacco smoke to human diseases. This support is being provided through the National Cancer Institute ($770,000), the National Heart Institute ($400,000), and the Division of Environmental Health Sciences ($5,000).

RESEARCH IN TOBACCO SMOKE AT ROSWELL PARK MEMORIAL HOSPITAL

Mr. HULL. The Health Department of New York State is also sponsoring research in tobacco smoke at the Roswell Park Memorial Hospital. Do you know about that research?

Dr. STEWART. Yes, sir, I do.

Mr. HULL. The Department of Agriculture in supporting research at the Roswell Park Memorial Cancer Hospital into certain substances in cigarette smoke. Is the Public Health Service also supporting similar work at this Institute?

Dr. STEWART. We do have support at Roswell Park but I would have to check on what specifically is being supported.

Mr. HULL. Also find out what amount is being spent on those research grants.

Dr. STEWART. For any period of time?

Mr. HULL. Yes.

Dr. STEWART. I mean, last year for example?

Mr. HULL. Yes.

(The information follows:)

SUPPORT AT ROSWELL PARK

The National Institutes of Health is providing substantial grant support to Roswell Park Memorial Cancer Hospital, but none for research directly related to tobacco smoke.

PHS EXPENDITURE ON CIGARETTE SMOKE RESEARCH PROJECTS

Mr. HULL. Can the Public Health Service provide this subcommittee with a list of projects completed and presently underway relating to the investigation of cigarette smoke, or its constituents, and how much has been spent in each year since 1964, on each such project?

Dr. STEWART. 1964 you said?

Mr. HULL. Yes.

Dr. STEWART. Yes.

(The information follows:)

LIST OF PROJECTS RELATING TO INVESTIGATION OF TOBACCO SMOKE AND BYPRODUCTS

Research in chemical carcinogenesis is important to many health problems as well as to the problem of tobacco. In addition, much research more specifically related to tobacco is multiple in purpose. The attached list of research projects represents those which are all or in part more directly related to the tobacco problem. Where only part of the project is concerned with tobacco rough estimates have been made as to the share which could be assigned to the tobacco problem. These projects have been marked with an asterisk.

Projects relating to investigation of tobacco smoke and byproducts

CONTRACTS

Institution and title	Fiscal year support			
	1964	1965	1966	1967
Food and Drug Research Laboratory, Inc., studies on mucous flow in the intact animal exposed to tobacco smoke	$103,575	$107,191	0	$153,000
New York University Medical Center, conduct a study of tumor-promoting principles of tobacco and tobacco smoke	107,535	105,050	$53,800	102,000
Southwest Research Institute, to study the physical and chemical properties of free radicals and alkylating agents in tobacco smoke	0	88,238	44,115	88,241
State of California, Department of Public Health, shifts in lung-gastric cancer among Japanese migrants [1]	21,000	0	13,000	0
Veterans Administration, incidence of prostatic and bladder cancer in a VA hospital, Minneapolis, Minn.[1]	5,000	6,000	6,000	6,000
University of California, in vitro and in vivo studies on response of respiratory epithelium to carcinogens [1]	54,000	55,000	54,000	20,000
University of Cincinnati, studies on carcinogenicity of aliphatic hydrocarbons	15,000	15,500	16,000	15,000
Total, contracts	306,110	376,979	186,915	384,241

Projects relating to investigation of tobacco smoke and byproducts—Continued

GRANTS

Institution and title	Fiscal year support			
	1964	1965	1966	1967
University of Texas, Southwestern Medical School, arsenic carcinogenesis and lung cancer	$6,355	$6,355	$7,290	$8,779
University of Washington, experimental bladder cancer	8,000	13,000	12,000	12,000
Loyola University, School of Medicine, effect of cigarette smoke on paramecium	8,100	0	0	6,900
University of Florida, pulmonary carcinogenesis with nickel and benzpyrene	0	0	0	23,673
New York Medical College, cigarette smoke condensate effect on bronchial mucosa	16,652	21,248	21,246	0
University of Minnesota, advisory committee on smoking and health	50,000	0	0	0
Danish Cancer Registry, Danish and international cancer review	9,500	12,800	0	12,800
Harvard School of Medicine, epidemiology studies in cancer	98,217	110,388	110,151	67,157
Columbia University School of Public Health & Administrative Medicine, epidemiology of histologic forms of lung cancer	44,088	44,542	60,000	0
Columbia University School of Public Health & Administrative Medicine, case control study of undifferentiated lung cancer	8,716	6,647	0	0
Philadelphia County Medical Society, a clinical study of primary lung cancer	1,993	0	0	0
University of Oregon, precancer in rat skin	2,500	4,000	5,500	5,000
Temple University, biochemical aspects of carcinogenesis	19,000	10,000	10,000	10,000
University of Cincinnati, analysis of factors in experimental lung cancer	20,850	20,850	16,970	30,826
New York University Medical Center, identification and metabolism of bladder carcinogens	0	0	0	58,507
Pasteur, mechanism of carcinogenesis	800	0	0	0
Hahnemann Medical College, cytologic study of role of viruses in carcinogenesis	3,300	1,700	0	0
New England Center Hospital, neoplastic proliferative disorders of the white cells	11,000	10,300	10,300	0
New York University Medical Center, metabolism and structure of chemical carcinogens	14,400	14,900	25,400	0
University of Adelaide, Australia, the process of tar formation	7,900	0	0	0
Fairleigh Dickinson University, test for cocarcinogenicity of asbestos	1,800	1,500	1,100	0
University of Southern California, histochemistry of lung tumors	10,500	0	0	0
Kyushu University Japan, carcinogenesis of the stomach and esophogus	2,400	2,400	2,400	0
Chester Beatty Research Institute, cancer chemotherapy and carcinogenesis	25,000	25,000	25,000	25,000
University of Wisconsin, Cancer Research Center	73,000	33,000	67,000	76,000
Sloan-Kettering Institute, research program of Sloan-Kettering Institute	0	0	50,000	50,000
Total, grants	444,071	338,630	424,357	386,642

DIVISION OF ENVIRONMENTAL HEALTH

Mr. HULL. The objective of the new Environmental Division has been said to be the development of an understanding of the complex interrelated phenomena underlying the human body's reaction to the increasing wide range of environmental stress imposed by modern living. Is that a correct description?

Dr. STEWART. I think so; yes.

Mr. HULL. What does it really mean?

Dr. STEWART. It means that man lives in his environment which is changing rather rapidly at the present time with an accelerated rate in technology, and that there has to be either adaptation, which in itself may cause difficulties, or there have to be manifestations which are maladaptations. This can be used as a definition of disease itself.

Mr. HULL. This newly created division started in 1966 with $8,924,000 and 52 positions. In 1967, $13,332,000 and 56 new positions. In the 1968, $20,615,000 with 176 positions. Is that correct?

Dr. STEWART. Is this the Division of Environmental Health Sciences that you have reference to, sir?

Mr. HULL. Yes.

Dr. STEWART. This was created as of last year in the National Institutes of Health, and the appropriations were in the Environmental Health Sciences appropriation before being transferred into this Division. The last increase is correct that you have there.

Mr. HULL. The 176 positions and $20 million?

Dr. STEWART. Yes. As I said earlier, this Division is looking at the whole problem of contaminants in the environment, the whole range of contaminants in the environment. The dose one is getting over a long period of time. These are all low-dose things. Many, many chemicals and other things are being studied to see what biological effect they have.

Mr. HULL. You propose research grants to organizations and institutions for the conduct of basic research in all environmental health scientific areas for 1968 in the amount of $10.4 million. Now, what do you mean by the term "basic research?"

Dr. STEWART. By the term "basic research," we mean research that is attempting to understand some underlying phenomenon; that it is not immediately aimed toward some action item in the field of health; that it is trying to understand an underlying phenomenon; the basic knowledge, that is.

Mr. HULL. I assume by your statement about scientific areas you mean all?

Dr. STEWART. Yes.

Mr. HULL. What are the various areas in which you plan to make these research grants?

Dr. STEWART. I think you can get that from the Bureau of Disease Prevention and Environmental Control when they come before you.

Mr. HULL. What eventual annual expenditures do you contemplate with respect to the research grants?

Dr. STEWART. We would expect the research grants in the environmental area to increase considerably.

BASIC RESEARCH AREAS INVOLVING TOBACCO

Mr. HULL. What does it mean when you say in volume II, part 2, page 325 of your justification, "Special interest will be given to problem areas of tobacco and health?"

Dr. STEWART. The special interest would be these types of research grants that are in this justification. Grants in areas of cigarette smoke, heavy metal, pesticides, microtoxins and other natural toxins, synthetic and organic components and other things that represent actual and potential health hazards.

I think those were given as examples of the kinds of research areas that would be supported.

Mr. HULL. What areas involve tobaccos in this and how do such projects differ from others underway? Would you give that to us?

Dr. STEWART. I certainly will.

(The information follows:)

Research projects sponsored by the Division of Environmental Health Sciences consist largely of grants that were transferred to the Division from the former Bureau of State Services. These projects do not at this time specifical-

ly include research in the area of tobacco and health. During the next fiscal year there would be interest in supporting extramural projects dealing with selected classes of actual or potential health hazards such as tobacco. Research on tobacco could be pursued in the following areas:

(1) Reduction of hazard associated with cigarette smoke by enhancing metabolic activity and stimulating pathways that destroy or detoxify carcinogenic components;

(2) Study of the role of antecedent or concomitant disease in the target organ in contributing to an enhanced response to an environmental agent through depression of metabolic activity or through abnormal deposition, localization, and retention of carcinogenic agents.

(3) Increased refinement in the techniques of separation, identification, and quantitation of tobacco smoke constituents, i.e., gas chromatography, mass spectrometry, neutron activation analysis, for the purpose of quantitating components potentially important in the pathogenesis of disease;

(4) Investigation of local and systemic factors concerned with entry and action of toxic environmental agents. Studies would be directed toward the intact host, particularly in relation to anatomic and metabolic fate of such chemicals with special emphasis on sites of elective localization, detoxification, and excretion;

(5) Synthesis of analogs of hazardous compounds in tobacco for studies on the prevention of toxic effects.

TRAINING GRANTS

Mr. HULL. You have a figure of $5.5 million earmarked for training grants to colleges and universities. What is the primary purpose of these grants?

Dr. STEWART. I am not sure I have the right references to which appropriation you are talking about, Mr. Hull.

Are you talking about the $5,545,000 that is in the Division of Environmental Health Sciences?

Mr. HULL. Yes.

Dr. STEWART. Well, you see, if you are going to have scientists who really move into this area of the relationship of hazardous substances and the environment to man, and biological systems, you are going to have to have a group of scientists who work in this area, and this training grants program is to train these types of individuals.

Mr. HULL. That is the primary purpose of the grants then?

Dr. STEWART. That is right, to train people to be the research workers of the future in these areas.

Mr. HULL. At what annual expenditure?

Dr. STEWART. We are asking in the 1968 estimates for $5,545,000.

Mr. HULL. How much is that over 1967?

Dr. STEWART. $1,241,000 over 1967 estimates.

Mr. HULL. You also referred to a figure of $4,075,000 for direct research funds. How do you plan to spend this money?

Dr. STEWART. There will be a laboratory in the research triangle in North Carolina where we will have our own in-house research. There we will be carrying on everything from epidemiological studies as to what is the dose that one takes in of some heavy metal, for example, which is coming through many vehicles, to very, I think, sophisticated biological studies at the molecular level as to what is happening in relationship to the heavy metal and, say, the enzyme systems, or something else. This will serve as the focus within the National Institutes of Health for this type of research.

Mr. HULL. What eventual annual expenditures do you contemplate in this area?

Dr. STEWART. I can't give you any long-range projection at the present time. We are just beginning to get the division established. It is in temporary buildings there at the moment, but I would expect it would expand its base to the degree necessary.

IDENTIFICATION OF CARCINOGENIC AGENTS IN CIGARETTE SMOKE

Mr. HULL. Dr. Stewart, no constituent identified in cigarette smoke on the basis of present scientific evidence has been found to be responsible for any of the diseases with which cigarette smoking is said to be statistically associated. The Surgeon General's Advisory Committee on Smoking and Health did not conclude from the evidence it reviewed that there was any specific constituent as found in cigarette smoke that was scientifically established as a causal agent in lung cancer or any of the other diseases mentioned in the report, is that correct?

Dr. STEWART. Mr. Hull, you are correct that there was no specific agent in cigarette smoke that can be specifically pointed to as the cause of lung cancer.

On the other hand, there are many agents in cigarette smoke which are carcinogenic.

Mr. HULL. I know because they put the tar on the backs of mice, which reacted to it. Of course, on the back of a man's hand it didn't react. So I guess there is a difference between mice and men?

Dr. STEWART. There is always this problem of relationship of animal systems to man in testing things, but I believe that we are pursuing it far enough now so that we can classify items as carcinogenic. You obviously cannot try it out in man to prove that it causes him to have cancer. You must have some kind of biological system that you can test things in.

Mr. HULL. The committee said that nicotine probably does not represent an important health hazard. That is page 32 of "Smoking and Health." Has this judgment been refuted by any competent, scientific evidence?

Dr. STEWART. I can't answer that at the present time, Mr. Hull.

Mr. HULL. Would you get us information on that?

Dr. STEWART. Yes, sir; I will.

(The information follows:)

A considerable amount of research is being done on the physiological effects of nicotine. At the present time we know of many different investigations, looking into such matters as the effect of nicotine on arterial diffusion, enzyme activity, on pregnancy, on urethral function, on hypertension, on the myocardium, on cerebral autostimulation, on fatty acids, on smooth and striated muscle, and on the central nervous system. The Public Health Service is currently reviewing this research. The review will be issued when completed.

Mr. HULL. Has any new constituent been identified in cigarette smoke since the date of the report that has been found to be responsible for any human disease?

Dr. STEWART. This I can't say. I don't know.

Mr. HULL. Has there been any new reliable scientific evidence about the effects of those constituents mentioned in the report which demonstrates that they cause any disease?

Dr. STEWART. I think if you will put it, do they cause carcinogenesis, I think we could show this.

Mr. HULL. Well, could you get us the information for the record?

Dr. STEWART. Yes, sir.

(The information follows:)

In its report of 1964, the Surgeon General's Advisory Committee on Smoking and Health found that cigarette smoking is "causally related to lung cancer in men (and that) the magnitude of the effect of cigarette smoking far outweighs all other factors." The Committee based this finding on the known carcinogenicity of cigarette smoke, on a wide variety of epidemiological evidence, from studying populations which had stopped smoking, from animal experimentation, from pathological studies at autopsy, and from physiological studies. Although tobacco smoke has been shown to be carcinogenic, and at least seven compounds isolated from cigarette smoke have been found to be carcinogenic, the total tar from cigarettes has many times the carcinogenic potency of these individual constituents in the amounts present. A great deal of research has been carried on since 1964 to investigate this anomaly, and the Public Health Service is currently reviewing this research. The review will be issued when completed.

Mr. HULL. And who made it and when it was made and so forth?

Dr. STEWART. Yes, sir.

Mr. HULL. The National Cancer Institute is still proceeding with the task of attempting to identify within tobacco those substances which may be responsible for human lung cancer, is that correct?

Dr. STEWART. That is correct.

Mr. HULL. I believe that is all, Mr. Chairman.

Mr. CASEY. Are we going to be privileged to hear from the directors of the various bureaus that you have listed?

Dr. STEWART. Yes, sir, and they will go into more detail than I am able to.

HEALTH MANPOWER NEEDS

Mr. CASEY. On page 14 of your statement under your health manpower, you have a statement that funds have been awarded to create 3,324 places for health professional schools. "These will expand our national educational capacity by 1,252 medical students, 786 nursing students, 589 dental students."

Are you talking about the total national capacity for educating——

Dr. STEWART. No, these are new places that didn't exist before these grants were made; add-ons to the capacity that we have at the present time.

Mr. CASEY. When you say "we," are you talking about the capacity of the Nation?

Dr. STEWART. No, I am talking about the places created by the Federal grant-in-aid that was made to create a new school or an expanded school. It has resulted in this many new places which would not have been there if these grants had not been made.

Mr. CASEY. 786 new nursing places; that sounds like we are still away behind in the nursing problem. Is there any way we could stimulate that?

Dr. STEWART. We are trying to do as much as we can to get nursing schools stimulated. There were some problems in this area. You have the bulk of nurses—75 percent of nurse graduates are from hospital schools of nursing. This is the 3-year program. The baccalaureate schools' 4-year programs are much less in number but are expanding, whereas the hospital schools of nursing have been pretty static, or contracting.

Then the community college, or the 2-year associate degree program in nursing, is rapidly expanding, but, of course, it started from a very

low level so that we have situations in nursing where the training of nurses is undergoing change at the time when this program came along.

I think that it will show a much larger increase in nursing than we have had before. In fact, the number of nurses in training, even though these shifts are going on, has increased about five thousand from last year to this year, if I recall rightly, in number. So that the total nursing and training pool is expanding, even though these shifts are going on between the 2-year school, the 3-year school and the 4-year school.

Mr. CASEY. Then this 786 doesn't reflect——

Dr. STEWART. It reflects the beginning of a program that started three and a half years ago under the Health Professions Educational Assistance Act. The total enrollment for 1965 in nursing was 135,702. The total enrollment for 1966 was 139,070, so the enrollment is going up in the nursing area and will be expanded substantially under construction authorized by the Nurse Training Act.

Mr. CASEY. At least once a week in some publication you will see something about the growing nurse shortage.

Mr. FLOOD. What is the shortage in a round number as of 4 o'clock this afternoon; about?

Dr. STEWART. 125,000.

Mr. FLOOD. What will it be in 10 years; about?

Dr. STEWART. It will grow in magnitude to about 220,000 or 230,000 over a 10-year period if we go at the rate we are going now.

Mr. FLOOD. As of now, 125,000?

Dr. STEWART. That is right.

Mr. CASEY. You mentioned one of the problems about the new medical schools, the recruitment of faculty for them. In other words, if you could start 25 new medical schools tomorrow, you wouldn't have the faculty for them when the construction was completed, would you?

Dr. STEWART. It would be difficult if they came all at once; yes. The basic science faculty, particularly, is difficult. Of course, the principal source of training of these people comes from the NIH training programs.

VALUE OF RESEARCH GRANTS TO U.S. BIOSCIENCE EFFORT

Mr. CASEY. Most of your medical school faculty have as a source of income some sort of a grant, do they not, in some of their specialized fields? If they are highly qualified, I mean.

Dr. STEWART. Many faculty members of the medical schools, particularly at the lower ranks in the medical schools, are receiving part or some of their salary from a research grant which they are conducting and carrying out. This is usually a pattern at the assistant professor-instructor levels of the university. They have sought these grants and competed in the peer system that we have and they are carrying out research and getting part of their salary from conducting research.

Mr. CASEY. In other words, the research grants most of these medical schools now receive, if they were cut off all at once, some of them would have to close their doors, wouldn't they?

Dr. STEWART. I think there would be a catastrophe. I don't know whether our medical schools would survive, but I would question whether they could or not.

Mr. CASEY. I don't think they could. I just don't know where they could get the funds to encourage the people to stay there if they didn't have research funds, not only from Federal sources, but from private endowments and so forth.

Dr. STEWART. And it isn't solely this salary item, although that is important, Mr. Casey. But also, unless you provide some kind of scientific environment, you have difficulty attracting faculty into the area. Faculty means people who are doing research and education, not just education, or just research. So the grants serve two purposes really, to get the kind of faculty you want to give the proper bioscience base to medicine, and to provide the strength, the financial strength, of our medical schools.

Mr. CASEY. If I understand you properly then, you think it would be a mistake to find some method of granting funds to pay salaries rather than the research type of program?

Dr. STEWART. No. I think there may be other ways of distributing the money. There is no absolute reason why salary funds must be contained within the research grant itself, if you are dealing with the institution. I don't have any specific proposal in mind at the moment, but I certainly wouldn't say that it must always be done the way it has been done. But I think that the flow of funds into the school, besides creating the world's greatest bioscience effort, has strengthened the medical schools; in fact, rescued them in the early days because they were in terrible financial shape, and it would be a catastrophe if it was to be cut in any substantial way.

Mr. CASEY. I can readily see where a scientist, whether an M.D. or Ph. D. in one of the basic sciences, who has an opportunity to conduct research, would rather do that at, say, a lesser salary than if you just paid him a flat salary and tell him, "You just teach this class and get out of the hall after class."

Dr. STEWART. I think this is true. This is true.

Mr. CASEY. I don't think a grant of funds for just salaries would be as good as these research grants.

Dr. STEWART. If that is what you had in mind, I would agree with you entirely, Mr. Casey.

Mr. CASEY. I didn't think you quite followed my reasoning on it.

Dr. STEWART. Yes, sir.

Mr. CASEY. Mr. Chairman, I think any other questions I have will be directed to the Directors of the various bureaus.

TRAINING GRANTS

Mr. FLOOD. You told Mr. Casey that you found the great source of supply for staff for the medical schools to be the training programs of NIH. If what you told Mr. Casey is so, I wonder why you have cut back the training programs at the NIH to the degree that you have in this budget?

Dr. STEWART. Mr. Chairman, when one is putting together the budget you have to stay within the budget constraints.

Mr. FLOOD. You told Mr. Casey that your strong right arm of supply is the NIH training programs.

Dr. STEWART. This is true.

Mr. FLOOD. And yet you show me a budget which has cut back the training programs at NIH. You have only about an 8-percent increase for NIH overall.

Dr. STEWART. That is correct.

Mr. FLOOD. Now, my guess would be that with increase in salary costs and other cost increases that the NIH budget will not support the current level of their program taken as a whole.

Mr. CARDWELL. Mr. Chairman, I have a difference of figures. Research training grants total appropriation goes up, as I have it, in 1968.

Mr. FLOOD. Yes; I know that, but what we asked about was the number of programs, and that is down.

I think we will give Dr. Shannon a chance to plead his cause on this issue. He is no amateur.

Thank you, sir. You were a very good witness.

Dr. STEWART. Thank you, sir.

Mr. FLOOD. At this point in the record we will place several statements on health problems that are dealt with by more than one part of the PHS.

SUPPORT OF MEDICAL RESEARCH

National support for performance of medical and health-related research by source of funds, fiscal years 1961–67 [1]

[In millions of dollars]

Source of funds	1961	1962	1963	1964	1965	1966 [2]	1967 [2]
	Actual					Estimate	
Total	$1,045	$1,290	$1,486	$16,52	$1,841	$2,050	$2,275
Government	604	819	964	1,099	1,229	1,380	1,540
Federal	574	782	919	1,049	1,174	1,319	1,475
State and local	30	37	45	50	55	61	65
Industry	312	336	375	400	450	500	560
Private support	129	135	147	153	162	170	175
Foundations and health agencies	77	78	85	88	92	95	98
Other private contributions	15	18	21	22	25	28	29
Endowment	19	19	19	19	19	19	19
Institutions' own funds	18	20	22	24	26	28	29

[1] Coverage is limited to conduct and support of medical and health-related research. Support of other activities such as research training or capital outlays for research facilities is not included in this series.

[2] Data on Federal obligations are available at the beginning of the fiscal year. Firm data on non-Federal support cannot be obtained until after the end of the fiscal year; the estimates for 1966 and 1967 may therefore overstate the Federal share.

NOTE.—The estimates of national support for medical and health-related research shown above update the series extending back to 1947 published in Resources Analysis Memorandum No. 7, "National Time Series on Support of Medical and Health-Related Research—The Years Since 1947." Current data for the Federal Government were obtained through the annual survey, conducted by the National Institutes of Health, of Federal agencies' support for medical and health-related research. Estimates for State and local governments include appropriations made to educational institutions and hospitals for the performance of medical and health-related research. The industry sector includes data for the pharmaceutical, medical supply and biomedical engineering industries. The nonindustrial private sector covers the funds provided by philanthropic foundations, voluntary health agencies, and other private contributors to the support of medical and health-related research. RAM No. 7 also presents a detailed discussion of the definitions and statistical methodology underlying the time series

Federal support for performance of medical and health-related research, fiscal year 1964–67 [1]

[In thousands of dollars]

Agency	1964 actual			1965 actual			1966 actual			1967 estimate		
	Total	Budgeted	Directly related	Total	Budgeted	Directly related	Total	Budgeted	Directly related	Total	Budgeted	Directly related
Total	$1,048,661	$843,044	$205,617	$1,174,208	$927,625	$246,583	$1,318,722	$1,046,991	$271,731	$1,475,485	$1,192,036	$283,449
Atomic Energy Commission	78,056	7,514	70,542	84,585	7,827	76,758	89,588	8,017	81,571	95,449	8,614	86,835
Federal Aviation Agency	2,939	2,939		2,798	2,798		2,496	2,496		2,690	2,690	
National Aeronautics and Space Administration	41,200		41,200	60,000		60,000	75,352		75,352	79,925		79,925
National Science Foundation	23,145		23,145	19,678		19,678	13,812		13,812	14,408		14,408
Tennessee Valley Authority	385		385	554		554	945		945	1,546		1,546
Veterans Administration	33,153	33,153		36,907	36,907		40,673	40,673		46,923	46,923	
Department of Agriculture	27,911		27,911	40,470		40,470	44,661		44,661	45,732		45,732
Department of Commerce	409	51	358	366	33	333	344		344	394		394
Department of Defense	86,484	46,869	39,615	101,261	53,461	47,800	119,153	67,465	51,688	114,281	64,080	50,201
Department of Health, Education, and Welfare	752,535	751,824	711	826,200	825,828	372	928,293	926,877	1,416	1,070,617	1,068,137	2,480
Public Health Service	(721,835)	(721,835)		(781,849)	(781,849)		(882,264)	(882,264)		(1,017,764)	(1,017,764)	
NIH	(651,010)	(651,010)		(715,072)	(715,072)		(790,927)	(790,927)		(813,895)	(813,895)	
NIMH [2]										(102,471)	(102,471)	
Other	(30,700)	(29,989)	(711)	(44,351)	(43,979)	(372)	(46,029)	(44,613)	(1,416)	(52,853)	(50,373)	(2,480)
Department of Interior	1,750		1,750	618		618	1,942		1,942	1,928		1,928
Department of State	694	694		771	771		1,463	1,463		1,592	1,592	

[1] Coverage is limited to conduct and support of medical and health related research. Support of other activities (such as training or capital outlays for research facilities) is not now included in this series.

[2] Effective Jan. 1, 1967, the National Institutes of Mental Health became a separate Bureau of the Public Health Service; prior to that time it was one of the Institutes in the National Institutes of Health. On the same date the National Environmental Health Sciences Center in North Carolina, and the related extramural program of support for research in the environmental health sciences was transferred to NIH from the Bureau of State Services—Public Health Service. Data for 1967 reflect these transfers.

NOTE.—The statistics shown above—actual obligations for fiscal years 1964, 1965, 1966 and estimates for 1967—were reported by Federal agencies to NIH following a review by each agency of its research activities to show explicitly obligations for medical and health related research in all fields of science (biological, medical, agricultural, psychological, physical, mathematical, engineering, social) distinguishing between (1) funds separately budgeted for medical and health related research, specifically identified, programed and justified as such, and supported for the purpose of improving human health (all the research activities of agencies or subagencies whose sole mission is advancement of human health through research may thus be included); and (2) funds for research directly related to health in terms of substance or probable application, but which derive from funds budgeted, justified or supported for purposes other than medical or health objectives (for example, the general support of science, the promotion of agriculture, the achievement of the Nation's strategic objectives in outer space). As the table shows, about 20 percent of the total represents this latter category of research directly related to health but supported for other purposes. The above up-date and continue the time series presented in the following "Resources for Medical Research" report: Rept. No. 4 presents data for 1947 through 1961 inclusive; "Resources Analysis Memo No. 7 presents data for 1962 and 1963. These publications together with the revised data shown above for 1964–66, constitute the definitive time series on Federal support for the performance of medical and health related research in the postwar period. A more comprehensive analysis of recent trends will be published shortly in the "Resources for Medical Research" series.

KIDNEY DISEASE

Lastest available figures from the Public Health Service's National Center for Health Statistics indicate that 24,697 Americans died of kidney diseases in 1964, These figures do not include deaths attributed to conditions such as hypertension or stroke which may be secondary as an underlying kidney ailment. Experts who comprise the Scientific Advisory Board of the National Kidney Foundation estimate that the actual number of deaths in which kidney disease is the primary cause approaches 100,000 each year. Conditions listed as acute genito-urinary tract disease (excluding veneral disease and menstrual disorders) in the National Health Survey of 1963–64 led to 36.9 million days of restricted activity for the 6.7 million individuals involved. An additional 1.1 million persons reported limitations of activity as the result of chronic genito-urinary disease. This latter figure accounts for 5.4% of all activity limitation in individuals under the age of 45, which makes it the fourth most common cause of nonorthopedic impairment.

An estimated 3,300,000 Americans harbor infectious organisms in their urinary tract. A significant number of these persons will have no warning of their disease until kidney damage is so severe that they cannot survive. Unlike the majority of chronic diseases, these diseases are particularly likely to cause death in patients in the middle, productive years The social and economic impact of kidney diseases therefore is far out of proportion to what one would expect from simple analysis of the bare statistics.

The importance of the kidneys can be judged in part by the fact that they receive about one-quarter to one-fifth of the blood volume pumped by the heart. By selective excretion of certain substances and reabsorption of others, the kidneys play an extremely important role in regulating the composition of blood and other body fluids. They continually process blood to eliminate detrimental waste products of metabolism. The kidneys help to regulate the chemical environment of the body cells by regulating the concentration and composition of salts and the amount of water in the blood and tissues. The kidneys also produce substances which are important in regulating blood pressure and in stimulating the bone marrow to produce blood cells.

The term kidney disease encompasses a number of conditions of varying causation which attack the kidneys. Among the leading causes of kidney diseases are:

1. *Hypersensitivity diseases* in which kidney tissue is destroyed by an immunereaction initiated by any of a number of causes, including streptococcal infection.
2. *Infections* in which kidney tissue is attacked and destroyed by microorganisms.
3. *Circulatory diseases* in which the kidney is affected as a result of disease of the blood vessels or the blood itself.
4. *Metabolic diseases* in which the kidney is secondarily affected, such as in diabetes or gout.
5. *Developmental disorders* in which kidneys fail to develop or develop in an abnormal fashion.
6. *Obstructive conditions* in which urine flow is blocked with resultant pressure damage to the kidney and repeated infections.

KIDNEY FAILURE

One characteristic common to almost all kidney diseases is their tendency to eventual progression to a common end-stage—the clinical syndrome of uremia. Uremia is the collection of signs and symptoms resulting from the loss of the kidney's normal functions of removing wastes from the body and of regulating the internal chemistry of the body.

Patients with uremia may be divided into two groups, those with acute kidney failure, and those with chronic renal insufficiency. In acute kidney failure, the kidneys are damaged by an acute insult and the symptoms of uremia progress rapidly. The damage may be reversible, however, and after a short period the kidneys may heal and regain normal function. On the other hand, chronic kidney insufficiency is brought on by gradually progressive destruction of the kidneys from which they do not usually recover. In these cases the kidneys never regain the ability to reverse the trend toward ultimate, fatal uremia.

TREATMENT OF KIDNEY FAILURE

It follows that the natural course of these two types of kidney failure dictates the goals of therapy. In acute, potentially reversible kidney failure, the primary objective is to sustain normal life processes in the patient for the relatively short period of time during which his kidneys cannot function. Eventually recovery may be complete, in which case no further treatment is needed, or the disease may progress and become chronic. In cases of chronic kidney insufficiency, the problem is much more difficult, and some measures of continuing therapy are necessary.

The two substitutes for kidney function which have come into use are peritoneal dialysis and the artificial kidney (hemodialysis). Both methods employ the same basic principle of dialysis: dissolved substances found in high concentration in the fluid on one side of a semi-permeable membrane will tend to pass through this membrane into the fluid on the other side where these substances are absent or found in lower concentration. At present, use of the artificial kidney is the predominant method of sustaining the lives of those persons suffering from permanent loss of kidney function.

Kidney transplantation is a technique whereby a functioning kidney from a donor is transplanted into a patient who has lost his kidney function. Although this procedure is at present still in its experimental stage, it shows considerable promise. With continued research, it is hoped that kidney transplantation, supplemented by efficient methods of hemodialysis until the patient is ready for an operation or until a suitable kidney is available for transplantation, will make fatal chronic uremia a menace of the past.

ARTIFICIAL KIDNEY

Artificial kidneys are mechanical devices that can be used to cleanse the blood when the natural kidneys fail. Until permanently functioning transplantation of healthy kidneys from living or dead donors becomes a practical reality, blood purification through repeated use of an artificial kidney (chronic hemodialysis) is the only hope for survival for the majority of such patients. While *some* patients in chronic kidney failure are being kept alive and productive through repeated treatment with the devices currently in use, *most* candidates for such treatment are unable to receive these benefits because of the extremely high cost and complexity of treatments.

Although artificial kidneys have been known for almost two decades and have been used in cases of poisoning or acute kidney failure, the use of these devices in any one patient has ben limited in the past. Each time a patient required the use of such a blood purifying apparatus, it was necessary to insert tubes into a major vein and a major artery to conduct the flow of blood from the patient through the artificial kidney and back into the patient's circulation. Each tube insertion often facilitated the onset of dangerous infections, and involved a new surgical procedure on a new pair of major blood vessels; thus, the number of times any one patient could be connected to an artificial kidney was limited.

About five years ago, an NIH grantee announced a successful innovation in the use of artificial kidneys aimed at permanent maintenance of patients with impaired or lost kidney function. His group, at the University of Washington in Seattle, had developed the use of permanently implanted, connected plastic tubes in an artery and vein of the forearm. This indwelling "Quinton-Scribner shunt" makes it possible to connect a patient repeatedly to artificial kidneys without special surgical procedures and without the use and ultimate sacrifice of a new set of blood vessels with each dialysis. Development of this shunt started a new era of hemodialysis in patients with permanently impaired kidney function.

The Public Health Service has programs in two areas in the field of kidney disease—research through the National Institutes of Health, and kidney disease prevention and control programs through the National Center for Chronic Disease Control. Both have an interest, from the standpoint of their respective missions, in the artificial kidney. In addition, the National Center for Chronic Disease Control is carrying out preventive programs, education, training and informational programs, and development of basic data to determine the extent of the problem and permit evaluation of the effectiveness of various community approaches. The National Institutes of Health will continue work on transplantation immunology, and on kidney disease research.

NATIONAL CENTER FOR CHRONIC DISEASE CONTROL

Under the mandate given by Congress during the hearings on the FY 1966 and FY 1967 budgets, the Kidney Disease Control Program has begun to explore and develop a number of potentially fruitful approaches to the reduction of kidney disease mortality and morbidity. In the description that follows, this Program's plans and projects are grouped according to four major areas:

I. Preventive Programs
II. Chronic Dialysis Programs
III. Continuing Education, Training and Information
IV. Development of Basic Data

The major objective in all of these areas is to help generate and then translate knowledge and new developments into broadly applicable health programs.

I. PREVENTIVE PROGRAMS

A. Kidney Diseases.—The attention given to end-stage kidney failure and its dramatic therapy (i.e. artificial kidney therapy and transplantation) has led to expanded interest in the area of kidney disease. In contrast to the treatment of end-stage kidney failure, which is the same whatever the original cause of the kidney disease, the prevention or therapy for early kidney disease will vary depending upon the pathologic process in question. In approaching the preventive aspects of kidney diseases we are thus confronted with an array of diverse disorders. One simple approach to prevention of all kidney diseases is impossible, and the present state of medical knowledges does not even allow a clear understanding of the incidence, natural history and causative factors involved in these various disease processes.

Methods for screening large populations for the early detection of significant urinary abnormalities are presently lacking. Knowledge of the natural history of such problems as asymptomatic bacteriuria, occult proteinuria, acute and chronic pyelonephritis, glomerulonephritis, urinary calculus formation, etc., must be expanded in order to identify the problems to which the population at risk is exposed. Further complicating factors include the lack of specific early signs or symptoms of these disorders. When signs or symptoms are present, the significance of these may not always be clear. In addition, when unequivocal signs of kidney disease are present, the diagnosis of the specific disorder is not always possible. Lastly, even when a diagnosis can be made, an effective means of therapy is frequently lacking; and a distinct lack of trained personnel and facilities in medical centers in many parts of the country serves to compound the problem.

The following table is a brief compilation and classification of the more common diseases that afflict the kidney. Each category is accompanied by a symbol P_1, P_2, or P_3. P_1 indicates that primary preventive measures are available. P_2 indicates secondary prevention, that is, early detection and effective therapy can effect a cure; and P_3 or tertiary prevention, means that methods of preventing further disability and death are available.

CLASSIFICATION OF KIDNEY DISEASES

A. Diseases of Infection (Pyelonephritis)
   1. Bacteriuria P_2
   2. Acute pyelonephritis P_2
   3. Chronic pyelonephritis P_3
B. Hypertensive Vascular Diseases P_2
C. Diseases of Hypersensitivity
   1. Acute Glomerulonephritis P_1 (?), P_2
   2. Chronic Glomerulonephritis P_3
   3. Idiopathic Nephrotic Syndrome P_2, P_3
   4. Renal Disease Associated with Collagen Diseases:
      a. Systemic Lupus Erythematiosus P_2, P_3
      b. Polyarteritis Nodosa P_2, P_3
      c. Scleroderma P_3
   5. Allergic Nephritis (Poison ivy, insect bites) P_2
D. Renal Involvement in Metabolic Diseases
   1. Diabetes P_3
   2. Gout P_2, P_3

E. Hereditary Diseases (Polycystic disease) P_3
F. Diseases Due to Substances Poisonous to the Kidney
1. Heavy Metal Poisoning P_1
2. Radiation Nephritis P_1
3. Analgesics ("Phenacetin") P_1

It is evident, upon surveying the table, that there are very few areas where primary prevention can presently be effected. The majority of patients with these disorders fall into the categories of secondary or tertiary prevention. For this reason, Federal programs directed toward preventing death in this advanced stage of disease have been initiated through support of dialysis and transplantation therapy.

Recognizing that our ultimate goal is primary and secondary prevention, an effective program must begin with the development of studies which will provide the information required for the institution of broad scale prevention and early detection programs.

Within this context, the Kidney Disease Control Program is developing and implementing plans to: (1) define the extent of the problem of kidney diseases in the population, (2) develop better methods of detection, (3) accumulate knowledge of the natural history of the disorders, (4) test current means of therapy and develop new modes of treatment, and (5) establish centers for the development and testing of new and improved techniques for prevention, early detection, diagnosis and treatment.

B. Plans and Activities.—In order to achieve the overall goals outlined above, the Kidney Disease Control Program is planning and developing projects to meet short and long range public health needs in the following six categories:

1. Bacteriuria and Pyelonephritis

Infections of the urinary tract, in which kidney tissue is attacked and destroyed by microorganisms, are second only in incidence to infections of the respiratory system. Infections of the kidney probably account for one-half of the patients who die of kidney failure.

We have four major goals in this disease category: 1. The development of effective screening methods for detection of significant bacteriuria. 2. Identification of the extent of the problem of urinary tract infection in the general population and in special sub-groups of the population. 3. Evaluation of current therapeutic techniques and development of an understanding of the natural history of the disorder. 4. The identification of so-called predisposing factors to the development of chronic infection of the urinary tract. Vesico-ureteral reflux is an example of the latter.

A great deal of work has already been done in this area but further developments and refinements are critical. In regard to development of screening tests for detecting chronic urinary tract infections, potential projects are currently under discussion; and insofar as costly and time consuming techniques are now utilized in the collection of urine for presently available urine tests, alternative methods of detecting bacteriuria are also being considered. Detection of enzymes in the urine, which may be elevated in patients with pyelonephritis, may eventually be an ideal means for large scale epidemiologic surveys. In addition, it is important that patients with bacteriuria and bladder infection only, are differentiated from patients who have active infection of the renal parenchymal. A single, simply performed, enzyme test may allow this differentiation. Currently two groups are under contract for study of several enzymes in the urine in patients with urinary tract infection and several more projects are anticipated. Other methods of detection such as the determination of minute amounts of glucose in the urine may prove of value in diagnosing bacterial infection.

In order to define the extent of the problem of urinary tract infection in the population, surveys of the pediatrics age group, and pregnant females (both susceptible groups) and general broad screening programs are being planned. Pregnant females are known to be particularly susceptible to develop urinary tract infection, but the significance of this infection has not really been determined. Studies of the natural history of the disorder and the effect of pregnancy are planned, and we anticipate that several other detection and follow-up surveys will be developed. Broad screening programs to detect the incidence of urinary tract infection in a cross section of a general population are also important, and contact has been made with a large corporation and several other groups who might be able to carry out such a screening program. Further studies of natural history and evaluation of various therapeutic techniques are anticipated to define the best method of therapy for urinary tract infection in various population groups.

It is well known that many host factors play a significant role in the development of urinary tract infections. An example of this is the presence of reflux of urine back into the ureters during the act of bladder contraction during urination. Other factors include any obstructive lesion of the urinary tract, calculus disease of the urinary tract, congenital anomalies of the urinary tract, hypokalemia, diabetes mellitus, gout, and many other urologic and medical disorders. It is hoped that a detailed study of many of these suspected predisposing factors can be made with an evaluation of the effectivenes of therapy of these problems in preventing recurrence or progression of renal lesions due to infection.

2. *Hypersensitivity Diseases*

Acute glomerulonephritis, nephrotic syndrome, chronic glomerulonephritis and the collagen diseases are hypersensitivity diseases in which kidney tissue is destroyed by an immune reaction initiated by any of a number of causes, including streptococcal infection. These diseases represent a large segment of the disorders which eventually lead to chronic kidney failure.

Understanding of the epidemiology and natural history of these disorders is fragmentary at the present time and much basic research remains to be done. In light of current medical knowledge, the goal of the Kidney Disease Control Program is to support the development of screening techniques in order to detect these disorders and provide support for the study of the natural history of these disease processes in hope of detecting points in which the process can be interrupted. Occasionally these disorders occur in epidemics (e.g., acute glomerulonephritis) and it is a subgoal of the Program to develop a team capable of assisting a community in coping with an epidemic.

At the present time a study of the natural history of acute glomerulonephritis, utilizing an epidemiologic approach, is being supported by the Kidney Disease Control Program. This epidemic is taking place on the Island of Trinidad and is under study by a group from Northwestern University. It is anticipated that other areas of the country known to have high prevalence rates of acute glomerulonephritis, such as Charleston, South Carolina; Birmingham, Alabama, parts of Mississippi and Louisiana, and Red Lake, Minnesota, may be studied in hopes of detecting host and environmental factors predisposing the population group at risk to develop this disorder. Though there is no known effective method of therapy for treating patients with acute glomerulonephritis it is anticipated that basic laboratory research in immunology will lead to the availability of therapeutic measures which must be evaluated in a clinical setting in the next several years.

The nephrotic syndrome represents an area where it is thought that existing therapy may be effective. This is particularly true in pediatric patients. Definition of the epidemiology of the nephrotic syndrome will probably be forthcoming from immunologic research laboratories but much information can also be learned from controlled evaluation of the natural history of the disorders on a long term basis.

Screening tests for chronic glomerulonephritis, collagen disease and metabolic disorders must be developed. The Northwestern group is currently being supported to search for simplified enzymatic techniques that may eventually be developed into simple screening tests for the detection of these disorders, and several other groups have expressed interest.

Studies of the natural history of hypersensitivity diseases and metabolic diseases involving the kidney are necessary since the characteristics of the early stages of these diseases are poorly understood. Thus, a definition of the significance of minimal amounts of proteinuria and orthostatic proteinuria is necessary so that methods can be developed to identify individuals who will progress to chronic renal failure. The Kaiser-Permanente group in San Francisco has been contacted regarding the utilization of the information derived from their multiphasic program that might be of value to the Kidney Disease Control program in this area. In addition, several groups have been contacted informally regarding the development of a cooperative study supported by the Kidney Disease Control Program to characterize the significance of minimal orthostatic proteinuria in patients followed on a long-term basis. Such a study would include serial determination of the status of renal function, renal biopsy material, and evaluation for the presence of metabolic disorders known to involve the kidney.

3. Renal Calculus

The development of renal calculi occurs in a variety of disorders. It may be possible to develop techniques to screen individuals who have a propensity for developing calculi. If these individuals can be detected before significant precipitation of material occurs in the urinary tract, calculus formation may be prevented. The goal of the Kidney Disease Control Program is to develop effective screening methods to detect patients with calculi and to detect patients susceptible to the development of calculi. On the basis of information currently available, the development of such a screening method is a distinct possibility. It is well known that the incidence of calculi in some areas of the country is very high as compared to other areas. Therefore, a further goal in this category is to identify the areas of the country in which individuals are more likely to develop calculi so that screening programs can be instituted in population groups in these areas. A finer definition of the extent of the "stone-belt" and of host factors necessary for the development of calculi may also lead to increased understanding of the epidemiology of this disorder.

4. Hypertensive Vascular Diseases

Hypertensive vascular diseases are currently under study by the Heart Disease Control Program of the National Center for Chronic Disease Control and the Kidney Disease Control Program is in the development of methods for detection of hypertension due to primary kidney disease. The program's goal is to support work which will lead to detection methods for reno-vascular hypertension and of hypertension due to parenchymal disorders of the kidney. In addition, those complex problems that lead to hypertensive disease may also be susceptible to detection by screening programs and by screening techniques.

5. Congenital Disorders of the Urinary Tract

The actual incidence of bladder neck obstructions, renal tubular acidosis, and hereditary nephritis and methods to detect these disorders are currently lacking. The primary goal of the Kidney Disease Control Program is to define the problem as it exists in the population and to characterize the influence of these disorders on the development and progression of diseases of the kidney.

6. Comprehensive Nephrology Programs

One of the Program's major goals is to assist in the development and improvement of comprehensive nephrology programs. These programs will be instrumental in the development, testing and application of new and improved techniques for the prevention, early detection, diagnosis and treatment of kidney diseases. The nuclei of several such centers have already been established.

From any point of view, prevention would be the ideal solution to the current high rate of mortality and morbidity from kidney diseases; and, short of total prevention, early detection and prompt effective treatment would be the next best alternative. The development of combinations of these two solutions is one of the major goals of the Kidney Disease Control Program. Projects with high potential have already been initiated and the categories outlined above indicate major areas of concern in our long range plans. Finally, we are continuing and intensifying our efforts to increase communications between all persons and institutions with interests or responsibilities in these programs.

CHRONIC DIALYSIS PROGRAMS

A. Background—As described above, until about five years ago, use of the artificial kidney was limited. However, since then, with the development of the "Quinton-Scribner shunt," much progress has been made.

B. *Plans and Activities*—The National Center for Chronic Disease Control has been involved since 1963 in the development and funding of artificial kidney projects for patients with kidney failure. As the following list indicates, fourteen centers have received grant support, and there are currently thirteen receiving PHS project grant funds.

PROJECT GRANT SUPPORT OF ARTIFICIAL KIDNEY CENTERS

Seattle Artificial Kidney Center, Seattle, Washington.
Grant Period: 7/1/63–6/30/66.
Downstate Medical Center, Brooklyn, New York.
Grant Period: 9/1/64–8/31/67.
University of Alabama Medical Center, Birmingham, Alabama.
Grant Period: 12/1/64–11/30/67.
Passavant Memorial Hospital, Chicago, Illinois.
Grant Period: 6/1/65–5/31/67.
University of Virginia School of Medicine, Charlottesville, Virginia.
Grant Period: 11/16/65–11/15/68.
Mt. Sinai Hospital, Cleveland, Ohio.
Grant Period: 1/1/66–12/31/68.
Emory University School of Medicine, Atlanta, Georgia.
Grant Period: 1/1/66–12/31/68.
Minneapolis Medical Research Foundation, Minneapolis, Minnesota.
Grant Period: 1/1/66–12/31/68.
Massachusetts Health Research Institute, Boston, Massachusetts.
Grant Period: 4/1/66–3/31/69.
Cedars-Sinai Medical Center, Los Angeles, California (Home Dialysis Program).
Grant Period: 6/1/66–5/31/69.
Spokane and Inland Empire Artificial Kidney Center, Spokane, Washington (Home Dialysis Program).
Grant Period: 6/1/66–5/31/69.
University of Mississippi School of Medicine, Jackson, Mississippi.
Grant Period: 6/1/66–5/31/69.
Wayne County General Hospital, Eloise, Michigan.
Grant Period: 7/1/66–6/30/69.
University of Louisville School of Medicine, Louisville, Kentucky.
Grant Period: 7/1/66–6/30/69.

These grant awards have been made based upon the recommendation of a formal project review committee composed of outside experts in the area of kidney disease and chronic dialysis. A tentative commitment for grant support over a three year period has been made to each grantee; and after the three years of partial project grant support, the grantee is committed to the continuation of the project using other sources of funds. The first such grantee—The Seattle Artificial Kidney Center—has successfully met this objective, and is no longer receiving project grant support. To our knowledge, the Seattle Artificial Kidney Center also has achieved the lowest cost per patient year for chronic hemodialysis—approximately $10,000 per patient year. A recently completed study of 202 patients in twelve different centers shows a first year survival rate of 86 per cent.

Based upon our own experience and that of the Veterans Administration and other programs, we believe that it has been demonstrated conclusively that carefully selected patients who are managed with scrupulous attention to all aspects of their care can be rehabilitated to the extent that they are able to carry on many of the activities considered a part of normal daily living. Many of the above projects will receive continued grant support during 1967 and 1968 under the Comprehensive Health Planning and Service Program authorized by PL 89–749. Emphasis during this period will be placed upon the collection and analysis of medical and cost data.

As they have developed, all of these centers have elements of the following objectives in varying combinations:

a. Innovation in order to improve the quality of medical care.

b. Continuous development, in a dynamic sense, as centers of excellence in order to provide the medical community with orientation and training opportunities, and to help develop plans and establish guidelines and criteria for other centers. This objective requires a continual updating of equipment in both the development and application of new techniques in dialysis systems design, staffing patterns, etc. The National Institute of Arthritis and Metabolic Diseases is currently conducting a dynamic and successful program in equipment research and development. Hopefully, the results of their research and development efforts will shortly be ready for widespread application in ongoing centers.

c. Uniform collection and analysis of medical data, patient socio-economic data and project costs data. The Kidney Disease Control Program and the National Institute of Arthritis and Metabolic Diseases have embarked upon a joint venture in the collection of uniform dialysis data.

d. Development of a sound clinical base for continuing research in kidney disease and chronic uremia.

Given the extremely high cost of chronic hemodialysis—even under the best of conditions—when performed within a hospital setting, the need for developing effective alternatives has become imperative. With the increase of $3,000,000 for FY 1967, the Kidney Disease Control Program is helping to develop and test such an alternative by establishing a limited number of home dialysis development and training centers. The purpose of these centers will be to develop and test the hypothesis that home programs, properly administered and controlled, can substantialy reduce the cost of artificial kidney therapy without sacrificing quality of patient care. The centers planned for 1967 will have the potential to train and support a sufficiently large home patient population to permit sound conclusions to be drawn regarding the medical, social, and economic feasibility and possibilities of applying this therapy to all who need it.

When these centers have been staffed and equipped, medically suitable patients (and their family members and local physicians) will be trained in the techniques of home artificial kidney therapy and then placed upon continuing treatment within the setting of their own homes. As a result of well planned, staffed, and equipped training centers plus a statistically significant patient population, the developmental home artificial kidney programs will be able to:

a. Test the feasibility of widespread and prolonged home treatment with the artificial kidney and various methods of providing it.

b. Generate and evaluate cost data on both the training center and the home treatment of patients.

c. Generate and evaluate uniform patient and medical data.

d. Determine the extent to which many possible sources and combinations of funds (i.e. insurance, private funds, voluntary sources, and local, State and Federal sources) can be developed to support this need.

Information and data derived from these programs over the next several years will help the Public Health Service in the determination of requirements, and the development of guidelines, criteria and plans for efficient and effective ways to curtail the needless loss of 5,000 lives each year. Even during the initial development of these training and support centers for home artificial kidney patients, hundreds of patients' lives will be saved; and, if this technique proves as successful and widely applicable as we expect, many thousands of lives may be saved by its widespread application.

III. CONTINUING EDUCATION, TRAINING AND INFORMATION

A. Background.—It may be true that if all research in medicine was suspended for five years and all efforts were directed toward education of physicians, medical students and nurses, the health standard of the population would be improved to a greater extent than by any other measure. This unrealistic suggestion merely points to the need for continuing education of the practicing physician and improved and expanded teaching facilities for those in training. Knowledge of kidney diseases is particularly lacking at the level of the practicing physician and medical student because of the subtle presenting signs and symptoms of these diseases, lack or confusion of knowledge regarding the etiology and means of treatment, and the complications resulting from these disorders which necessitate familiarity with physical and chemical terminology.

The field of nephrology is represented by investigators and clinicians with broad interests. Thus, the Third International Congress of Nephrology was attended by physicians in diverse research and clinical fields including physiology, pathology, immunology, bacteriology, endocrinology, etc. In the midst of expanding interests in the area of the kidney and its diseases, is a large body of knowledge related to the manner in which basic discoveries can be applied to individuals with kidney disease. Dialysis and transplantation stand out as examples of the application of knowledge gained through experimentation to the care of the patient.

The expansion and application of knowledge has precipitated an increase in the needs of the community for trained physicians who can apply this knowledge. The plans for increased dialysis and transplantation activity will not only provide for increased facilities for the care of patients but will also provide facilities for the training of doctors in the care of patients with kidney disease.

B. Plans and Activities.—The Kidney Disease Control Program believes that programs in education, training and information in kidney diseases should be directed into three areas: the practicing physician, medical and paramedical personnel in training programs, and the general public.

1. The Practicing Physician

It is common knowledge that a physician who leaves an academic environment and enters practice gradually or rapidly loses touch with contemporary advancements in medical practice, depending on the time and interest of the individual practitioner.

The morass of educational media in the form of journals, drug company pamphlets, newspapers, tapes, radio broadcasts, and medical meetings overwhelm the practitioner so that he is unable to ferret out the concise meaningful information that will assist him in bringing up-to-date care to his patients. As the accumulation of medical knowledge accelerates, the busy practitioner is left further and further behind and his ability to keep up with journals and to attend medical meetings becomes more restricted as his practice and responsibilities grow. Clearly a need exists for a practical means of continuing education for the physician which will bring up-to-date care to his patients.

Anyone who has attended a medical conference or seminar in a crowded room where the acoustics and visual aids are far from ideal can attest to the relative inefficiency of such methods of mass education. Similarly, the medical journals are multiplying rapidly and it is becoming more and more difficult for a practicing physician to ferret out concise reviews of subjects of interest to him. Though pharmaceutical houses have taken the lead in providing educational material that is attuned to the busy practitioner, the quality and range of such publications is often restricted.

In this age of mass communication, it is appropriate that advantage be taken of techniques in visual aids to provide an educational medium to practicing physicians with a minimum of inconvenience and possible embarrassment. Ideally, the educational process would be available to the physician on a daily basis, in an environment in which he is comfortable, and which takes a minimum amount of time from his daily activities.

Continuing education by television is being established among networks of university and community hospitals in several areas in the United States. A series of professional education programs in kidney diseases is needed to utilize these operating networks which are reaching increasing numbers of practicing physicians. Progress toward this goal is currently being made by planning for the production of a professional education film on dialysis center functions. Other programs of professional education are needed in the vital areas of prevention, early detection and diagnosis of kidney diseases.

The technique of programmed learning has been particularly effective as a continuing education medium. A number of booklets utilizing this technique have been prepared and distributed by pharmaceutical houses and have been well received by the medical community. A programmed learning series of booklets or television programs, developed in cooperation with consultants to the Kidney Disease Control Program and distributed through local medical groups, would provide additional education to the local practitioners.

Evaluation of the effectiveness of such educational procedures is necessary to justify Federal and local support in these areas. The following pilot study is being considered for such an evaluation:

a. In cooperation with local medical agencies in two separate localities that are compatible geographically, educationally and culturally, a program of education will be undertaken in the test community with the second locality remaining as a control.

b. Local practicing physicians will be asked to cooperate in such a study in the test and control areas. Initially, they will fill out a relatively short questionnaire, anonymously, relating to their knowledge of kidney diseases.

c. During the following six to twelve months, physicians in the test community will receive programmed learning booklets and visits from a local university group who will conduct a seminar in kidney diseases. The control group will not be visited nor will they receive the programmed booklets.

d. A repeat questionnaire will be circulated at the end of the test period in both groups and an evaluation of the exposure to a learning experience will be made in both areas among the practicing physicians. Also a tabulation of the number of cases diagnosed and admitted to the local hospitals,

and those referred to the medical centers serving the areas will be made at the beginning and at the end of the study in both localities.

If the pilot study proves effective in increasing the level of knowledge and awareness of kidney disorders in the test community as compared to the control locality, consideration must then be given to further study of the most efficient means of education and to extending these activities on a broader scale throughout the country.

Finally, plans are being made for sponsoring a series of seminars in early detection of urinary tract disorders for the practicing community physician, to be held in conjunction with developmental screening programs for urinary tract infections.

2. Medical and Paramedical Training Programs

Increasing the number of health personnel familiar with diagnostic and therapeutic techniques in kidney diseases is an obvious necessity to improve care of patients with these disorders. Progress toward achieving this goal is currently being made by the following Kidney Disease Control activities:

a. Dialysis Training—Training programs at the Downstate Medical Center and the Seattle Artificial Kidney Center are being supported which are designed for both medical and paramedical personnel. The physician trainee is paid a yearly salary while on the training contract. Basically, the trainis of the apprenticeship variety, with no concrete curriculum involved. Admission to this one year training program is through application to the institutions involved and the project director and department of medicine at the institution act upon the application. There is a limitation regarding the number of physicians who can be trained by this method and the training contract with Downstate Medical Center provides for two physicians to be trained per year.

Although there is no requirement that a research protocol be submitted or that research be carried out during the tenure of the one year traineeship, it is assumed that physicians involved in the center activities do participate in some research, although their basic role is in the clinical care of dialysis patients.

b. Short-term Traineeships—This training grant mechanism is applicable for short-term training of physicians and paramedical personnel. Our plans call for a series of seminars in early detection of urinary tract disorders for the practicing community physician and other health personnel utilizing this type of grant.

c. Development of Training Materials—A contract has been negotiated with a firm experienced in educational media development and production. This firm will work closely with several artificial kidney centers to develop recommendations for visual aids and text materials for the training of physicians, nurses and technicians.

d. Other Programs—Physicians may receive training in the field of kidney disease from individual academic institutions or through private foundations. As a rule, foundation support is for research. On the other hand, many dialysis units have trained physicians expressly for the development of competence in this field. These training programs are basically apprenticeships without standard curricula.

3. Planned Clinical Fellowships and Traineeships

The following programs (which would require legislative authority) are planned to fill a void which exists in opportunities for clinical training in kidney diseases:

a. One Year Clinical Fellowships—It is planned that a fellowship be established which will have the purpose of supporting individuals interested in one year of clinical experience in kidney disease. This support would expressly involve the individual who wishes to gain competence in the clinical management of such patients before entering the practice of Internal Medicine.

The fellowship would also allow a certain degree of freedom that does not already exist for those who are in postgraduate training in kidney diseases. An individual who wishes to spend a clinical year in one institution before going on to pursue research in another institution could therefore apply for a clinical fellowship without the necessity of submitting a research protocol for his clinical work.

This fellowship would also cover the training of physicians who want to spend a full year on a dialysis or transplant unit and have no specific research plans prior to initiation of the fellowship.

b. Three Month Dialysis Traineeships—At the present time the National Institutes of Health is capable of supporting a number of physicians on research fellowships and traineeships. The three month dialysis traineeship would allow these individuals and other qualified physicians to gain a certain degree of competence in this technique during the period of their training.

These traineeships would be carried out in centers designated by the Kidney Disease Control Program through a mechanism similar to the National Institutes of Health Training Grant. The Program would therefore be responsible for the support of the institutions that will carry out the training, whereas the individual applicants would apply directly to the training institutions.

It is planned that a limited number of such training grants be funded at dialysis centers that are uniquely capable of carrying out such training. The traineeship would include a concrete curriculum as well as a period of apprenticeship. Each quarter of a new group of fellows could rotate through the dialysis unit for training. The support for the unit from the Kidney Disease Control Program would conceivably include the salaries of professional staff needed for the training of fellows, as well as equipment, supplies, and stipend for the trainee.

4. Public Education

In this area the basic objective of the Kidney Disease Control Program is to increase public awareness of the importance of kidney diseases. Increased understanding of the nature and extent of the chronic kidney disease problem on the part of the public is vital to an appreciation of the true importance of these diseases as a public health problem.

The basic philosophy underlying this aspect of the Program is that an informed public is a necessity if effective community-wide programs for kidney disease are to be developed. The importance of these diseases as a public health problem is not widely appreciated and the general public has little or no concept of the functioning of the kidneys or the nature of the diseases that can attack them. This is in contrast to other important chronic diseases such as heart disease and cancer where the efficacy of adequate public information programs has been repeatedly proven.

In the past there have been very few publications available for the layman which adequately describe either the general functions of the kidney or characteristics of specific kidney diseases. The Kidney Disease Control Program has produced a number of pamphlets, one describing the artificial kidney and another which explains the Program's activities and method of operation. Plans are underway to develop a series of brochures on various kidney diseases with highest priority being given to infections of the urinary tract and hypersensitivity diseases.

The use of movies and television for the widespread dissemination of information on current health problems has been quite successful in recent years. The Kidney Disease Control Program is proceeding with plans to produce a short general information film for public use covering the treatment of the patient with chronic uremia. Increased efforts are also being made to maintain close contact with the appropriate voluntary agencies in the field so that problems and progress in the kidney disease area may be brought quickly and accurately to the public's attention.

IV. DEVELOPMENT OF BASIC DATA

The collection, analysis and dissemination of basic data is another area of high priority to the Kidney Disease Control Program. Basic data relating to these diseases must be developed in order to describe adequately the extent and size of the problem and to permit us to evaluate the effectiveness of various community approaches. A major aim is to ensure periodic collections of such data in a uniform manner so that time comparisons can be made and program evaluation and effectiveness may be judged. Portions of the data collection and analysis are being undertaken cooperatively with other agencies, in particular with the National Institute of Arthritis and Metabolic Diseases. Much of the basic data required will evolve from the studies and developmental programs outlined above. One of our major responsibilities will be to assure timely and effective evaluation and distribution of such data.

Since data on the mortality and morbidity due to kidney diseases are sorely needed, several approaches are being taken to obtain this information. Mortality estimates are being developed utilizing not only the Vital Statistics of the United States, but also improving the information available through special death certificate studies, autopsy report studies, and studies of the records of selected health departments and medical care institutions. Morbidity estimates have been obtained from the National Health Survey, and these data are being supplemented from hospital record sources, data from selected health departments, and special studies. Two extremely promising contracts have been negotiated to meet basic data needs—a project to develop data on the economic costs of kidney diseases which will lead to the development of cost-effectiveness models; and an exploratory study of socio-economic problems related to chronic hemodialysis.

SUMMARY

Kidney diseases cause an estimated 100,000 deaths each year of which at least 5,000 are known to be medically preventable at present. The Kidney Disease Control Program, in conjunction with many other governmental and private agencies, is attempting to work out short-range and long-range solutions to this problem. The problem must be clearly defined, and we are attempting to accomplish this objective. In the long run, prevention or early detection and effective treatment are the optimal solutions to the kidney disease problem, and we are attempting to plan and develop the long-range projects required to accomplish this goal. As a result of successful research, thousands of people who would die each year can now be kept alive and productive through the use of artificial kidney therapy. We are attempting to convert this lifesaving therapy from a highly expensive experiment to a widely applicable mode of treatment. There is currently a woeful lack of physicians and health personnel trained in the area of kidney diseases, and we plan to develop programs to help correct this deficiency. Progress has been made toward our overall objective which is to help generate and then translate knowledge and new developments into broadly applicable health programs.

NATIONAL INSTITUTES OF HEALTH

TRANSPLANTATION IMMUNOLOGY: EARLY PROGRESS IN BREACHING MAJOR BARRIERS

The living body's implacable determination to destroy any intruder—a lifesaving graft as well as a life-threatening microbe—remains the principal barrier to successful kidney and other organ transplantation.

The surgical techniques for transplanting kidneys have in large part been developed and are constantly refined. Today, most kidney transplant operations are surgical successes, technically. The immune response of the body, however, if not suppressed, usually destroys the transplanted tissue within a short time.

When a kidney is transplanted between identical twins, no immune response occurs because the donor's and the recipient's tissue cells, having a common genetic origin, are chemically identical. Kidney transplants between identical twins have, therefore, been generally successful.

The body ordinarily defends itself against a graft, as against any foreign substance, by making counterattacking substances (antibodies), and by mobilizing specialized, defense processes. This immune response is triggered by antigens in the graft tissue. In a series of complex events the unwelcome graft is attacked and ultimately destroyed.

Progress has been made over the years in the science of transplantation immunology. The discovery in 1901 of the AB blood groups made possible the matching of erythrocytes, or red blood cells, so that today typing and effective pairing of donors and recipients make blood transfusion a successful medical tool.

The problems involved in tissue transplantation are considerably more complex. Considerable achievements have, however, been made. A number of transplantation, or histocompatibility, antigens has been identified. They are found in both body tissues and leucocytes (white blood cells). Some tests have been devised to compare the reaction between the leucocytes of prospective donors and recipients and thereby measure the degree of compatibility between their tissues. Early transplant operations using these leucocyte-matching tests have had a success rate in unrelated donors and recipients approaching the rapidly improving success rate in related persons who, because they are likely

to share a number of antigens, are more likely to have a higher degree of compatibility. Investigators believe that leucocyte typing may ultimately become the standard means of proper selection of organ donors.

The defensive immune response of the body can be counteracted and the eventual destruction of the transplanted kidney delayed or possibly prevented through use of certain so-called immunosuppressive drugs. Whole body X-ray irradiation also can reduce the formation of antibodies. These aids to transplantation prolong the functional life of the transplant, but at the same time may weaken the host's resistance to infection.

In short, progress has been made in the experimental science of tissue transplantation immunology. But much remains to be learned before the replacement of failing kidneys and other organs with new ones can become a reality.

Tissue Typing

The National Institutes of Health began to expand its program in tissue transplantation immunology in 1964, when Congress authorized a broad program of research in the field. Grant-supported research projects, intramural studies, and organized developmental work in medical centers and industry have been stepped up in succeeding years. The efforts of many laboratories have been focused on hurdling the remaining barriers through both basic research in immunology and kidney diseases, and through development of a badly needed universal tissue-typing system.

The urgent need, and the short-term goal, of this program is the identification of all the tissue transplantation antigens and their classification according to relative strength. Experimental work has shown that there are apparently only 6 to 10 major transplantation antigens rather than the 15 to 30 which had been predicted on the basis of animal studies. This finding is encouraging but investigations are being accelerated (1) to make certain that the new number represents all the significant antigens, (2) to isolate those that are the strongest, and (3) to improve the techniques for antigen-antibody detection.

A major requirement of the typing program is specific, high quality antisera (blood serum containing antibodies) for comparing typing results and serologic techniques. The contract supported program of NIAID had produced by the end of 1966 more than 36 liters of antileucocyte antiserum for issuance to tissue-typing laboratories all over the world. Through two contractors (one in Europe, the other in the United States) that are acting as serum banks, the sera are being distributed for further characterization studies, for attempts to fix the total number of leucocyte antigens, for evaluation typing of transplant patients and prospective donors, and for attempts to isolate and purify histo-compatibility leucocyte antigens obtained from tissue culture and other sources.

There has been encouraging evidence that the leucocyte-matching tests apparently do identify the key transplantation antigens. With these typing tests it has been possible to select from a random population unrelated donors whose kidneys provided as good a survival rate and function as kidneys from donors related to the recipients. Further refinement of techniques, however, must occur before the present laboratory procedures can be applied to the selection of patients and donors in kidney transplantation centers throughout the country.

Research on the transplantation antigen-like activity of bacterial fractions gives hope that eventually antigens can be produced from bacteria of cell cultures and substituted—in both typing and matching—for living leucocyte cells, which are difficult to store. They may some day also prove useful in stimulating tolerance to foreign grafts.

Adjuncts To Tissue Typing

Because transplants, except between identical twins, are frequently ultimately rejected by the body, the critical problem still is to find methods to reduce—and some day to eliminate—the immune response to grafts. Lasting success depends on matching the recipient's and donor's cells as closely as possible, and then overcoming any remaining minor incompatibility by inducing immunological tolerance in the recipient's body.

Certain immunosuppressive drugs for use in the prevention or control of the rejection phenomenon are being studied. Studies are being conducted to find more effective and less toxic drugs to control the immune response.

Two groups of investigators have produced specific immunologic tolerance to grafts in mice and in dogs by administration of antilymphocyte serum before the transplant operation. This procedure resulted in striking prolongation of the graft and apparently induced tolerance also to second grafts. Another group

found that antiserum to thymus prolonged skin graft survival in rats twice as long as antiserum to lymphocytes.

In addition to antilymphocyte serum, total and sub-total body irradiation, cytotoxic drugs, and surgical alterations of the lymphatic system have been used in attempts to reduce or eliminate the lymphocyte population and thus increase tolerance to homografts. These methods, however, also cause undesirable general effects, such as depression of bone marrow and red blood cell formation.

Now selective destruction of *lymphocytes* and a consequent tripling of kidney homograft survival-time in dogs has been achieved by grant-supported scientists. According to this method, radioactive pellets of yttrium are sealed in a Silastic tube and the tube is suspended within the aorta by a single Dacron suture. The yttrium isotope was chosen because of its short half-life and because the beta rays it emits are mainly confined to the immediate area of the implant. Thus, the bloodstream serves to shield the adjacent aortic wall at the same time it is bringing the extremely radio-sensitive lymphocytes within range of the capsule.

Functional survival of the kidney homograft was more than tripled in 10 radiation-implant dogs over that of eight untreated control animals. No permanent survivals were obtained with the short-term radiation employed, but further studies are under way to evaluate longer periods of radiation, and various combinations of radiation and immunosuppressive drugs.

Supportive Basic Research

Paralleling the efforts to develop reagents, tests, and techniques for applying the knowledge already gained are research projects aimed at understanding the basic immunologic processes of the human body. Intramural projects in Bethesda on immunology focus on such areas as hypersensitivity, mechanisms of the immune response, immunochemistry of serum antibodies and antisera, and induction of delayed hypersensitivity. Many of these studies are closely related to the problems of transplantation.

Protection of Transplant

This past year, a grant-supported scientist markedly reduced early failure of kidney homografts by a program of "renal-protective" management. By hydrating living, consanguinous donors immediately before operation, the grantee has been able to reduce significantly early functional failures of kidneys transplanted from the donors. This program of "renal-protective" management was employed to offset kidney damage that begins with anesthesia and is worsened during subsequent surgical manipulation of the organ.

In his study, 10 patients (Group A) received kidneys from donors who were given routine preoperative treatment, while 21 patients (Group B) received kidneys from donors who were given "renal-protective" management: induction of diuresis (increased urine excretion) before anesthesia, strict maintenance of blood pressure during surgery by continuous fluid replacement, and maintenance of diuresis by intermittent injections of the drug mannitol.

There was evidence, too, that "renal-protective" management, coupled with immunosuppressive *pre*treatment of recipients with corticosteroid drugs and azathioprine, enhances survival of grafted kidneys beyond the first two months: overall mortality two to 24 months postoperatively was 60 per cent in Group A patients and 19 per cent in Group B patients.

Recent data from the Human Kidney Transplant Registry clearly show that most graft failures occur within 60 days after transplantation. The present results suggest that such failures may stem from occult renal damage initiated within the donor during nephrectomy, and that such damage may be largely prevented by prehydration and mannitol-induced diuresis in the donor.

Clinical experiences with 100 consecutive non-twin kidney *homotransplants* performed during the four year period from 1962–1966 were recently presented by a group of grantees to the Third International Congress of Nephrology meeting.

The long-term follow-up data obtained from this large number of patients permitted some interesting comparisons between transplants from related living donors (RLD) and those from cadaver donors. These comparisons, based on duration of excellent kidney function rather than patient survival-time, revealed plateaus in kidney function at 12 months for cadaver kidneys, and 18 months for those from related living donors. This function was maintained for 30 months in 41 per cent of the cadaver kidneys, and for 36 months and over in 58 per cent of the RLD kidneys.

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The study also catalogues some signs and events occurring within weeks of transplantation that, in many cases, enable one to predict the long-term fate of the transplant, whether cadaver or RLD in origin. For example, if the transplant undergoes a rejection crisis within the first week, or if rejection crises occurring during the first four months are severe enough to require the use of an artificial kidney, the odds that the transplant will continue to function beyond one year are practically nil. If no rejection crises occur during the first four months, prospects are excellent for continued good function for a period of several years—up to three and one-half years in this study. Predictions between these two extremes can be based on whether or not rejection crises, however severe, can be brought under control within 30 days.

Future Program Direction

Organ transplantation is still an experimental science, despite the limited success with kidney grafts. And there are many unanswered questions, such as: What mechanism is involved in the survival of a transplant? Why do failures occur? How do antibodies destroy an organ?

Multidisciplinary studies of the immunologic and therapeutic means available for achieving permanently successful grafts must continue to be pressed. Medical science must continue to use all the weapons it can produce to breach the body's own barrier against life-saving new parts: constantly refined surgical techniques, continued and improved use of dialysis, improved and simplified tests to insure the closest match with the recipient's own tissue, and the suppression of other rejection processes through new immunosuppressive agents and techniques, applied to both the donor organ and to the recipient.

Concurrently, there will be an ever-increasing need for healthy organs with which to replace diseased or worn ones. Already under study are tissue preservation techniques which will permit the storage of functional whole organs and diagnostic reagents until they are needed.

During the last few years it has been shown that the repeated routine use of artificial kidneys in such patients on a regular schedule would permit the saving of lives which would be lost due to the otherwise fatal uremia. At the moment, however, using currently available techniques, the cost of hemodialysis both in terms of money and qualified manpower is extremely high, so that this life-saving treatment modality is, as yet, not available to all who might benefit from it.

The techniques and equipment involved still require improvement which must come about through strong research and development efforts. Authorities representing artificial kidney centers agree that improvements in hemodialysis must be based on additional knowledge of the nature of uremia. Such knowledge is as yet imperfect and must be developed side-by-side with efforts to improve artificial kidney apparatus and techniques, in order to assure maximal rehabilitation of patients maintained by chronic dialysis.

Pertinent National Institutes of Health Activities

For several years, intramural scientists have been working on the development of simpler, more efficient and more compact artificial kidneys, including one artificial kidney involving the use of activated carbon to absorb uremic wastes. These efforts have now advanced to a point where pilot models can be tested with laboratory animals and patients.

At the same time, the NIH has invested major funds in extramural support of research in hemodialysis with artificial kidneys and peritoneal dialysis (blood purification through washing of the abdominal cavity with special dialyzing solutions).

In the summer of 1965, Congress appropriated $3 million for the pursuit of a centrally directed program of research and development in chronic uremia, hemodialysis and artificial kidney development, utilizing predominantly a direct contract approach as well as increased research grant support. This program was located in the National Institute of Arthritis and Metabolic Diseases (NIAMD), the Institute which has major responsibility for urology and renal diseases research support.

It was considered important to undertake such a program through the utilization of the best possible consultative talent from both outside and within the National Institutes of Health. Accordingly, 23 outstanding authorities active in the field of chronic uremia and hemodialysis have been appointed as consultants. Among them are physicians who have led programs in artificial kidney centers, renal physiologists, physical chemists and membrane specialists, chemical

and electronic engineers, and those rare, talented individuals who combine several of the above qualifications. These consultants are assisting in setting the trend of the new program and are reviewing the scientific merit and feasibility of contract proposals.

It was also considered important that the new program be undertaken in close cooperation with the activities of the Kidney Disease Control Program of the Bureau of Disease Prevention and Environmental Control (BDPEC), PHS. The latter activity is concerned largely with the actual demonstration of chronic dialysis in a community setting—both in specialized dialysis centers and, where feasible, in the homes of selected patients. Because of the closely interdigitating and interdependent nature of the NIH and BDPEC activities, both programs are in close and constant communication and work with a high degree of cooperation. There is a constant exchange of essential data between both programs and the respective staffs of these programs, with particular emphasis on program planning activities. It is hoped that this close cooperation will assure a maximum of benefit and prompt developmental advances in the artificial kidney field.

Outline of Program Plans

A thorough study of the state of the art made it apparent that no single specific direction could be followed which would exclude others which might be relevant. Several different types of artificial kidneys are in use at the moment, and different methodologies are being advocated by the various workers in the field. Therefore, at this time, a variety of approaches in artificial kidney development are being supported. Once it becomes evident that one or more approaches show greater promise, efforts will be concentrated in these directions.

Problems of Highest Priority

The following are outstanding problems in dialysis toward which the new Artificial Kidney Program is directing immediate efforts:

1. Cannulas. The life and function of the permanently implanted cannulas are still limiting factors in successful dialysis.
2. Dialysis membranes. Though effective, the cellophane membranes currently in use may not be optimal. The possibility of using other, perhaps more selective membranes, must be explored.
3. Design of individual dialyzer units. Most dialyzers presently in use are cumbersome and costly to assemble and sterilize. There exists a dialyzer which utilizes a disposable dialysis-ultrafiltration "cartridge"; this cartridge is as yet too expensive for maintenance of chronic patients.
4. High requirement for professional personnel. This requirement is based on the medical nature of dialysis, but aggravated by problems 1, 2, and 3 above.
5. Lack of effectiveness data. No objective information has been obtained through well-controlled studies which permits a meaningful evaluation of the comparative effectiveness of the various dialysis methods and equipment currently in use. Such studies are facilitated by the existence of artificial kidney centers which provide the long-term patient care for this type of evaluation.
6. Undesirable symptoms frequently found in patients maintained by repeated dialysis:

a) Anemia. On the average, one or more blood transfusions are needed per month per patient maintained in dialysis—with the attendant high risk of transfusion hepatitis.

b) There is a significant incidence of peripheral neurological damage. This may be due to long-term effects of the semi-uremic state in surviving patients on repeated dialysis, or due to the dialysis procedure, *per se*.

c) Pseudo-gout, secondary hyperparathyroidism, skeletal demineralization, and calcium deposition in joints and in the tissues throughout the body. The most recent findings involve calcium deposition in the cornea of the eye. Simultaneously, there is a tendency to decalcification of bone with resultant fractures produced by minor stresses.

Problems 1 through 4 are primarily responsible for the current high cost of dialysis, which averages $10,000–$14,000 per year in patients maintained by hospital dialysis on a twice-weekly schedule.

Immediate Program Activities

In brief the following are activities of primary concern of the Artificial Kidney Program.

1. Improvement of cannula materials, design and techniques so that current clotting and infection problems will be minimized. This involves redesign of cannula tips and bodies, development of a safer and simpler cannula coupling to the artificial kidney conduits, and the use of different cannula materials, including plastics permanently coated with anti-coagulants.

2. Development of improved or different membranes to permit a more selective and briefer dialysis. This involves the development and evaluation of tailor-made polymer membranes with controlled pore size and/or selective electrostatis properties, as well as mechanical modifications of the currently used cellulose sheeting, introduction of non-coagulating surface properties, and investigation of the metal binding characteristics of these new membranes.

3. More efficient, less cumbersome and less costly dialyzer design. This involves the improvement of new disposable dialysis-ultrafiltration units, development of more compact dialyzers requiring less blood for priming, overall redesign of machines to simplify and shorten assembly and sterilization, introduction to artificial kidney design of plastic materials with non-coagulating surfaces, and expansion of two new concepts in artificial kidney dialysis; (a) "hollow fiber" kidneys, and (b) "diafiltration"—blood purification primarily through ultrafiltration, followed by artificial reconstitution of the filtrable blood solutes.

4. Improvement of technical and hardware efficiency and safety of large hospital dialysis centers and of home dialysis units. In hospital centers, this involves development of improved automatic central fluid delivery systems, and fail-safe monitoring systems for all aspects of dialysis (blood leakage, temperature, ionic concentrations of fluids). In home dialysis units, this will also involve inclusion of a fail-safe mechanism in the dialyzing equipment in the event of accidental blood leakage—to permit unattended dialysis at night when patient and family are asleep.

5. A systems analysis of the entire present chronic dialysis effort and of its methodologies and equipment. This includes a meaningful comparative evaluation of the various facets, steps and methodologies involved in chronic dialysis, from selection of the patient through his medical evaluation once he is being maintained with chronic dialysis. This includes a registry of all patients presently maintained with the aid of artificial kidneys or peritoneal dialysis, which will permit a truly comparative evaluation of the effectiveness of equipment involved and various methodologies of treatment. This overall systems analysis will continue as a longitudinal study of these patients and will be undertaken as a cooperative effort with the community service programs in dialysis of the Kidney Disease Control program. BDPEC, PHS: it will cover the various dialysis centers of the Veterans Administration Hospitals and all other centers or hospitals engaged in chronic dialysis and willing to cooperate.

Activities to Date

The Artificial Kidney-Chronic Uremia Program was mounted in record time with the activation of 24 carefully selected research and development contracts. These contracts were placed with universities, nonprofit research laboratories and industrial concerns, and constitute a broad spectrum approach to the major problems. These projects involve development of improved blood cannulas; evaluation and development of new polymer surfaces for artificial kidneys, cannulas and membranes which do not induce blood coagulation; design of more efficient, compact, and less costly dialyzer systems; development of a new concept of artificial kidney dialysis ("hollow fiber" or "capillary" kidneys); research on and development of absorption cartridges for blood purification; research on the utilization of ultrasonics to speed up dialysis in artificial kidneys; development of inexpensive disposable dialysis units; improvement and design of new automated centralized artificial kidney systems; improvement and design of new dialysis units with automated fail-safe mechanisms; design and development of a prototype for a portable artificial kidney; and many other related projects.

The portion of the program which is funded by extramural research grants complements closely the contract program described above, but is oriented more toward elucidation of clinical and fundamental biological problems related to

the treatment of chronic uremia rather than toward hardware development. It involves studies on urea metabolism in uremic patients undergoing chronic dialysis; the undesirable side effects of chronic dialysis; the effectiveness of peritoneal dialysis in uremic patients; other novel approaches to blood purification in chronic kidney failure such as dialysis of a surgically relocated, isolated intestinal loop, lymph dialysis and dialysis in the home; and the nature of the biochemical defects in advanced uremia.

Thirty-two new research and development contract proposals have already been received in fiscal year 1967, and a substantial portion is in the process of being activated. These proposals embody unique, new approaches to artificial kidney methodology such as diafiltration (a novel concept in artificial kidney design); development of new types of permanent arteriovenous shunts; introduction and evaluation of novel materials for cannulas; development of additional types of capillary (hollow fiber) artificial kidneys; evaluation of a special protein restricted diet in the maintenance of uremic patients for whom chronic dialysis is deemed not feasible or unobtainable; isolation from dialysates and identification of the as yet unknown compound(s) which is (are) specifically responsible for the toxic symptomatology in uremia; and many other projects related to improved dialysis methodology or apparatus.

Periodic optimistic stories in the lay press notwithstanding, the ultimate cheap, simple, efficient and safe artificial kidney for home use does not yet exist, nor does it loom in the immediate future. The program as outlined above is expected to close existing gaps systematically and to deal with treatment complications. Simultaneously, it introduces new engineering developments into the maintenance treatment of uremic patients and, hopefully, will lead toward both better hardware and improved patient rehabilitation.

KIDNEY DISEASE RESEARCH

This past year, NIH-supported scientists have reported on a host of findings shedding light on several diseases involving the kidneys in order to better understand and hopefully prevent lesions that produce chronic renal failure. Some of these are uremia, systinuria, glomerulonephritis, chronic pyelonephritis, the nephrotic syndrome, and hypertensive kidney disease.

Uremia

A low-protein intake is considered useful in the treatment of some patients with uremia because the failing kidney is no longer able to handle the excretion of urea and other nitrogen-containing products of protein metabolism in the body. The accumulation of these nitrogeneous substances is believed to be responsible for some of the symptoms of uremia.

A group of Italian grantees has noted that chronic malnutrition is often present in patients with chronic renal failure. Severe protein depletion is often present because of breakdown of body protein resulting from dietary protein restriction, a poor food intake because of lack of appetite, and in some instances urinary protein losses as a result of kidney damage. Tissue wastage and resorption of bone matrix are reported to be frequent results of this severe protein depletion. Their dietary approach is aimed at restoring nitrogen balance without overloading the kidney's impaired nitrogen-excretion capabilities. They have employed diets containing from 18–25 grams of protein daily. If one of these diets fails to improve the patient's clinical condition, he is placed on a diet containing eight essential amino acids in amounts comparable to 8.5 grams of protein daily. These diets usually decreased blood nitrogen levels and produced clinical improvement, especially if a positive nitrogen balance could be maintained. Surprisingly, positive nitrogen balance was observed most frequently in patients on the essential amino-acid diet, which contained less total nitrogen than any of the others. Biochemical studies, using labelled urea in uremic patients on the low-nitrogen diets, indicated that some of the urea was being actively used in the synthesis of amino acids and protein. This might help to explain both the decreased azotemia and the improved clinical status of patients maintained on these diets.

In two separate and unrelated studies this past year, scientists have made significant contributions toward identifying and characterizing the toxic factors in uremia, essential to a better understanding of uremia and to improving hemodialysis apparatus and techniques.

Treatment of uremic patients with the artificial kidney or with peritoneal dialysis usually results in clinical improvement, suggesting that the small molecules removed by dialysis contribute to the symptoms of uremia.

Recent studies have suggested that catabolism of aromatic amino acids may lead to accumulation in the blood of intermediate products which may play a role in development of the toxicity of uremia. Now it has been shown that blood levels of aromatic amines (degradation products of aromatic amino acids) are markedly elevated in uremic patients, that these high levels are correlated with blood urea nitrogen levels, and that they may be reduced significantly by hemodialysis with an artificial kideny. These findings suggest that aromatic amines may play an important role in the toxicity of uremia.

Another investigator has demonstrated that protein synthesis, as measured by an *in vitro* amino acid incorporation system, is markedly impaired by two specific organic compounds isolated from hemodialysis fluid of uremic patients It is suggested that this assay system may be of value in determining the toxic components present in uremic patients.

Cystinuria

Cystinuria, a disease characterized by urinary excretion of large amounts of cystine and other amino acids, and by formation of cystine stones in the urinary tract, is attributed to a hereditary transport defect in the kidneys. It has been suggested that cystinuria is due to more than one single inherited disease process, however, and evidence was recently obtained of an intestinal as well as a renal transport defect in this disorder. The reported findings indicate that cystinuria encompasses at least three biochemically and genetically distinct diseases.

In cystinuria, the kidneys excrete excess amounts of cystine. Since cystine is relatively insoluble, cystine crystals may be produced in the urine and may accumulate in the kidneys, frequently leading to the development of kidney stones. Conventional therapy, including increase fluid intake, alkalinization of the urine, and dietary restriction of methionine (a metabolic precursor of cystine), is not always effective.

It is known that penicillamine, a degradation product of penicillin, can markedly reduce urinary cystine excretion and prevent new stone formation by reacting with cystine to form the more soluble penicillamine-cystine. Recent work, both in Bethesda and by grantee scientists, now has shown that prolonged penicillamine therapy sharply reduces the size of existing cystine stones in the kidney and eventually dissolves them completely, without serious side effects.

Glomerulonephritis

NIH grantees have developed a new vaccine that may help prevent streptococcal infections, which frequently lead to rheumatic fever in children and may be the basis of glomerulonephritis in both adults and children. Although the majority of patients with glomerulonephritis recover, a significant number enter a chronic stage of kidney function impairment that ultimately progresses to chronic kidney failure.

The investigators have found their new vaccine to be safe and effective in extensive tests with mice, rabbits, and guinea pigs. In tests on nearly 50 adults, it has led to no serious reactions and has greatly increased the levels of antibodies against streptococcus organisms. Only further testing, particularly in children, will determine the effectiveness of the new vaccine in preventing streptococcal infections under ordinary conditions.

The investigators are working at present toward development of a vaccine that will be effective against the five or six types of streptococcus organisms that cause most infections in urban populations.

Chronic Pyelonephritis

Chronic pyelonephritis, a slowly progressive kidney disease, is believed to result from the scarring effects of a pre-existing bacterial infection, as well as from persisting and recurring bacterial infections. The disorder apparently occurs more frequently in diabetic patients than in other groups, but there is little unanimity of opinion as to the actual frequency of the disease in diabetic and in nondiabetic groups.

Histologic and bacteriologic studies by an NIH grantee now have shown that there is essentially no correlation between the presence of positive urine cultures, positive renal tissue cultures, and the histologic diagnosis of chronic pyelonephritis in juvenile diabetic patients. These findings suggest that factors other than the continued presence of bacteria in the kidney may play a role in the pathogenesis of chronic pyelonephritis.

Nephrotic Syndrome

A long-term NIH-supported study of patients with the nephrotic syndrome has revealed that such individuals have an incidence of cancer ten times that of comparable population groups. This finding suggests a more than coincidental relationship between these diseases and indicates a need for careful and repeated screening of nephrotic patients for malignancies.

Of 101 patients with idiopathic nephrosis studied between 1953 and 1962, 11 (or 10.9 percent) were found to have malignant neoplasms anywhere in the body. The incidence of cancer in comparable population groups, paired according to age and sex, was one percent. None of the 11 patients had received anticancer therapy which might produce nephrosis. Renal amyloid involvement and renal vein thrombosis were also ruled out.

It is known that patients with neoplastic disease frequently develop antibody directed against their lesions, and there is evidence to indicate that membranous glomerulonephritis and lipoid nephrosis are immunologic diseases. The high incidence of cancer observed in nephrotic patients in this study suggests a relationship between these diseases; materials released from neoplasms may act as antigens which subsequently cause the production of antigen-antibody complexes capable of inducing the characteristic renal lesions of the nephrotic syndrome.

Hypertensive Kidney Disease

Renal failure is a common cause of death in patients suffering from malignant hypertension. Recently, however, unequivocal evidence has been developed to show that modern blood pressure-lowering drugs are saving many lives by preventing renal damage as well as other fatal consequences of essential and malignant hypertension.

The known incidence of hypertension secondary to primary kidney disease and renovascular disease has increased progressively as improved methods have been devised for diagnosing these ailments and for determining their various (and variable) effects in the body.

In renovascular hypertension, for example, the improved diagnostic acumen of physicians has enabled them to: (1) determine the location and extent of blood clots or atherosclerotic deposits obstructing renal blood vessels; (2) measure the effects of such obstructions on renal function in one or both kidneys; (3) choose that method of and/or surgical treatment most likely to benefit the patient; and (4) assess the results of therapy. Surgical reconstruction or bypass of affected vessels will often cure renovascular hypertension if the obstructions to bloodflow are confined to surgically accessible sites and if they have caused no permanent damage to the kidney. Otherwise, removal of one kidney will be required to control the hypertension resulting from kidney damage. If only one kidney is affected, prompt and accurate diagnosis followed by repair or removal of that kidney can often prevent hypertensive damage to the other kidney.

New Diagnositic Methods

An improved method of percutaneous renal biopsy, whereby a sample of kidney tissue for analysis is obtained with a special needle inserted through the patient's back, utilizes television-monitored fluoroscopic guidance of the needle to avoid potentially hazardous "blind" probing and to insure that tissue suitable for diagnosis is obtained. The scientists, who introduced the standard technique in 1952, state that their improved technique is now the method of choice for biopsy of the kidney.

Differentiating between acute and chronic renal failure in a uremic patient is often extremely difficult. This distinction is a very important one for the physician to make, however, since most medical centers are prepared to dialyze temporarily the patient with acute renal failure in the hope of eventual recovery, whereas only limited facilities exist for the chronic intermittent dialysis of patients with end-stage renal disease.

A grantee scientist has postulated that measuring the creatinine content of fingernail and toenail clippings would permit an estimation of the duration of renal failure and thus provide a basis for separating acute and chronic uremia patients. His reasoning was based on the premise that the creatinine content of the clipped free edge of the nail, which was formed many months earlier, would reflect blood creatinine concentration (hence the presence or absence of uremia) which was present at that time. Results of creatinine anaylses of nail clippings from normal persons and patients with renal failure of varying degree and duration bear out his theory.

He found that patients with acute renal failure had normal nail creatinine concentrations, whereas those with chronic renal failure had elevated levels that correlated with the blood creatinine levels present several months before. Patients with chronic renal failure who regained normal kidney function after successful renal homotransplantation continued to have elevated nail creatinine levels until several months after blood levels returned to normal.

Scientific Communication Activities

In a major effort to meet the scientific communications problem in kidney disorders, and to acquaint the professional community with kidney research, the NIAMD has begun a vigorous program to expedite communication of pertinent laboratory and clinical findings. This past year, the Institute began publication of a new current-awareness bibliography on chronic kidney failure and on artificial kidney and dialysis methods covering relevant scientific papers from throughout the world. The publication, *Kidney Failure and Artificial Kidney Bibliography*, has been made available to interested investigators in this field and has been received enthusiastically. It was prepared to explore the possible utility, content and format of a new quarterly bibliography dealing with research and development in the area of chronic kidney failure and improvement of artificial kidney and dialysis methods.

Also developed this past year were an exhibit and an accompanying brochure to provide general information for present and prospective participants in the Artificial Kidney-Chronic Uremia Program. Both exhibit and brochure describe areas of emphasis in this program and the procedures and methods utilized for supporting research, applied research and development.

The Third International Congress of Nephrology was held this past year in Washington, D.C., and was sponsored primarily by the National Heart Institute and the National Institute of Arthritis and Metabolic Diseases. Principal objection of the Congress was to promote the international exchange of scientific information on activities in the basic and clinical sciences relating to the kidney. Over 2,000 scientists from some 44 countries attended the Congress.

Kidney Disease: Summary

Research conducted or supported by the National Institute of Arthritis and Metabolic Diseases, the National Institute of Allergy and Infectious Diseases and the National Heart Institute has added considerably to the understanding and treatment of chronic kidney disease. Latest morbidity and mortality figures due to kidney diseases reflect the acute need for continuing and intensifying research efforts in this area.

Significant advances have been made in research on the prevention, diagnosis and treatment of the varying disease processes which attack the kidneys. Investigators delineating the basic abnormalities of the chronic uremic state have contributed considerably to our understanding of the condition.

Increased understanding of the fundamental disease processes has brought with it a significant improvement in treatment methods. Kidney transplantation at present shows promise of becoming a major treatment modality for chronic kidney failure. Immunological host-transplant incompatibility remains the major difficulty to successful kidney transplantation today. Steps are being taken to overcome this problem through a tissue-typing program (matching cell antigens of recipient and donor) and through studies for more effective and less toxic agents to control the immune response.

Until kidney transplantation becomes a practical reality, blood purification through an artificial kidney (chronic hemodialysis) is the only hope for survival for the majority of patients with chronic kidney disease. Moreover, a number of patients are unable to receive or successfully maintain a kidney graft due to physical, immunological, or financial reasons. Major efforts have been made in the direction of developing simpler, more efficient, more compact, and less costly artificial kidneys, allowing for the effective treatment of an increasing number of patients.

As an alternative or adjunctive method of therapy for patients with chronic kidney failure, especially those less seriously impaired, the use of a special, low-protein diet has shown considerable promise.

Investigations such as those outlined above have added much to our ability to cope with and prevent kidney failure. They have also indicated areas for new research efforts in order that more widespread and more permanent control of this group of diseases may be accomplished.

EMPHYSEMA AND RELATED RESPIRATORY DISEASES

"Respiratory Disease" is a general term covering a broad spetrum of definitions, classifications and conditions, both acute and chronic.

In response to a Committee request during the FY 1967 hearings, this report will be limited to a discussion of Public Health Service activities dealing with one aspect of the respiratory disease problem which, for clinical convenience, is often expressed as the chronic bronchitis/emphysema syndrome. It also is referred to as chronic obstructive lung disease or chronic non-specific lung disease.

THE DISEASES

It will be helpful at this time to outline some of the general medical definitions, symptoms, and characteristics of the diseases we are concerned with.

Chronic bronchitis and pulmonary emphysema are chronic diseases of the lung which have been recognized for more than 150 years. Incomplete knowledge of the etiology and pathogenesis of these disorders, however, has frustrated the development of precise definitions which could subdivide these diseases and uniquely segregate them from all other diseases of the lung.

The following definitions are generally acceptable:

Chronic bronchitis is a clinical disorder characterized by excessive mucous secretion in the bronchial tree. It is manifested by chronic or recurrent productive cough. The diagnosis of chronic bronchitis can be made only if other bronchopulmonary or cardiac disorders are excluded as the cause for these symptoms. The predominant pathologic change is hypertrophy and hyperplasia of the mucous secreting glands in the trachea and bronchi.

Pulmonary emphysema is an anatomic alteration of the lung characterized by destruction of alveolar walls accompanied by abnormal enlargement of the air spaces distal to the terminal, nonrespiratory bronchiole.

By definition, chronic bronchitis is accompanied by chronic cough due to excessive mucous secretion from the tracheobronchial tree. In most cases, a chronic productive cough is the only symptom during the individual's life span. Other persons, for reasons that are not clear, also develop obstruction to the flow of air through the bronchi. For most, this leads to occasional bouts of wheezing, particularly during or following acute respiratory infections. In others, airway obstruction becomes more marked and leads to varying degrees of shortness of breath. The most severe cases have marked ventilatory impairment and are short of breath at rest or with the slightest exertion. Such patients may succumb to their disease, particularly when airway obstruction is exacerbated. The lesions of pulmonary emphysema often are found in the lungs of middle-aged and older individuals, particularly men, and may be present without symptoms of lung disease. Others, with more extensive pulmonary lesions, suffer progressively increasing shortness of breath on exertion and, ultimately, may die of respiratory insufficiency.

Although patients having only chronic bronchitis tend to have more cough and sputum that do those having only pulmonary emphysema, the array of symptoms, physical findings, and pulmonary physiologic abnormalities are similar in both diseases.

Chronic bronchitis and emphysema coexist in many patients; usually it is difficult to assess the relative contribution each disease makes separately to the over-all obstruction of airflow.

Patients with shortness of breath and physiologic evidence of obstruction to airflow are often diagnosed as having "chronic obstructive pulmonary disease." Some persons with "chronic obstructive pulmonary disease" have only chronic bronchitis and others only pulmonary emphysema. Most, probably, have both disorders. Individuals with chronic bronchitis, or emphysema, or with both diseases may not have symptoms of airway obstruction.

Throughout this discussion, it should be pointed out that the acute episodes of distress and disease must be regarded in the long run as part of the chronic disease continuum. That is, an acute attack of bacterial respiratory infection is essentially part of the long-term chronic pulmonary illness. Victims of chronic chest disease are, of course, especially susceptible to acute respiratory illness, and for them, a simple cold can be a life-threatening episode. Therefore, such control measures as phophylactic antibiotic therapy are often employed with these patients. The development of a respiratory vaccine could be a means of saving thousands of chronic lung disease patients' lives.

DEATHS

During the past several years, emphysema and related chronic respiratory diseases have become the fastest rising causes of death and disability in the United States. Deaths from emphysema and chronic bronchitis have increased about 9 times in the last 20 years: 2,300 in 1945 to 20,208 in 1964. In addition, emphysema and chronic bronchitis contributed to an additional 40,000 deaths that year. Thus in one year, over 60,000 deaths were caused, either directly or indirectly, by emphysema and chronic bronchitis. However, most authorities feel that these figures represent only the visible portion of the iceberg. Because of variations in diagnosis, many deaths caused by emphysema and chronic bronchitis are incorrectly attributed to "heart failure," and a host of other terms.

In contrast to emphysema and chronic bronchitis, deaths from asthma and bronchitectasis have steadily decreased during the past 15 to 20 years. Thus, the real public health problem is limited to chronic bronchitis and emphysema.

DISABILITY

The number of deaths caused by emphysema and chronic bronchitis are only part of the story. Each death is typically preceded by months or years of torment during which, as one expert puts it, "the successful completion of every single breath is regarded as an achievement."

In 1964, the Social Security Administration declared over 15,000 workers totally and permanently disabled because of emphysema. These men and women, mostly in their middle years and all under 65, constitute one of the Nation's most productive and stable groups. Emphysema is the second most frequent diagnosis among workers becoming eligible for these disability pensions, second only to heart disease. It accounts for 6.6 percent of all cases. Incidence based on Social Security disability is weighted, since it refers only to workers suffering from advanced stages of these diseases. However, in terms of Social Security pensions, emphysema is responsible for more invalidism in men than stroke, cancer, tuberculosis, or mental disorders.

In Fiscal Year 1965, disability from chronic respiratory disease accounted for 7 percent of the Civil Service Commission disability retirements.

To determine the prevalence of early stages of chronic chest disease, we must turn to the data provided by the National Health Survey. Figures for the period July 1962 to June 1964 indicate a prevalence of 3,094,000 individuals with chronic bronchitis or emphysema serious enough to produce some limitation in activities. This estimate, based on a random sample of household interviews, reflects only symptoms of diseases people believe they have. An added disadvantage is that chronic respiratory diseases are often asymptomatic until lung damage has occurred. The chronic cough symptom is often viewed as an inconsequential "smoker's cough."

Various groups have conducted limited surveys including pulmonary function testing, X-rays, and medical histories, in various parts of the country. Some surveys have yielded estimates that at least 3 percent of all persons over 40 have early signs of chronic obstructive lung disease. On this basis, it can be estimated that there are at least 2 million people in the U.S. with early signs of these diseases. Other limited surveys have suggested that as much as 25 percent of the population over 40 may have abnormal lung function, leading to an estimate of up to 14 million people in the U.S. with various stages of chronic obstructive lung disease. Since these estimates are not based on rigorously controlled representative samples, the possible range varies from 2 to 14 million people.

Among one-half million people discharged from Veterans Administration hospitals in 1962, pulmonary emphysema was diagnosed in 7 percent of the cases. Most likely the figure would be at least 10 percent if only middle and older age patients were counted.

TRENDS

The number of deaths attributed to emphysema and chronic bronchitis is doubling every 5 years. Thus, in 1952, emphysema and chronic bronchitis caused 3,846 deaths; in 1962, 15,915; leading us to expect 63,660 deaths in 1972. This increase has been going on for a number of years and is showing no signs of stopping or slowing down. The problem seems to exist throughout the country, with higher rates of death appearing in the Rocky Mountain area. Although female deaths are lower in number than those in males, the number is growing at the same rate in females as in males.

The National Disease and Therapeutic Index, based on a sample of visits to the offices of private physicians, indicates that in 1965 among new patients visiting their physicians approximately 800,000 were diagnosed as having emphysema or chronic bronchitis. This figure is almost twice the number so diagnosed in 1961, according to the same index.

Admittedly, some of the increase in mortality and the increase in physician visits is due to increased recognition of the problem by physicians and patients. Nevertheless, not all of the increase can be construed as an artifact. In either case, this trend can be taken as an indication of a public health problem requiring attention and relief regardless of whether the problem is now increasing or was always there and is just now being recognized.

The economic impact of these diseases is staggering and continues to mount every year. Social Security disability benefits for victims of these diseases have increased from $30 million in 1963 to $90 million in 1966. As of this fiscal year and under a multifaceted plan of attack, the Public Health Service has budgeted about $15 million to prevent and control these diseases. The cost to individuals in caring for family members, to industry in time lost from work, and to our country in wages and productivity is incalculable.

SCIENTIFIC KNOWLEDGE AVAILABLE

Although there is a great deal of information still lacking about the causes and progression of these diseases, much has been learned, and we have some promising facts and leads to work with.

Symptomatic emphysema and chronic bronchitis are not natural results of the aging process. Younger and younger people are suffering from chronic cough and shortness of breath. The scientific consensus is that something relatively new in the way we live is responsible for the increase in the diseases.

Mot authorities agree that cigarette smoking and air pollution are the new influences most directly connected with this increase in chronic respiratory disease, particularly chronic bronchitis. At two recent meetings concerned with these diseases, the National Task Force on Emphysema and Chronic Bronchitis and the Southeastern Conference on Chronic Obstructive Pulmonary Disease, researchers and clinicians estimated that about 70 percent of the cases they see would not have occurred without heavy cigarette smoking, and that emphysema and chronic bronchitis would be rare if smoking could be abolished. Many experts also feel that community and industrial air pollution are significant factors in the causation, and certainly the aggravation, of chronic respiratory disease. There is also thought that genetics, allergic or immunologic reactions, racial differences, and so forth, may also play some indefinite role in the causation and progression of these diseases.

These opinions are not entirely subjective. The following observations are generally accepted and are the basis for action by several units of the Public Health Service.

1. Cigarette smokers show a marked increase in incidence and severity and death rate. For every 14 persons who develop significant clinical disease, 13 are heavy smokers. The death rate from chronic bronchitis and emphysema was six times greater for smokers than for non-smokers.

2. Exposure to air pollution of the usual domestic and industrial type increases the severity of chronic lung disease. The increase is proportional to the degree of air pollution, the seasonal changes in air pollution, and the years of exposure. After each air pollution disaster, the number of deaths from chronic lung disease rises sharply.

3. Racial, socioeconomic, and sex differences in incidence and severity of chronic lung disease have been observed. Non-white races seem to have a lower incidence, and the incidence of emphysema in women is 1/6 to 1/10 that of men. (However, the increase in number of deaths during the past 10 years in women has paralleled the increase in male deaths.) Urban dwellers have higher death rates than rural dwellers.

Scientific studies have also yielded some basic data on causation. For example:

1. Dogs allowed to smoke cigarettes (which incidentally they seemed to enjoy) also develop a disease which resembles emphysema, both pathologically and clinically.

2. Mice allowed to inhale carbon particles saturated with nitrogen dioxide (a common air pollutant) develop (after relatively brief exposure to relatively high concentrations) a lung condition that resembles emphysema.

3. An inheritable deficiency of a particular serum protein (alpha$_1$ antitrypsin) has been observed in some families and has been associated with a high risk of developing a severe form of emphysema (panaciner type) relatively early in life. Here would appear to be limited identifiable population at high risk of developing the disease rapidly.

4. The racial and sex differences seen in emphysema and chronic bronchitis suggest that endocrinological and genetic factors may play a role. However, whether host susceptibility is determined by environmental or constitutional factors, or some combination of both, is not clear.

In the area of patient treatment and disease control, there has been some definite progress, although application of this knowledge has lagged far behind its development. The treatment of emphysema and chronic bronchitis is for the most part directed to those components of the obstructive bronchial disease which are reversible. If the bronchial changes are irreversible or the predominant feature is destructive emphysema, treatment will be less effective.

Bronchial obstruction arising from bronchial irritants, from infections, and from poorly understood mechanisms that cause increased secretions or spasms often may be controlled. Elimination of inhaled irritants, particularly the interdiction of cigarette smoking, the treatment and prevention of bronchial infection by antibiotics and viral vaccines, and the use of bronchodilators, will produce excellent results in uncomplicated bronchitis.

For severely disabled cases, pulmonary rehabilitation has offered dramatic results in small-scale pilot studies. When compared with control groups, the rehabilitation groups have had one-quarter the mortality rate and one-half the rehospitalization rate. And fifty percent of the rehabilitation patients could be returned to jobs requiring limited physical effort, as compared with none in the control group.

Rehabilitation does not cure; the ventilatory and pulmonary function test results may not significantly change; but the individual's work capacity, like that of the trained athlete, is increased and, by being able to function in a less restricted and painful fashion, this psychological outlook is considerably improved.

Patient care and rehabilitation make use of a great variety of techniques, all of which present special problems in physiology, pharmacology and engineering for continuing research and development. For example, such techniques include oxygen breathing; forced air breathing; breathing exercises; general physical conditioning; expediting of air flow (by bronchodilators, postural drainage, or drugs that liquify mucus or stimulate respiratory control centers); changes to physically less demanding jobs or milder climates; and use of antibiotics to reduce viral and bacterial-complicating infections.

BASIS FOR ACTION

With these facts and leads, among others, the Public Health Service within the past two years has geared itself to an accelerated attack on emphysema and chronic bronchitis. We are attacking the problem on all levels. First, we are stepping up our basic research activities into the causes, progression, and natural history of these diseases. We are looking more closely at the relationship of chronic respiratory disease to cigarette smoking, to industrial and to community air pollution. We are devoting more effort to developing and improving medical methodology, including such techniques as early detection and treatment, pulmonary rehabilitation, and intensive care in cases of respiratory failure. We are attempting to stimulate medical schools and hospitals, first, to train more of the critically needed physicians and other health workers, and second, to provide the facilities necessary to care for the increasing numbers of victims of chronic lung disease.

Because of the subtle and complex nature of the emphysema and related chronic respiratory disease problem, Public Health Service competency is required in a number of different programs, each budgeted to investigate those aspects of the problem in its own particular area of competence. Overall budget planning and analysis provides a basic and essential means of program coordination.

RESEARCH

In the area of basic research, the National Institutes of Health are carrying the major load. The National Institute of Allergy and Infectious Diseases presently has in its budget about $1,200,000 in support of special studies at major medical centers throughout the country, investigating the possible allergic, immunologic, or infectious aspects of emphysema. In addition, the NIAID budget

includes $170,000 in direct operations. The National Heart Institute budget includes $1,657,000 in research grants investigating physiology and other aspects of chronic pulmonary disease. In addition, NHI is spending $574,000 in training grants and fellowships in the pulmonary disease area.

Outside NIH, research activities are being performed under grants from the Bureau of Disease Prevention and Environmental Control. The National Center for Air Pollution Control has budgeted at this time some $1,400,000 in research grants and about $519,000 in direct operation funds to investigate the prevalence and etiology of chronic respiratory diseases as related to community air pollution. In the National Center for Urban and Industrial Health, the Occupational Health Program budget covers about $1,227,000 yearly in direct operations and $1,000,000 in research grants to study the prevalence and etiology of chronic lung disease associated with occupational factors.

DISEASE CONTROL

In the National Center for Chronic Disease Control, the Chronic Respiratory Disease Control Program is assigned some $1,100,000 through direct operations to develop and improve methods of early detection of emphysema and regimens of disease control and medical rehabilitation, and to help support intensive outpatient treatment programs. Physician and public education has been a major activity of the program. Since the recent PHS reorganization, the main thrust of the program is to develop standards for control of the chronic respiratory diseases, and to work out guidelines for their implementation. The program is also performing epidemiologic work on the natural history of emphysema and is performing as an information clearinghouse on chronic respiratory diseases.

BEHAVIORAL RESEARCH AND EDUCATION

Also in NCCDC, the Clearinghouse on Smoking and Health has budgeted $2,600,000 for investigating the behavioral aspects of cigarette smoking and for educating the public on the health hazards associated with the habit. Although this effort is directed toward no specific disease, the findings of behavioral research studies and the effects of health education are certainly part of the total PHS effort to prevent and control chronic respiratory disease.

MANPOWER AND SERVICES

Two other PHS Bureaus, the Bureau of Health Manpower and the Bureau of Health Services are doing or will be doing substantial work that touches on the chronic respiratory disease problem. The need for physicians, nurses, and allied health personnel trained in pulmonary disease is critical. The future responsibilities of the new Bureau of Health Manpower are obvious in this area. In addition, the responsibility for highly specialized training activities is shared with the National Center for Chronic Disease Control and other units whose projects and studies include provision for teaching specialized skills.

In providing the best of care directly to PHS beneficiary patients, the opportunities for the Bureau of Health Services are significant. In such operations as community health services, hospital and medical facilities, federal employee health, direct health services, Indian health, and others, the Bureau can offer model examples of good treatment methodology and facilities.

To perform these duties most effectively, the operations of the Bureau of Health Services are tied closely with those of other Bureaus and programs. For instance, the National Center for Chronic Disease Control is supporting a case-finding and treatment center in one PHS hospital (administered by the Bureau of Health Services). In this particular project, the objectives of both units are being met admirably: the control unit is testing new therapeutic techniques, while the patients are receiving the most modern therapy.

COORDINATION OF ACTIVITIES

With the rapid emergence of emphysema and related diseases as a growing problem of national proportions, the Public Health Service in 1966 moved to broaden and strengthen its attack. The PHS set up a new program in chronic respiratory disease control and increased efforts to determine the causes and effects of these diseases.

From the beginning it has been evident that coordination of considerable but piece-meal activities, both within and outside the Public Health Service, was a

prerequisite to any effective national program of prevention and control. Inside the Department of Health, Education, and Welfare, for instance, we have in addition to the PHS, the Office of Vocational Rehabilitation and the Social Security Administration, both of which have responsibilities in the area of chronic respiratory disease. The Veterans Administration is spending $2.5 million this Fiscal Year on medical and applied research for pulmonary disease (including tuberculosis) and providing care for thousands of VA hospital patients suffering from emphysema. The National Tuberculosis Association is devoting more and more of its effort toward chronic respiratory disease.

The PHS is now and will continue to work with the Social Security Administration and the Office of Vocational Rehabilitation in HEW. PHS programs are exploring areas of mutual concern with the Veterans Administration. Several PHS units are working with the National Tuberculosis Association and constituent agencies in such projects as health education and information, cigarette smoking and air pollution activities, case-finding and treatment modalities, and other activities.

Within PHS, the coordination effort begins in research. The two Institutes at NIH which are involved in investigating causes and effects of chronic respiratory disease have developed a practical relationship whereby the staffs of both Institutes meet to exchange information on research grants. The Pulmonary Disease Committee of NIH includes representatives from the National Heart Institute, the National Institute of Allergy and Infectious Diseases, and the Division of Environmental Health Sciences. The Collaborative Studies Program of the NHI maintains a liaison with the Chronic Respiratory Disease Control Program, NCCDC, and has arranged to include pulmonary function studies in the long-term Framingham study on the natural history of heart disease.

It is recognized that other units supporting research activities, the National Center for Air Pollution Control and the Occupational Health Program, NCUIH, could benefit from a better exchange of information with the Institutes. An important move toward meeting such needs is anticipated with the recent establishment of the Division of Environmental Health Sciences as part of NIH. This Division will support and conduct a broad research job which cuts across the entire environmental health frontier. It will direct major attention to modern toxicology and pharmacology as they relate to long-term, low level exposures to environmental contaminants. This effort will provide improved opportunity for basic knowledge and collaborative effort in the area of chronic chest disease and exposure to community and industrial air pollution.

In the Bureau of Disease Prevention and Environmental Control an ad hoc inter-bureau committee on the chronic respiratory diseases is in operation. Its membership includes representatives from the programs with responsibilities in air pollution, occupational health, and disease control. The committee was set up when the program in chronic respiratory disease control was begininng. Since then, informal liaison has been maintained at both the executive and staff levels.

Advisory committees are used extensively by most Divisions, Centers, or Institutes to help formulate plans. Such groups may make recommendations regarding program, review grant and contract proposals, and serve as important scientific liaison channels. Included among these groups are: the Air Pollution Program Grants Advisory Committee, the various committees of the National Heart Institute, and the National Institute of Allergy and Infectious Diseases, and the Advisory Committees on Occupational Health, and on Environmental Health.

All these Bureau committees have purview over major research and developmental activities carried on in the PHS and insure that steps are taken at all levels to plan wisely and comprehensively, to establish liaison and to insist that coordination and participation take the place of vested interest.

Information exchange is essential to all management or developmental problems, but need not always be highly organized to be effective. Within the PHS, the most effective exchange often comes from the informal, day-to-day working relationships established at various staff levels among the programs involved. Informal liaison often leads to more organized coordination. Ad hoc planning groups formed during the past few years have ultimately led to, in some cases created, such coordinated and cooperative activities as the chronic respiratory disease control program of the Bureau of Disease Prevention and Environmental Control; the program of the National Heart Institute on smoking and cardiovascular effects, and the chronic respiratory disease program of the National Institute of Allergy and Infectious Diseases.

The advice and consultation of other interested organizations and individuals is often sought by various programs within PHS to help crystalize plans and formulate broader programs. Thus, last October, the Public Health Service and the National Tuberculosis Association sponsored a 25-member Task Force on Emphysema and Chronic Bronchitis. Task Force members included non-government specialists in research, clinical medicine, nursing, social work, behavioral science, and other specialities. In addition, representatives from eight PHS programs (air pollution, occupational health, disease control, smoking and health, allergy and infectious diseases, heart research, gerontology and medicare) were asked to serve as resource people for the task force. The exchange of information afforded by the task force deliberations allowed detailed consideration of all aspects of the emphysema/chronic bronchitis problem. The Task Force was stimulated and supported by the Chronic Respiratory Disease Control Program, NCCDC.

Another podium for the exchange of new information has been the Annual Conference on Emphysema, held every June in Aspen, Colorado. This scientific meeting, devoted to research or management, has been sponsored during its 10-year history by various units of the PHS, with the help of such groups as the National Tuberculosis Association and the American Thoracic Society, and smaller regional groups. For the past 3 years, the meeting has been sponsored by the Chronic Respiratory Disease Control Program.

OPPORTUNITIES FOR FURTHER COORDINATION

In addition to coordination assured through the budget process, through informal exchange of information between scientists, and through federal liaison groups, the Surgeon General this year established a PHS Committee on Chronic Respiratory Disease. Representing all program components involved with these diseases, the Committee is expected to provide a focal point for collection and exchange of information. It will provide machinery for internal leadership and coordination as well as a point of visible and effective contact with external organizations active in the field. Chairman of the Committee is Dr. Donald Chadwick, Director of the National Center for Chronic Disease Control, Bureau of Disease Prevention and Environmental Control. Other members include Dr. Dorland Davis, Director of the National Institute for Allergy and Infectious Diseases, NIH, and Dr. John Walsh, Chief of the Division of Direct Health Services, Bureau of Health Services. Representatives of other programs involved will assist in the deliberations of the committee through their appropriate Bureau representatives. This committee will report their deliberations and recommendations to the Surgeon General on a quarterly basis.

The Committee is intended to complement, not replace, the informal day-by-day exchange of information between operating PHS programs. Every effort will continue to keep channels of communication open among all programs involved, and the Service will continue to encourage the sharing of goals and opportunities.

One project resulting from such contact and scheduled to begin next summer will be carried out at the National Bureau of Standards, by the Division of Federal Employee Health and Safety, Bureau of Health Services, and the Chronic Respiratory Diseases Control Program. This study will include socio-economic effects and prevalence of emphysema, smoking attitudes and behavior, and a possible long-range surveillance of a stable, employed population. Such joint projects are meant to increase program communication as well as encourage the most economical use of funds.

In conclusion, it is emphasized that this report in no way attempts to catalog all activities of the Service in dealing with emphysema and related chronic respiratory problems. Rather, it is intended to indicate the rapidly increasing seriousness and complexity of the problems, the increasing array of PHS and other program interests involved in research, prevention and control, and finally a clear recognition within the Service of the need for careful, continuing, and effective coordination across the full range of activities.

Management of an attack this complicated, in terms of program involvement and economic impact, must be a continuously adaptive process. There must be provision for feedback of results from the research laboratories, the clinics, the surveillance and epidemiological teams, and the engineering development groups. The overall program mix must be periodically discussed, evaluated, and changed accordingly. These are the goals of the Public Health Service in dealing with the problem of emphysema and related chronic respiratory diseases.

Further Information on the Respiratory System, Processes, and Diseases

Respiration—System and Process

Among the major organ systems of the body two are closely interrelated and vitally interdependent. These are the respiratory and circulatory systems.

In carrying out its primary function of feeding oxygen to (and funneling carbon dioxide from) the blood stream, the respiratory system utilizes the nose, the mouth, and a passageway of tubes (the trachea, bronchi, and bronchioles) which branch and narrow into a grape-like cluster of hollow, minute sacs (the alveoli), deep in the spongy, delicate, lung structure. Through the thin, elastic cell-walls of the alveoli, oxygen is passed into the blood stream and carbon dioxide is discharged. If the efficiency of this breathing procedure is impaired, we say that respiratory disease is present.

The rate of breathing is controlled through a monitoring center in the brain which is sensitive to carbon dioxide levels in the blood. Oxygen, in turn, becomes involved in a complicated series of chemical reactions in the blood which contribute to body-cell energy and produce carbon dioxide. Because these are balanced chemical reactions, the greater the energy requirement—through exercise or the body's need to repair damaged tissue—the more carbon dioxide is produced and the more oxygen is required.

The significance of this respiratory function to various disease conditions is readily apparent. Any insult to the organ—infectious agent, noxious chemical, unhealthy habit of living—may have far-reaching or long-term effects on the system. Conditions which restrict or obstruct the air passages increase the physical effort of breathing. Conditions which reduce the elasticity and structure of the alveolus reduce the volume of oxygen that can be inhaled, and at the same time, reduce the volume of carbon dioxide that can be exhaled. And any thickening or decrease in permeability of the alveolar wall reduces the ease of the gas exchange process. Any of these conditions—singly or in combination—make respiration less efficient. In attempting to compensate for this loss of efficiency, the body throws a greater burden on the remaining portion of normal-functioning lung tissue and on the heart in its effort to provide increased blood circulation in the lungs. This interdependence between the respiratory and circulatory systems is described by the term "cardiopulmonary." That is why lung disorders are frequently associated with cardiac complaint and are more serious in older patients whose heart function is already diminished by general aging.

Two other peculiarities of the normal respiratory tract are of interest in the general explanation of respiratory diseases. These are the mucus-secreting cells and the ciliated cells. Mucus secretion is produced by special glands and cells widely distributed in the bronchial tree, but not in or near the alveoli. The function of mucus is not truly known; it is suspected that by providing a continuous lining to the bronchial tree, it may help to protect against bacterial infection; it may also help protect the living cells that line the respiratory system from excessive drying. And it certainly assists the ciliated cells in removing foreign matter from the depths of the lungs.

Respiratory infections and air-borne irritants may act to increase the number of mucus producing glands and cells, to increase their output, or probably to change the chemical composition of the mucus. In fact, an increase in the amount of mucus secreted is a clinical characteristic of chronic bronchitis.

The volume of air required by a person varies, depending mainly on the amount of muscular activity. Even for the resting adult, it is approximately twelve quarts per minute. Nobody breaths pure air; examination of the air cleaner on an automobile or the filter on an air conditioner is proof of this. If such dirt were to collect passively in the lungs, there would soon be no free space in the alveoli for gaseous exchange. Nor is inanimate, inactive dirt the only burden. Every minute bacteria of many kinds are inhaled. Other humans contribute occasional droplets of infective viruses. Urban environment provide a vast array of specific chemicals—the products of such things as automobiles, heating systems, smokers, and commercial processes.

It is the constant task of the ciliated cells to collect and expel those "insults" to our bronchial tree. They do this by a coordinated wave-like motion which propels the foreign matter or excess mucus toward the mouth where it can be removed by "clearing the throat." Some specific chemicals—and infections—are known to slow down the ciliary action or to attack and kill the ciliated cells. Such a slowing down or stopping of ciliary action is suspected of having a pro-

found effect not only on the accelerated course of pre-existing disease but also possibly on the causation of new diseases such as lung cancer and pneumoconiosis.

DISEASES—GENERAL

In moving from a description of the structure and function of the respiratory tract to a consideration of the diseases affecting the tract, it should be emphasized that the research interests of the Public Health Service must be broad—embracing virtually any phenomena of any respiratory disease. While seeking an understanding of the basic biological phenomena common to many diseases, the goal of the Public Health Service is to reduce markedly the incidence of death or disability due to acute and chronic respiratory diseases of recognized public health importance. The major effort is channeled toward efforts to develop or apply "instruments of control." These instruments include:

Prevention—e.g. by vaccines, drugs and environmental control
Treatment—e.g. by drugs, surgery, physical devices
Resources and facilities
Public or individual psychology

DISEASES—SPECIFIC

In a consideration of the more important respiratory diseases, it is convenient to distinguish between specific and non-specific diseases. By specific diseases is meant simply diseases for which the cause or origin is known. A further breakdown may be conveniently made according to the type of cause:

Infectious agents

Viruses—e.g. influenza, rhinoviruses, adenoviruses
Bacteria—e.g. tubercle bacillus, pneumococcus

Other agents

Allergens—e.g. asthma due to ragweed pollen
Pneumoconiosis (reaction of the lungs to dust)—e.g. silicosis, asbestosis and anthracosis
Carcinoma—lung cancer. It can be argued that the ultimate cause of lung cancer is not known, but the disease results from the growth and spread of a cell type foreign to the normal body.

When the cause is known, not only does diagnosis become easier and more reliable but several possible avenues to disease control open immediately. These are directed at the agent and include:

Immunization—e.g. against viruses, bacteria and allergens
Destruction of the inciting agent—e.g. by chemotherapy or X rays
Prevention of entry to the body—e.g. by dust masks or control of air pollution

For any given disease, exploration of these avenues is, of course, a research function and the evolution into a system of instruments of control becomes a matter for development and demonstration. For some diseases, such as tuberculosis, the Public Health Service may, through a system of grants to state or local health organizations, even assume an important part of mass diagnosis or specialized patient care. It is probably correct to say that no respiratory disease control program has ever been so complete and satisfactory that no more research must be done.

Tuberculosis is a good example. The specific cause—the tubercle bacillus—was grown and identified as the agent eighty years ago when bacteriology was in its infancy. The transmission and epidemiology are well understood. Effective chemotherapy and a vaccine exist. Tuberculosis, once the leading cause of deaths in the United States, has now declined to 20th place. Yet each year in the United States there are some 50,000 new cases and perhaps 10,000 deaths. Two major factors apparently account for the failure to eradicate tuberculosis. The course of antibiotic and chemotherapy is prolonged and distasteful so that many patients not under constant supervision may fail to complete a course of treatment. The psychology and management of the patient is perhaps the single most important problem area in the effort to reduce the toll from tuberculosis. It poses a difficult problem in human motivation, one for which the usual techniques of the laboratory or clinical research do not seem to be well adapted. Continuing research attention is being focused on finding and evaluating improved regimens of chemotherapy. Another aspect under investigation is the additional problem that many of the new cases may be caused by types of bacteria, closely

related to the classical tubercle bacillus, which present special problems in recognition, epidemiology, chemotherapy, and patient care.

The review will describe briefly the disease and, within the context of mass prevention and control, indicate the state of the art and attempt to identify the crucial problems and the opportunities for research and development that appear to offer solutions to these problems.

Viral Diseases

In a normal year viral respiratory disease is a major problem. Apart from the temporary disability that nearly everyone suffers from colds and bronchitis, there are an estimated 75,000 deaths each year in the United States. Of these, 10,000 and 15,000 occur in infants, with each infant death representing a loss of some 70 man years of life. One disease, influenza, is of particular epidemic importance. It has been estimated that during eight weeks of the 1957 epidemic, nearly 70 million people were sufficiently ill to require bed rest and nearly 40 percent of the entire U.S. population clinically sick.

Various respiratory viruses and their diseases have several things in common. The number of different viruses is large—well over a hundred. These fall into several groups—influenza, influenza related, adeno, and rhinoviruses—based chiefly on chemical and physical structure. However, in their ability to produce some form of immunity, each kind of virus within a group can be separately distinguished. The diseases are acute, develop suddenly and run a brief and stormy course sometimes complicated by bacterial infections. In older patients with reduced cardiac reserve or with pre-existing chronic obstructive lung diseases, the extra stress imposed can be a serious threat to life. The result of this stress is shown by the increased death rate observed during epidemics as compared with the mortality statistically expected for a given period of time. The diseases are frequently epidemic. Because no quick easy method of identifying specific viruses is available, the specific cause of the disease in a patient is only suspected while he is sick. Confirmation generally follows recovery or death.

The use of antiviral substances (analogous to bacterial chemotherapy or antibiotics) for prevention or treatment is an appealing idea, but at the moment it is only a distant research hope except for one recently discovered drug (Symmetrel or amantadine hydrochloride) that apparently specifically prevents the A2 (Asian) type of influenza from invading the cells of the human body.

Fortunately, epidemiological research shows that a relatively small number of different viruses account for a disproportionately large number of serious cases. This fact suggests the possibility of developing a limited number of vaccines to control the more prevalent diseases. Vaccines give protection by causing the body to develop special proteins called antibodies. These appear in the blood and other body secretions (nasal secretions) and possess the power of combining with specific virus material (antigen) similar to that which produced them. Under these conditions, the whole virus may be rendered incapable of causing infection, that is, the virus is neutralized.

The current *influenza* vaccine is capable of preventing clinical disease in perhaps 75 percent of people vaccinated within the year. The principal problem is the constantly changing nature of the important influenza strains. Unless the vaccine is made from the recently prevalent strains, it is of reduced effectiveness. Constant surveillance of epidemics and comparison of strains are performed.

Development of vaccines for *other respiratory diseases* of importance either to the general population or to specific large population groups (e.g. military recruits or infants) has been undertaken by a contract-supported, federally managed program. A living vaccine for adenovirus type 4 infections has been successful in field trials and nearly 1,000,000 doses are now being procured for use in U.S. and foreign military units. Programmed development of other vaccines for parainfluenza types 1, 2, and 3, primary atypical pneumonia, and respiratory syncytial virus infections have run into technical problems that indicate a need for more scientific information. Contracts are now being used to support research in specific gap areas.

Improvement in the protection afforded by the killed commercial influenza vaccine is sought through research on methods of purification and concentration. The results are encouraging.

In the clinical picture known as the "common cold" the specific viral cause can be identified for only about 40 percent of the cases.

Continuing epidemiological surveys are needed to identify types and frequency of other causative agents. The severity and cause of viral respiratory infection varies from place to place and with season and year. Continuing surveillance is needed to assess the relative importance of different kinds of viruses and the severity of the disease. In the development of vaccines for viruses of proven importance, the technical problems alluded to above, relate to methods of obtaining maximal virus growth, methods of killing or attenuation, and type and duration of immune response.

Respiratory infections, and especially repeated attacks, may well play a role in the causation of other more serious diseases such as lung cancer, chronic bronchitis and emphysema. These roles are described below under the respective diseases

Bacterial Diseases

The research and development problem of *tuberculosis* has been presented earlier. There is also an extensive effort more directly related to care of special population groups and to trial and demonstration of intensive and improved patient care.

Pneumonia caused by the *pneumococcus* bacterium was once a major cause of death but it is now of substantially reduced importance in the general population largely because of the use of antibiotics and chemotherapy. The curiosity and persistence of at least one research scientist has led to the suspicion that pneumococcal pneumonia may be the cause of more deaths in the older population than is now recognized. Such lack of recognition can be ascribed to inadequate epidemiological surveillance and to changes in the interests and diagnostic capabilities of hospital laboratories. If an epidemiological survey now underway in selected, geographically well-distributed urban centers establishes the importance of the disease in this population group, attention will be given to prevention by vaccines. Existing experimental vaccines developed just before the days of antibiotics and chemotherapy promise to be effective if this effectiveness is proven. It is possible that 10,000 to 15,000 deaths a year in the United States can be prevented.

Allergic Asthma

Asthma is a disease characterized by acute attacks of difficult labored breathing (dyspnea) caused by narrowing of the bronchial airways of the lungs (*not* the alveoli) and varying in severity over relatively short periods of time either spontaneously or as a result of treatment. Asthma is often associated with an allergic condition. Of the ten million or so hay fever victims in the United States, two to three million are asthmatics. More than 4,000 deaths per year are due to allergic asthma of all kinds. Although emphysema may develop and complicate asthma, it is not known whether asthma or its labored breathing may cause emphysema.

Local epidemics of asthma—as in New Orleans, Tokyo, and Yokahama—have been shown to be associated with air pollution. Although they may not have an allergic factor, epidemics probably could be controlled by attention to specific air polluting operations, particularly when the atmospheric conditions were most critical. There seems to be no immediate prospect of mass prevention when the cause is a well-known naturally airborne material, such as ragweed pollen. There is little prospect that the incidence of asthma and of potential asthmatics can be decreased, although much can be done to relieve the acute attack by the use of drugs. If the individual is sensitive to a specific substance allergen such as pollen, densensitization can often be achieved by a series of carefully graded doses of the substance over an extended period of time.

It is not clear what abnormalities cause some people to develop allergies while others do not, or why some allergic people develop asthma, or what the biochemical chain of events is from intake of the allergen to the constriction of the bronchial airways and how that chain could be interrupted or diverted by drugs. These remain knotty research problems for the solution of which the Public Health Service supplies support. New drugs useful in treatment are under continuing development primarily by industry, but in their evaluation Public Health Service activities play a significant role.

Pneumoconiosis

Pneumoconiosis is a disease characterized by a reaction of the lung tissue to an inhaled dust—such as silica, coal, asbestos, beryllium, and certain vegetable

dusts. Details of the tissue reaction vary with the chemical composition of the dust, but in all cases there is development of fibrous tissue around the dust particles retained in the lung. The fibrous tissue distorts the normal lung structure and acts to reduce the efficiency of air movement and gas transfer by reducing the elasticity of the lung and in destroying the membranous character of the alveolar walls. The fibrous tissue changes are irreversible.

This disease is important in the dusty operations of such industries as stone cutting and coal mining. The death toll in the United States—about 1500 per year—does not adequately describe the total impact of death and disability in specific regions where as high as fifty percent of all soft coal miners are affected. The disease develops after prolonged exposure to high concentrations of dust, dust so fine that it eludes the clearing action of the mucus and cilia in the bronchial tubes and is deposited directly in the alveoli, which has no mechanism for ejecting the foreign substance.

Pneumoconiosis may be complicated by development of emphysema; it is often accompanied by an increased incidence of tuberculosis and, in the case of asbestosis by an increased incidence of lung cancer.

Prevention lies in engineering the industrial process to reduce or contain the dust or in the scrupulous use of efficiently filtered air (masks or air supply hoods).

Apart from this purely technological problem area, there are serious socio-economic problems concerned with industry responsibility, awareness by the workers of safe practices, early diagnosis and rehabilitation. If the disease is recognized in time, the individual can generally, by a change of work, continue to lead a useful life albeit of somewhat more limited activity.

This is a disease created and tolerated by man.

Lung Cancer

Cancer of the lung is a particularly frightening disease that has increased sharply in importance in recent years. Fifty years ago it was actually rare. It is estimated that deaths will be 50,000 in excess of those in 1967. As with most cancer diseases the cause is unknown. Current data would indicate however that cigarette smoking far outweighs all other factors in the causation of lung cancer. About ten percent of all lung cancer patients can be classed as non-smokers. Other causes include inhalation of air polluted with cancer-producing chemicals from incompletely combusted fuel, asbestos dust, and various industrial chemicals.

It has been noted that the respiratory tract is a system with interrelationships and interdependencies. Several unfavorable influences may act together (synergistically) to have an effect well beyond the minimal effect of each alone. Lung cancer may provide a good example of this synergism. It has been known that various substances—such as the reaction products of ozone and gasoline, Los Angeles smog, and the condensate of tobacco smoke when applied to the skin of mice—can produce cancer although they may be relatively ineffective when inhaled. Soot particles are the most universal of air pollutants and, being carbon, have the property of absorbing a great variety of chemicals including cancer producing (carcinogenic) combustion products. When soot is inhaled, the particles are deposited in the lung and tend to concentrate in certain areas depending upon particle size. The slow release of absorbed carcinogens gives the cells a relatively long and concentrated exposure to the harmful chemicals unless particles are removed by movement of the mucus layer induced by action of the cilia.

ARTHRITIS

Today, one out of every 15 persons in the civilian non-institutional population of the United States suffers from some form of arthritis. This represents a total of 13 million Americans. However, estimates of the prevalence of arthritis depend on the criteria used, since the National Health Examination Survey has identified about 40 million Americans with radiologic changes of osteoarthritis, and 3.6 million with rheumatoid arthritis. Major forms of arthritis include rheumatoid, osteoarthritis, and gout.

The economic losses of arthritis are staggering. Current losses are estimated at $3.6 billion annually. These costs are the result of lost productivity, direct medical expenses, current programs and, unfortunately, expenditures for misrepresented drugs and devices. An estimated 12 million days of work are missed each year. Benefits paid to arthritics by the Social Security Administration, the Welfare Administration, and the Veterans Administration total more than $385 million yearly, and are not included in the calculation of economic losses.

The suffering in terms of human misery and economic privation is impossible, of course, to assess. The psycho-social stresses on the patient, his family and community, are not quantifiable. Rapidly fatal diseases receive ever-increasing publicity, but arthritis is a quiet, painful crippler. Its effects are felt slowly; increasing disability becomes an acceptable way of life. No medical or surgical heroism performed in a tense moment dramatically alters the situation.

The Public Health Service has programs in two areas to alleviate the suffering caused by these diseases. Research, carried out by the National Institute of Arthritis and Metabolic Diseases, continues on the ever-challenging question of what causes these diseases, as well as into improved methods of treating them and preventing disability. Further, a long-term program of investigation and demonstrations in the prevention of disability is carried out by the National Center for Chronic Disease Control.

Current programs in these areas, outlook and plans for the future, are discussed below.

NATIONAL INSTITUTE OF ARTHRITIS AND METABOLIC DISEASES

RHEUMATOID ARTHRITIS

Of all the major forms of arthritis, rheumatoid arthritis is the most crippling and the most puzzling in terms of etiology. In their search for a causative agent, investigators are encouraged, however, by recent evidence suggesting that mycoplasma, a type of microorganism, somewhere between bacteria and viruses in size and other properties, may be involved, directly or indirectly, in the etiology of this disease. The increasing interest of investigators in mycoplasma and the rapid development of research findings made it essential that a group of knowledgeable investigators be brought together not only to exchange information but to examine critically the evidence supporting a relationship of this organism to rheumatoid arthritis, and to stimulate further research.

The Institute, therefore, joined forces last February with the Division of Research Grants, NIH, to co-sponsor a working conference in Chicago on "The Relationship of Mycoplasma to Rheumatoid Arthritis and Related Diseases." About 35 authorities in the field met to discuss the mycoplasma, diseases in animals and man known to be associated with them, the evidence for associating them with human arthritis, and possible ways in which the organisms and their host might interact to produce the disease. Among the resulting proposals were that standard reference sera (immune blood fractions capable of reacting with mycoplasma) be made available in research banks for the use of investigators, and that medical and veterinary resources for the study of mycoplasma be brought together, where possible. Scientists at the meeting concluded that although the evidence linking mycoplasma infection to rheumatoid arthritis is fragmentary, it is sufficient, nevertheless, to encourage further research.

Another group of microorganisms, the Bedsonia, have commanded a considerable amount of research attention this past year. A team of investigators at the University of California produced arthritis in monkeys by injecting them with Bedsonia organisms isolated from human patients with Reiter's syndrome, a disease related to rheumatoid arthritis. They were than able to recover Bedsonia from all the infected joints and from various internal organs of the experimental monkeys.

The Bedsonia viruses have been reported to cause polyarthritis in lambs. This fact plus the knowledge that they cause human trachoma, inclusion conjunctivitis, and lymphogranuloma venereum led the investigators to suspect that they might contribute to the development of Reiter's syndrome, a triad of urethritis, arthritis, and conjunctivitis. If further studies confirm initial findings, this work may eventually have important bearing on a whole series of disorders that have arthritic manifestations, including rheumatoid arthritis.

A Distinctive Rheumatoid Arthritis Cell

A study conducted by NIAMD and National Cancer Institute investigators has provided new information about certain cells which at times pose a problem in the differential diagnosis of rheumatoid arthritis. The investigators have described a distinctive multinucleated synovial giant cell in rheumatoid arthritis. The cells were present in the knee joint synovia of 9 out of 19 patients with active disease and positive serologic tests for rheumatoid arthritis. None were found in 9 seronegative rheumatoid arthritis patients or in a series of control cases. The

giant cells were also observed in joints other than the knee. They can usually be readily distinguished from multinucleated plasma cells, foreign body giant cells, and Touton cells that also occur with some frequency in rheumatoid arthritis.

Twin Studies of Rheumatoid Arthritis

Two factors that have long been thought to be associated in some way with the onset of rheumatoid arthritis are heredity and emotional stress. Institute supported investigators at the University of Rochester have now obtained evidence from a study of the disease in twins that psychologic stress may play a greater role in determining onset of the disease than heredity.

The investigators studied eight sets of female identical twins, in which only one twin in each set was affected with rheumatoid arthritis. It was found that all the affected twins had undergone a series of life events that were demanding and restricting, during which time they developed their first symptoms. The unaffected twin, in every case, had no comparable experience. These findings are consistent with the conclusions of a very extensive epidemiologic study by Institute investigators during 1963–65 that inheritance does not play an active role in the pathogenesis of rheumatoid arthritis.

Autoimmunity

One of the principal theories on the pathogenesis of rheumatoid arthritis is the concept of autoimmunity. This theory holds that the body, for some unknown reason, produces abnormal antibodies that are directed against its own tissues rather than against foreign material. Part of the evidence supporting this concept is the elevated gamma globulin (antibody) content of the blood in rheumatoid arthritis patients and the antibody-like nature of the characteristic rheumatoid factor—complex, specific proteins found in the serum of patients with rheumatoid arthritis.

A potent argument in the past against the antigen-antibody pathogenesis of rheumatoid arthritis, however, has been the frequent occurrence of arthritis in patients with a disease called agammaglobulinemia, which is associated with a deficiency of antibodies. Rheumatoid factor cannot be found in the blood of these patients, and immune gamma globulins can be found only in small amounts. Institute grantees at the University of Pennsylvania have now refuted this argument by showing that in agammaglobulinemia, immunoglobulins which are not detectable in the blood may be found in the joint. Their study indicated that in this disease immunoglobulins are apparently produced in demonstrable quantity in the synovial membrane, just as in typical rheumatoid arthritis. This demonstration of an immunoglobulin reaction in agammaglobulinemic arthritis gives further support to the concept of autoimmunity in rheumatoid arthritis.

Institute-supported investigators at the University of Texas have reported a study which offers hope for an effective form of therapy in rheumatoid arthritis and in other diseases caused by immune mechanisms. Adjuvant arthritis (an experimentally induced form of arthritis exhibiting a true, but transitory, immunological reaction and polyarthritis symptoms) was induced in 30 rats by injecting them with Freund's adjuvant. Ten of the rats were treated with rabbit anti-lymphocyte serum, which successfully suppressed the usual arthritic reaction; only one developed a moderate arthritis. In contrast, 20 control rats all developed marked polyarthritis. This important research lead is being followed up with additional studies to determine its possible applicability to treatment of human arthritis.

Further information related to the immunity aspects of rheumatoid arthritis was obtained in a fundamental research study completed by grantee investigators at the University of Pennsylvania. Their study of albumin distribution in selected rheumatoid arthritis patients has indicated that the low serum levels of albumin frequently encountered in these patients are associated with an increased fractional turnover rate of albumin, indicating increased albumin destruction rather than diminished synthesis. This finding is noteworthy in view of the knowledge that corticosteroid drugs, often a necessary form of therapy in rheumatoid arthritis, can further deplete reduced body pools of albumin, and thus may be deleterious to a patient who is already chronically ill.

A study conducted this past year at the New York Downstate Medical Center also concerned the relationship of certain drugs to serum albumin. A grantee investigator there studied a total of 180 commonly used drugs with respect to their interaction with serum albumin. He found that 13 of the drugs, including

aspirin and other non-steroid anti-inflammatory compounds, interacted with serum albumin in a unique way. They had the ability to alter the tertiary structure of serum albumin molcules. Since all but one of the thirteen drugs exhibiting this unusual effect are known to be anti-inflammatory, this finding may lead to a valuable means of screening compounds for anti-inflammatory activity.

Another grant-supported study at Duke University has helped explain the anti-inflammatory and fever-reducing effects of aspirin (acetylsalicylic acid), used much more extensively than corticosteroid drugs in rheumatoid arthritis and other arthritic disorders. This finding concerns lysosomes, which are subcellular packets of enzymes found in large numbers in synovial lining cells of rheumatoid joints. It was reported last year that a different group of Institute-supported scientists had shown that a disruption of these lysosomes induces in rabbits an arthritic lesion similar to rheumatoid arthritis in man. Aspirin has now been found to stabilize lysosomes, suggesting that the drug's beneficial effects may be brought about through a lysosomal mechanism.

Aspirin was also the subject of a conference sponsored by the Institute at the New York Medical College last June. This working conference on the "Effects of Chronic Salicylate Administration" brought together approximately 40 medical experts from the United States, England, and Canada to scrutinize the effects of repeated aspirin administration in man and animals and to determine in what specific areas more information is needed. The conferees explored the metabolism, pharmacology, and toxicology of salicylates; their pathologic effects in animals; and the possible relationship of these effects to long-term salicylate administration in patients with rheumatic diseases.

OSTEOARTHRITIS

During the past year several significant findings have been reported by Institute-supported scientists regarding osteoarthritis, a common disorder of unknown etiology associated with degenerative changes which alter the mechanical structure of the joints. Investigators at the Medical College of Georgia reported that *Rumalon*, a cartilage-bone marrow extract, is of clinical value in the treatment of osteoarthritis. The cartilage of patients with this disorder is thought to be deficient in chondroitin sulfate, a component of the ground substance of tissues. Thus, a drug capable of stimulating the synthesis of chondroitin sulfate in the affected tissues theoretically would be considered helpful in counteracting the pathologic changes in osteoarthritis. The scientists reported that *Rumalon* stimulates the uptake of radioactive sulphur in human osteoarthritic cartilage, indicating increased synthesis of chondroitin sulfate. This study warrants further investigation of the basic mechanism of action of this extract, as well as continued clinical trials of its effectiveness.

In another approach to this disease, nine German Shepherd dogs with osteoarthritis of the hip were studied in the Orthopedic Research Laboratories of the University of Pittsburgh. The grantee investigators obtained and studied slices of cartilage from the weight bearing and non-weight bearing areas of the arthritic femoral heads and from the distal femoral joints of these dogs. Their observations, along with other experimental evidence, suggest that the cartilage cells (chondrocytes) in the weight bearing area of osteoarthritic hips are synthesizing protein and RNA at a decreased rate in comparison with normal hips. This finding may provide a clue towards our eventual understanding of the fundamental disease process in osteoarthritis.

FUNDAMENTAL RESEARCH ON JOINTS

It has been suggested that contractions of the skeletal muscles may play a role in the development of joints during the embryonic stage. Previous investigations of this theory failed to preserve the exact embryonic environment, however, and the resulting joint deformities could not be attributed solely to the absence of movement. A study carried out by an Institute investigator in Bethesda, in collaboration with a grantee of the National Institute of Child Health and Human Development at Tufts-New England Medical Center, has now shown that joints do not develop normally in chick embryos paralyzed by three different techniques (two different neuromuscular blocking agents and surgical removal of the spinal cord). In striking contrast to the normal joint cavities in control specimens, the paralyzed joint cavities failed to develop and became filled with fibrous tissue which eventually bound the joint elements together. In

addition, joint surfaces were flattened and distorted. That these abnormalities were due to paralysis *per se* (absence of fetel musclar contractions) was evidenced by the fact that the three treatments produced effective paralysis by different mechanisms, as well as producing identical joint abnormalities. Thus the possibility of a common, direct toxic action on the joints was excluded. Results of the study clearly indicate that embryonic movement plays an important role in the formation of joints.

Some biochemical and biophysical aspects of joint stiffness were clarified in another study by a grantee investigator at the University of North Carolina School of Medicine. It is generally known that even temporary immobilization of normally movable joints can result in a permanent loss of motion. It is also appreciated that immobilization of joints surrounded by edematous soft tissue often produces joint stiffness more quickly and severely than immobilization of nonedematous extremities. The actual mechanism, however, by which range of motion is lost and the exact charges in joint structures which are responsible for decreased mobility are unknown. In this study, the investigator found gross, microscopic, and biochemical evidence that new collagen synthesis is the fundamental process in the pathogenesis of joint stiffness. He found that flexion contractures of canine and rat knee joints produced by experimental fixation in the flexed position are the result of important changes in collagenous tissue on the flexor side of the joints. The study also showed that surgical removal of newly synthesized collagen from strategic areas around stiff human interphalangeal joints produces immediate relief of flexion contractures. Long-term results, however, of surgical removal of excess collagen from stiff joints have not been satisfactory, it was concluded, because of *subsequent* collagen synthesis during the healing process.

SYSTEMIC LUPUS ERYTHEMATOSUS (SLE)

Systemic lupus erythematosus is a grave, generalized disease which is manifested by structural and functional changes in the skin, joints, and internal organs. Young women are most frequently affected, and the disease is found most often in the 20–40 year age group. For many years, research on this insidious inflammatory connective tissue disorder was hindered by lack of an experimental animal model. Then in 1961 a strain of highly inbred New Zealand mice was discovered which developed a disease resembling human SLE without evidence of any concurrent infection or dietary deficiency. Further studies of these animals by grantee investigators at the University of Southern California have now provided additional clinical and pathological data which emphasize the close similarity between this model and the human illness.

Findings in the mice included typical LE cells (giant cells considered pathognomonic or characteristic for lupus erythematosus), antinuclear antibodies, hemolytic anemia, proteinuria, and nephrosis with kidney failure—all of which are associated with the human disease. The incidence and severity of the lesions were much more prevalent in female than in male mice, a finding which is also consistent with human SLE. Further investigation of this heretofore unavailable animal disease model should provide clues to its cause and development, should lead to controlled studies of various methods of treatment, and may provide keys to a better understanding of the human disorder.

Although the cause of systemic lupus erythematosus is not known, evidence points to an abnormal antibody reaction. Circulating antibodies that are capable of harming the body's own tissues have been found in SLE patients. It has also been suggested that these antibodies may combine with the products of tissue breakdown to form immune complexes potentially harmful to organs such as the kidneys. Institute-supported investigators at Washington University in St. Louis have now found further evidence to support this theory. Their immunofluorescent studies have detected extensive deposits of bound gamma globulin in the skin lesions of SLE patients. It is suggested that such lesions may be one source of antigens, in the form of tissue components, which are released into the circulation during tissue damage. These antigens then combine with circulating antibodies to form immune complexes capable of damaging a variety of organs in the patient.

SCLERODERMA

Scleroderma is a serious, systemic disease characterized by fibrous thickening of the skin and by scattered hardening of internal organs. Its etiology remains unknown, and there is no satisfactory form of treatment. Evidence has been

obtained in an Institute-supported study at the University of Texas, however, that an underlying blood-vascular mechanism may play an important role in the development of this disease. The investigators studied biopsies of muscle from 8 patients with scleroderma who had no evidence of muscle involvement. A capillary abnormally, lamination of the basement membrane, was found in all the specimens obtained. Sixty-five per cent of all capillaries were involved in these patients, the overall frequency or number of blood vessels per volume of tissue was decreased, and the average diameter of blood vessels was slightly increased. It was concluded that a distinctive morphologic change occurs in a high proportion of the capillaries of the skeletal muscle of patients with scleroderma, a new finding that may be significant in the pathogenesis of this disease.

GOUT

One important cause of acute, extremely painful, and sometimes chronic destructive arthritis is gout, an inherited metabolic disorder associated with an increased amount of uric acid (hyperuricemia) in the blood and tissues of those afflicted. In this disorder, uric acid crystals are deposited in and around the joints, resulting in inflammation, severe pain, and eventual destruction of normal joint structure. In especially severe cases, permanent crippling or severe kidney damage, or both, may result.

An Institute-supported study by investigators at the University of California Medical Center has shown that a high percentage of patients with gout also have calcification of cartilage, especially in their knees. A study of 58 patients led the investigators to postulate that the calcification is a secondary manifestation of gout, caused by the deposit of sodium urate crystals around the joints. Calcification of cartilage occurs with a number of conditions related to hypercalcemia (abnormally high calcium concentration in the blood), including vitamin D intoxication and hyperparathyroidism. It can also occur after trauma, infection, or degenerative changes, as well as in gout, ochranosis (another metabolic disease), and in pseudogout.

At the present time, gout can be the best controlled of all the arthritic diseases. Treatment aims at controlling excess uric acid accumulation in the body, and preventing or relieving the recurrent painful attacks. Potent drugs developed during the past decade (uricosuric drugs) are used to rid the body of its excess uric acid via the urine, thus preventing a build-up of harmful crystal deposits. These drugs, notably probenecid and sulfinpyrazone, are the mainstay of long-term maintenance treatment in gout. Present research emphasis is on development of methods of early diagnosis and further improvement in management so that deformity and such complications as described above can be prevented.

OUTLOOK

This brief review of some recent research accomplishments in the field of arthritis and rheumatism is obviously not all-inclusive. It is indicative, however, of the increasing velocity of medical science's attack on this debilitating group of diseases, and of the significant stimulus provided by the National Institute of Arthritis and Metabolic Diseases. The past year has yielded a number of exciting findings that offer hope to millions of sufferers, that greater understanding of these conditions will bring with it improved methods of treatment and long-term care.

NATIONAL CENTER FOR CHRONIC DISEASE CONTROL

The first step in activities that are designed to prevent disability from arthritis is a hard look at all features of the problem, identification of areas where increased effort is necessary, and the formulation of an inclusive plan of attack. The Surgeon General's Workshop on the Prevention of Disability from Arthritis utilized the knowledge and experience of leading experts in medicine and allied fields to take stock of our status and suggest future action. The recommendations of that conference for increased activity related to facilities, training, and clinical investigation have served as the basis for our planning.

Measurable accomplishment for expenditures is crucial to real progress in health programs. An extensive analysis of the arthritis problem, including the magnitude of the problem, the state of the scientific art, alternative programs for control based on current knowledge, provision for training, and clinical research, and careful calculation of potential economic benefits has recently been com-

pleted. Implementation of the suggested programs promise a substantial return for each dollar spent.

Many of our current activities are testing, on a pilot basis, the assumptions that are required for long term plans and programs such as those referred to above.

EPIDEMIOLOGY

The search for factors that determine the occurrence, frequency, and distribution of a disease as it is found in the community is a prerequisite to the understanding and ultimate conquest of the disease. When the characteristics of a disease have been identified, and its associations demonstrated, hypotheses regarding etiology can be formulated. The critical examination and testing of hypotheses so derived will ultimately uncover the causes of the disease.

Therefore, the National Center for Chronic Disease Control has sponsored several epidemiologic investigations of arthritis. A long term community based study in Sudbury, Massachusetts, has already uncovered previously unknown information regarding the incidence of gout. Furthermore, the critical examination of previously accepted criteria for the diagnosis of rheumatoid arthritis has led to a reevaluation of their efficacy. Activity has been stimulated to improve them.

A study of the relationship of socio-economic status to the development of arthritis and its consequences in New Haven, Connecticut, has raised fundamental questions that challenge widely held notions of the characteristics of osteoarthritis and gout. In addition, the study will provide information on the quality and quantity of care that is available to arthritics in various social strata.

A study of the occurrence of rheumatoid arthritis and gout among monozygotic (identical) twins, dizygotic (fraternal) twins, siblings and parents in Connecticut may help settle the controversy regarding the influence of genetic factors in the etiology of these diseases.

THERAPEUTIC APPROACHES

Improvement in patient care depends upon successful accomplishment on several levels. First, a new approach must be conceived and tested in the laboratory. Should its efficacy be promising and its shortcomings acceptable, careful clinical trials must be undertaken. Finally, a technique for delivery to the patient in the most effective and economic way must be devised and demonstrated. The National Center for Chronic Disease Control supports activities related to the evaluation of therapeutic techniques, and demonstration of their efficacy and ready applicability.

Rheumatoid arthritics frequently need institutional care for long periods of time. Usually, all of the facilities of acute hospitals and/or rehabilitation centers are not required for their effective treatment during this time. A facility in New York City has demonstrated that an outstanding program of comprehensive care for rheumatoid arthritics is possible in an environment that is significantly less expensive than the usual hospital setting.

Considerable controversy exists regarding the efficacy of splinting in the treatment of rheumatoid arthritis. A carefully controlled study of patients with symmetrical rheumatoid arthritis is underway in Salt Lake City, Utah. The study promises to provide substantial, dependable information regarding the value of splints in this disease.

The recent increase in early surgical treatment of rheumatoid arthritis has caused substantial disagreement among physicians regarding the value of this approach when compared to conservative medical management. As a first step toward settling this controversy, the development of criteria under which future trial may be conducted is being undertaken. Experts in rheumatology, physical medicine, orthopedic surgery, and medical statistics will developed criteria and suggested protocols so that decisive investigation will be feasible.

EDUCATION

Most patients with arthritis can be effectively treated by the first contact physician if he is familiar with the diagnostic and therapeutic procedures required. The large numberof arthritics in the United States compels us to equip as many physicians as possible with the knowledge they need to manage these diseases. Programs of continuing education, however, must meet the specific needs of the target population and methods for the evaluation of educational activities need

to be developed and perfected. National Center for Chronic Disease Control programs of education for physicians and allied health professions in rheumatology are pilot attempts to discover the most effective way to proceed.

At the Downstate Medical Center in New York a program to educate general practitioners by asking them to participate in an ongoing rheumatology training program will begin shortly. Several different techniques for measuring knowledge that is gained and practice habits that are acquired will be evaluated.

"Traveling teams" of experts are currently supported in several states so that consultation is available to physicians in surburban and rural settings. The "consultations" are learning experiences for all the participating doctors.

Short term training regarding many features of comprehensive care for the arthritic has been stimulated widely throughout the year.

MISCELLANEOUS

The range of arthritis related activity undertaken by the Center extends to many areas not mentioned above. Sometimes, activities of modest cost and limited effort have far reaching effects. Though in the long run, the kinds of programs previously described will determine the fate of future arthritics, activities related to making them more comfortable today may be particularly satisfying.

A recently completed and soon to be published pamphlet on clothing tips for the arthritic woman will satisfy the many requests we get for such information.

Comfortable, therapeutic shoes are frequently too expensive for arthritics with foot problems. A contract has been let to develop and perfect soft plastic (silastic) inserts for regular shoes that are suitable substitutes for specially constructed shoes. Preliminary studies have demonstrated the feasibility and economy of this approach.

Where trained physical therapists are in short supply, some method of stretching their skills is necessary. Home exercise programs for individual patients must be devised by competent professional personnel. Once devised, however, they can be performed by the patient alone, or with assistance from family and friends. A series of home therapy reminder pads is nearing completion so that the therapist can literally "paste" in the exercises required, and modify them as time goes by, always "pasting" the new approach over the one discarded.

OUTLOOK

A brief description of some of our programs can only serve to demonstrate the broad thrust of our activities. We have been heartened by the ever increasing professional and public interest in these crippling diseases. We hope our future activities will hasten the day when there will be no disability from arthritis.

STROKES

Stroke is the third leading cause of death in the United States and a major cause of disability. Of the 400,000 victims in whom stroke occurred last year, one half were dead within two weeks after the onset. Reports indicate a 21 percent mortality following an initial attack of cerebral thrombosis, one of the major types of stroke. Moreover, of the 79 percent who survive the first attack, one-half die within the next four years, the remainder often condemned to a life of either permanent paralysis or other neurological catastrophe.

There are about two million Americans at the present time who have survived a stroke. Five percent of these are below age 45, 30 percent between 45 and 64 and the remainder over the age of 65. Thirty to 50 percent of stroke survivors are living in nursing homes or chronic disease hospitals.

The above figures demonstrate the devastating nature of stroke. In view of the extraordinarily high case fatality rate and the widesperad disability among survivors, it is clear that maximum effort must be expended in the primary prevention of stroke and in reducing the mortality, mobidity and disability in those suffering from stroke.

The term "stroke" refers to loss of brain function resulting from interference with the blood supply to the brain. Some strokes are minor episodes, while others cause permanent disability. Usually they are brought on by one of three events: thrombosis—a clot within a blood vessel of either the brain or the neck: cerebral embolism—the blocking of a blood vessel in the brain by a piece of

clot carried through the circulation from some other part of the body; or cerebral hemorrhage—the rupture of a cerebral blood vessel with bleeding into the brain tissue.

The major underlying cause of cerebrovascular disease is atherosclerosis—a disorder in which deposits of fatty materials form within the inner lining of an artery wall and decrease the size of the arterial channel. The decreased size of the blood vessels limits the flow of blood and increases the danger of complete blockage at some point. People with hypertension (high blood pressure) also show a considerable increase in the severity and frequency of vascular diseases of the brain especially hemorrhage. Among other causes are aneurysms—usually congenital weaknesses in artery walls that develop into sac-like swellings—and abnormalities in the blood clotting mechanism which facilitate clot formation.

Whatever the specific mechanism involved, interference with the blood supply of the brain inevitably leads to the death of brain cells and impairment of function. Temporary or permanent paralysis of movement, thought, speech, or sensation is the result.

A concerted attack, through research on the problem of cerebrovascular disease, is being made by the National Institute of Neurological Diseases and Blindness and the National Heart Institute through the effort of a joint subcommittee of the advisory councils of the two Institutes, and by groups of scientific consultants.

In addition, the National Center for Chronic Disease Control assists States and communities by providing consultatve services, training, and demonstration programs.

Programs of the Public Health Service to combat cerebrovascular diseases are discussed below.

NATIONAL INSTITUTES OF HEALTH

The National Institute of Neurological Diseases and Blindness has recognized stroke as a major health problem, and has supported research through project grants for many years. Beginning in 1961, with the overall broadening of research support mechanisms at NIH, the Institute undertook support of multidisciplinary research centers for the study of this disease, and there are now 15 such centers (a 16th is supported by the National Heart Institute) located in major population centers of the country. Each center is concentrating on a major approach to the disease problem, such as epidemiology, natural history, the dynamics of cerebral blood flow, the biochemistry of blood constituents, the effect of anticoagulant drugs, and cerebral cellular metabolism. In addition, each center is giving major emphasis to clinical research on problems of improved diagnosis and treatment. The work in all the centers is coordinated by the Joint Council Subcommittee through symposia at which scientists report findings and exchange ideas. Together, these men spearhead a major attack on the fundamental problems which must be solved before strokes can be prevented and treated more effectively.

In addition to the research grants program, a contract has just been negotiated for a national epidemiological study of stroke. Six to nine communities will serve as the basis for data which will be gathered and analyzed for comparisons of customs and practices in certification of deaths. These data will be correlated with hospital records and with physician and household interviews to determine their adequacy. If necessary, other methods of obtaining epidemological information will be explored. For the first time accurate information will become available about the incidence and mortality of cerebrovascular disease and the validity of the reported differences in different parts of the country.

The number of research and clinical workers in the field of stroke is still far from adequate, and the Institute last year began to expand its cerebrovascular training efforts, organizing specific training programs for each of the different professional groups concerned. Since the founding of the Institute, training in all of the academic neurological disciplines has been supported, but sponsorship has now been extended to a number of programs specifically for training in cerebrovascular research, including several types of support which provide short-term training to medical practitioners who wish to keep abreast of the latest developments in diagnosis, prevention, and treatment, longer training for specialists in internal medicine, surgery, radiology, and physical medicine, and long-term training for future teachers and investigators.

The cerebrovascular program of the NINDB both in research and training, is closely coordinated with the programs of the National Heart Institute and the

NIH Division of Regional Medical Programs, with a view toward bringing the fruits of the scientific effort into clinical practice in all localities as rapidly as possible.

Cooperative Studies

Much can be learned about cerebrovascular disease only through cooperative studies, because of the vastly enlarged statistical base made possible through the combined efforts of a number of institutions. The Institute has been supporting a Cooperative Study of Intracranial Aneurysms and Acute Subarachnoid Hemorrhage, among 24 university-based centers here and abroad, since 1958. Personnel at a central registry at the University of Iowa have now analyzed the accumulated data on 6,368 cases and have published a wealth of carefully derived statistics of value to physicians in deciding upon courses of treatment. The study has produced data on the most common causes of subarachnoid hemorrhage, susceptibility of various age groups, sex distribution, most common sites of aneurysms, sites related to age and sex, percentages of patients who had warning signs, the relation of environmental events to hemorrhage, and the value of angiography in detecting multiple aneurysms. Also produced were new analyses of the mortality of nonsurgically treated cases, the risks of death and rebleeding at various time intervals after hemorrhage, the statistically critical size of aneurysms, and the influence of age, sex, aneurysm site, and general patient condition on survival.

Among the many highlights of the study was the statistical verification of intracranial aneurysm as the most common cause of subarachnoid hemorrhage (51 percent). Next most common is hypertensive arteriosclerotic cerebral vascular disease (15 percent). Other findings were that the peak frequency for hemorrhage due to aneurysm lies within the 50–54 age group, and that hemorrhage from aneurysm is more common in women by a ratio of 3 to 2, though men predominate below age 40. The study revealed that headache and dizziness occur before hemorrhage in at least 90 percent of the cases, but noted that these are so commonplace as to be of little diagnostic value. In one-third of the cases, hemorrhage occurred during sleep; in another third, during random activity. However, certain specified events showed a higher frequency of association than expected, including lifting and bending, and emotional stress.

The scientists found that high-quality bilateral carotid angiography can be used to discover 92 percent of multiple aneurysm cases, but that the remaining 8 percent require vertebral angiography in addition.

With the discovery and utilization of effective anti-hypertensive drugs, there has been a corresponding decrease of the number dying of strokes. The Institute is now funding a new cooperative study of hypertensive patients showing signs of cerebrovascular disease at eight institutions, in order to learn the degree to which anti-hypertensive drugs decrease stroke incidence.

In the planning stage is another cooperative study which will be a joint effort of the NINDB, the Veterans Administration, universities, and the National Academy of Sciences. Using the very large study population whose records are available from the Veterans Administration, epidemiologists and neurologists will develop much more detailed and accurate data on incidence and possible factors affecting incidence.

Scientific Conferences

The National Institute of Neurological Diseases and Blindness has sponsored scientific meetings, both on the broad topic of cerebrovascular disease, and on specific aspects of the problem. The Fifth Princeton Conference on Cerebrovascular Disease was held in January 1966, and plans are being made for a sixth to be held in 1968. Conferences on specific cerebrovascular problems include one devoted to the neurology of aphasia, in November 1965, and one on the rehabilitation of stroke victims held in March 1966. A workshop for the scientific directors and staffs of the 16 cerebrovascular clinical research centers is planned for January 1967. The Joint Council Subcommittee will continue to meet three times a year serving as a focal point for cerebrovascular planning and giving general guidance to the program.

NEEDS

The great advances in knowledge, instrumentation, and techniques of medical science as a whole in the past two decades have led to a more optimistic attitude toward prevention and treatment of stroke. The substantially enlarged Federal

program of research support in the field has heightened this optimism. Much remains to be done, however.

The epidemiology of stroke, which could identify the causes of the disorder, is still largely undeveloped. Rapid survey methods should be developed which can be used reliably in large-scale population studies by field investigators. More prospective studies of large population groups beginning at age 30 are needed to uncover factors contributing to stroke proneness.

The importance of blood-flow studies has repeatedly been emphasized, and is a central interest of several of the clinical research centers mentioned earlier. Scientists at one of the centers have developed highly accurate new electronic methods for recording rapid changes in cerebral blood flow and metabolism as a direct write-out on a graph.

However, the dynamics of circulation are only part of the problem; there needs to be adequate understanding of the mechanisms that promote and retard clotting. Blood clotting is a normal physiological defense mechanism when it occurs at a point of injury in a blood vessel; it becomes abnormal when it occurs within the closed vascular system of a previously normal person.

Significant advances have been made in the rehabilitation of stroke patients. However, many thousands of stroke patients lie helpless in nursing homes, slowly deteriorating toward states of organic dementia, who might be helped substantially through modern techniques. The encouragement of research in restitution of function is a major concern in Institute planning.

Continued autopsy studies can contribute much to the accuracy of our knowledge of the pathology of stroke. For example, a neuropathologist supported by the Institute has reported that 2,650 brain dissections made over a 7-year period show that intracranial thrombosis is more frequent, in relation to thrombosis of the carotid and vertebral arteries, than is currently believed.

Training for research in cerebrovascular disease is one of the field's most urgent needs. The National Institute of Neurological Diseases and Blindness's training program has greatly strengthened the Nation's research manpower resources in the neurological field generally, having provided training support in the clinical and basic disciplines pertinent to the cerebrovascular field. With new forms of training support established last year, it is hoped that more of the scientists who have been trained in neurology, neuroradiology, neurosurgery, and other directly related disciplines will now be encouraged to undertake specialized study in cerebrovascular disease. Scientists from associated disciplines such as genetics, epidemiology, biostatistics, and biomedical engineering also need to be encouraged to focus their interest on stroke problems.

With a greater number of Americans moving into the primary target age for strokes, it becomes increasingly urgent that the Institute's broad but intensified research and training effort continue to move ahead with the vigor and speed demanded by the scope of the problem.

NATIONAL CENTER FOR CHRONIC DISEASE CONTROL

Past Activities

In order to define the nature and extent of the problem, the program has supported two incidence studies of stroke, one in Middlesex County, Connecticut, and one in a three-county area in Mid-Missouri. These studies have yielded the most valid statistics on the incidence of stroke to date.

The Ecology Field Station in Columbia, Missouri, has analyzed the geographic distribution of stroke mortality in the United States, pinpointing States with exceptionally high rates of disease and States with very low rates. These data supply the basis for further investigations as to why certain States have high rates and others low rates.

It has been demonstrated in rehabilitation centers that vigorous rehabilitation efforts applied to stroke victims can markedly reduce disability, in many cases to such an extent that the patients can return to work. In order to make the benefits of such rehabilitation techniques available, the program has sponsored more than twenty-five community or State-wide stroke rehabilitation programs. These programs have included the granting of monies to support such programs, the training of professional medical and paramedical personnel through short-term training courses, and the field assignment of highly trained and qualified personnel to assist communities in the development of comprehensive stroke rehabilitation programs.

The first stroke demonstration program was begun in Georgia in 1958. At first this consisted of evaluating stroke patients at a hospital clinic in Atlanta

and making recommendations for treatment. Then, small numbers of public health nurses were given a 3-day course in simple restorative techniques for the stroke patient. This included a review of the pathology, signs and symptoms, and general management of the stroke patient. Ultimately, by 1964, most all public health nurses in the State, about 750 in number, had taken the course at least once.

Since this initial pilot effort in Atlanta, the program has directly been involved in similar projects located in:

Lane County, Multnomah County, Oregon
Denver and Colorado Springs, Colorado
Bucks, Darke and Preble Counties, Ohio
Montgomery and Delaware Counties, Pennsylvania
Madison, Wisconsin
Chatham, Person, and Mecklenburg Counties, North Carolina
Adams County, Illinois
San Antonio, Texas
Allegheny County, Pennsylvania
Cambridge, Massachusetts
Montgomery County, Maryland
Wichita, Kansas
East Orange, Atlantic City, and Camden, New Jersey
Memphis and Shelby Counties, Tennessee
Spartanburg County, South Carolina
Hillsborough County, Florida
Jefferson County, Alabama
Bernalillo County, New Mexico
Frankfort, Kentucky
Corona-Flushing District, New York
Middlesex County, Connecticut
Detroit, Michigan
Addison County, Vermont

In March 1962, with the cooperation of the Good Samaritan Hospital in Oregon, the program assisted the State Health Department to establish a clinic to examine patients that showed signs and symptoms of impending strokes or cerebrovascular insufficiency. When remediable cerebrovascular insufficiency was found, recommendations for treatment of the patient by either medical or surgical means were made to the patient's physician.

To counteract the pessimistic attitude of both professional and lay people the program has sponsored a number of educational efforts in the form of literature, exhibits and demonstrations in relation to what can be done in a positive way for the stroke victim.

Stroke seminars lasting 3½ days were held in five areas in western States in cooperation with the Western Branch of the American Public Health Association. These seminars preceded a National Stroke Conference Planning Session whose emphasis was directed toward developing and implementing a National Stroke Congress. Both the Conference and Congress were planned and financed by the American Heart Association, Vocational Rehabilitation Administration, American Medical Association, and the Public Health Service.

Guidelines have been produced which have been useful to State and local health departments, the private physician, and community health planners. "Up and Around" and "Strike Back at Stroke" booklets have been developed for physicians to assist them in the everyday care of the stroke patient who is seen in his office or when he goes to the home of the patient. A booklet, "Guidelines for a Stroke Rehabilitation Program," was developed for health planners.

Present Activities

Since death certificates are the main source of mortality data, it is important to determine their validity as far as stroke is concerned so that further studies regarding the geographic pattern of stroke mortality can be conducted. The program therefore is supporting a study being conducted by Yale University concerning the validity of death certificates in regard to stroke.

The Mid-Missouri incidence study and the study of geographic patterns of mortality by our Ecology Field Station are being supported on a continuing basis. In addition, a prevalence and incidence study of stroke is being supported in Birmingham, Alabama.

In terms of preventing stroke, it is important to develop screening techniques which will detect stroke-prone individuals. The San Francisco Field and Train-

ing Station is conducting such a study at Seal Beach in California where an attempt is being made in a retirement community to develop a questionnaire which will detect the stroke-prone individual and also discover risk factors which may be important in precipitating stroke.

In light of the high case fatality rate for stroke and the lack of knowledge concerning the possible prevention of some of these deaths, the program is supporting by contract and with field assignees, a project in the intensive care of the acute stroke patient at St. Frances Hospital in Pittsburgh, Pennsylvania. This study utilizes an intensive care unit, around the clock nursing and physician coverage and special training courses for nurses in an effort to determine the factors contributing to the high death rate and whether it can be reduced.

Despite the fact that facilities for the care and rehabilitation of the stroke patient may be available within the community, it is not known at the present time how many stroke patients benefit from those services. To determine this, the program is supporting by contract and field assignees a stroke survey in Nassau County, New York. This survey, which is being conducted by the medical society, will follow the course of approximately 1,000 stroke patients to determine the existing methods of caring for the stroke patient in the county and what community agencies are being utilized. This survey will be used as a yardstick for programs to improve the level of care of the stroke patient through physician education, coordination of community agencies and possibly establishing screening programs and treatment centers.

Projected Activities

The nature, extent and natural history of stroke should be more precisely defined. Therefore, a number of community studies should be undertaken to determine the prevalence, incidence and outcome of stroke. Such studies would provide the data necessary to properly assess the needs of stroke patients and also give clues as to possible etiologic and risk factors.

Improved methods for detecting the stroke prone individual are needed. A systematic investigation of available methods should be conducted including an evaulation of thermochronic paints, thermography, ophthalmodynamometry, palpation of the internal carotid arteries, carotid bruits, etc.

Research among high risk groups such as retirement communities and hypertensive populations should be expanded in an effort to pinpoint specific risk factors and to develop methods of detecting the stroke prone.

Community programs aimed at the primary prevention of stroke should be inaugurated by intervening on those variables known to be risk factors in developing stroke. Hypertension is known to increase the probability of stroke. Hypertension can be diagnosed and drugs are available to adequately control hypertension. Community studies should be conducted to determine whether a hypertension control program will reduce the incidence of stroke.

There is a need to evaluate in a systematic way the value of the varying types of community rehabilitation stroke programs. For future programming, it is important to know whether stroke patients do better in a rehabilitation unit, in a hospital-based home care program, in a group therapy program or in a completely home-based program.

The Center plans to work with interested State and community health agencies to stimulate these studies, demonstrations, and community programs, to the greatest extent possible, utilizing funds available to them under the Comprehensive Health Services program.

DIABETES

It is estimated, according to the Diabetic Supplement to the National Health Survey, that there are 2.3 million known diabetics in the United States, and another 1.6 million who have not yet discovered that they have the disease. Diabetes ranks eighth in the list of diseases causing death, and third in causing blindness. Approximately 325,000 persons yearly find they are diabetic.

Diabetes is a complex disorder for which there is no known cure. It affects individuals predisposed to the disorder by their hereditary background. As a result of the body's inability to metabolize carbohydrates normally, the diabetic is inefficient in converting carbohydrates into heat and energy required for normal body functions and in storing them in the form of glycogen. The carbohydrates, converted into glucose, accumulate in the blood and spill over into the urine. As the disease progresses, abnormal carbohydrate metabolism becomes associated with derangement in the metabolism of fats and proteins.

In its severe form, diabetes rapidly progresses to a state of grave metabolic derangement, called keto-acidosis, which may result in coma and death unless controlled by insulin administration. In its less severe form, diabetes will result in accelerated degeneration or hardening of the arteries, with a greatly decreased life expectancy. Although the disease can be fatal unless properly treated, in most cases it can be well controlled. Today, with proper treatment, most diabetics can lead a normal life and live almost as long as their fellow human beings. Despite good control of clinical symptoms, however, and the usual ability to hold in check the abnormal blood sugar level, the long-term complications of diabetes, primarily those affecting blood vessels, peripheral nerves, and the eyes, tend to develop relentlessly.

The Public Health Service carries out programs against this disease in two areas. Final solution to the problem of diabetes will depend upon an understanding of the more fundamental mechanisms at the root of the disorder, and the main thrust of the efforts of the National Institute of Arthritis and Metabolic Diseases is in this direction. The National Center for Chronic Disease Control is working with State and local community groups on programs directed toward casefinding and educational activities. The Public Health Service programs are discussed in more detail below.

NATIONAL INSTITUTE OF ARTHRITIS AND METABOLIC DISEASES

During the past year, studies conducted in Bethesda or supported by this Institute and carried out in other biomedical research centers have continued to increase in a very meaningful and useful way the body of knowledge concerning this complicated disease. Institute scientists and grantees have broadened their fundamental studies of the pathology of diabetes, of the action of insulin, and of the many biochemical and physiological changes which occur in body cells and fluids of diabetic patients.

JUVENILE DIABETES

Diabetes can be divided into two clinical types—juvenile diabetes and maturity-onset diabetes—which have different prognoses, somewhate different treatment, and related, but possibly dissimilar, causative mechanisms. In juvenile diabetes the onset of the disease frequently occurs during childhood or the teens. Although the great majority of such patients can be maintained with regular insulin injections, life expectancy of the juvenile diabetic is considerably shortened.

It has recently been proposed that the inheritance and development of diabetes may be mediated through a structurally abnormal insulin. This concept has gained support during the past year from the work of an Institute-supported investigator at the University of Colorado. He has shown that insulin isolated from the blood of diabetic children is significantly more resistant to destruction by an insulin-specific enzyme than is insulin derived from normal individuals.

This finding suggests that there is a genetically determined difference in natural insulin which in the juvenile diabetic contributes significantly to the underlying biochemical disorders of diabetes. It would appear that resistance of juvenile diabetic insulin to the enzyme is a function of some difference in the insulin molecule itself, perhaps a structural change which affects the active contact site for the enzyme.

Diabetes resembling the human *maturity-onset* type has been described previously in hamsters and dogs, and in recent years, Institute grantees have reported it in a new animal model, heretofore unkown in the United States, the Egyptian sand rat. Institute-supported investigators at the Jackson Laboratory in Bar Harbor, Maine, now have described a metabolic disorder closely resembling human *juvenile* diabetes which has appeared as a new genetic mutation in inbred mice. These diabetic animals exhibited a severe disease syndrome with onset at an early age and a shortened life-span. Because the disease closely resembles juvenile diabetes in man and is readily reproducible, the new strain of mice will provide a much-needed experimental animal model for research on juvenile diabetes.

The Jackson Laboratory scientists already are conducting further studies of the chemistry, endocrinology, pathology, and genetics of the diabetes mutant. Such studies may well provide diabetes investigators with information on many of the unanswered questions about the eitology of diabetes.

DIABETES IN THE PIMA INDIANS

Institute scientists are continuing their studies of the Pima Indians of Arizona, a population group found recently to have the highest rate of diabetes ever reported in a circumscribed, and otherwise normal population group. Intensive studies are underway to investigate the mode of inheritance of diabetes, the natural history of the disease and its complications, the role of diet and other environmental factors, and the effect of various therapeutic measures.

The investigators' most recent findings indicate that the effects of child bearing do not account for the higher prevalence of diabetes among women. These findings are at variance with previous diabetes clinic studies by other scientists, principally in England, which have supported the hypothesis that pregnancy precipitates diabetes. Contrary to expectations, the prevalence of diabetes, especially in the younger age groups, was found to be somewhat higher in Pima Indian women who have *not* borne children than in those who have borne seven and more. The Institute scientists suggest that in previous studies which linked diabetes to pregnancy there was more likely an indirect association with obesity.

INSULIN ACTION

One of the greatest challenges in diabetes research is the fact that 45 years after the discovery of insulin much disagreement still exists about the mechanism of action of this important hormone. It is known that insulin's single most important action is to facilitate the entry of glucose into the cells of the body. An understanding of the precise mechanism by which insulin accomplishes this task is essential to full solution of the diabetes problem.

It has been postulated that insulin may act primarily by initiating a disturbance at the cell surface which produces widespread structural changes. Such changes, it is theorized, would lead not only to increased penetration of glucose and other substances into the cell interior, but might also explain several other known effects of insulin. This hypothesis has been strengthened by recent studies by grantee-scientists at Mount Sinai Medical and Graduate Schools, New York, and at John Hopkins University, Baltimore. The New York investigators have shown that radioactively labelled insulin binds largely to the boundary membrane of the muscle cell. They have suggested that this action of insulin may facilitate the entry of glucose, electrolytes, water, and amino acids into the cell via a hormone-sensitive, possibly contractile, system which might also account for the known stimulating effects of insulin on protein synthesis. The Baltimore scientists have added support to this proposal by showing that insulin has an *immediate* effect on potassium and sodium movement in and out of rat muscle tissue. This finding implies that insulin acts on the outer boundary of muscle cells and is in line with the proposal that it acts primarily on the cell membrane.

PREDIABETES

It has been generally accepted that abnormal carbohydrate metabolism, as evidenced by elevated blood sugar levels and abnormal glucose tolerance tests, is the initial sign of clinical diabetes, and that small blood vessel disease develops as the disease progresses. Grantee-scientists at the University of Texas Southwestern Medical School in Dallas, however, have unearthed evidence to suggest that the reverse might be true; specifically, diabetes may be primarily a disease of the vascular system and not simply a disorder of carbohydrate metabolism.

These investigators have found that significant small blood vessel disease in muscles expressed in the form of marked thickening of the basement membrane of capillaries, which is characteristic of overt diabetes, appears in at least 50 percent of genetically prediabetic subjects prior to the onset of carbohydrate abnormalities and in practically all diabetic patients thereafter. Prediabetic subjects, persons genetically destined to develop diabetes sometime during their lives, were defined in this study as those having two diabetic parents, normal fasting blood sugar levels, and normal glucose tolerance tests.

These findings suggest that small blood vessel basement membrane thickening may represent the primary lesion of diabetes, followed only secondarily by carbohydrate derangements. The significance of this observation is that diabetes investigators are now afforded a new angle of attack, a direction for research efforts which may be much more fruitful in determining the funda-

mental cause of diabetes than previous studies directed mainly toward the abnormality in carbohydrate metabolism.

COMPLICATIONS OF DIABETES

Although the "control" or management of the clinical symptoms of diabetes has improved dramatically during recent years, complications such as heart disease, failing eyesight, hardening of the arteries, impaired kidney function, diabetic retinopathy and diabetic neuropathy continue to plague the older diabetic who has had the disease for many years. While concentrating primarily on the cause and prevention of the basic disease, researchers today are also vitally interested in these complications in the older diabetic, inasmuch as his life expectancy and function depend on them to a large extent.

Diabetic neuropathy, a condition characterized by lesions in the peripheral nervous system, is reported to occur in four percent of diabetic patients, but undoubtedly occurs in a less severe form much more frequently. The exact cause for such lesions has not been established. An Institute-supported investigator at Massachusetts General Hospital in Boston has now obtained evidence to suggest that a little-known chemical pathway involved in sugar metabolism (the conversion of glucose to fructose via sorbitol) may be overactvie in the sciatic nerve and spinal cord of rats with experimentally-induced diabetes. The existence of such a hyperactive abnormal biochemical mechanism in these tissues in diabetes, coupled with the marked local accumulation of its products, may have major implications for the development of diabetic neuropathy. It is known that in animals with galactosemia, another disorder of carbohydrate metabolism, such an aberration of biochemical pathways is involved in the development of cataracts. The present findings suggest that a similar mechanism may be operative in diabetic neuropathy.

MATURITY-ONSET DIABETES

A number of factors have been identified as predisposing an individual to diabetes. It is well established that those persons most likely to develop the disease are overweight, over the age of 40 years, relatives of diabetics, or mothers of large babies. During the past year Institute grantee-scientists suggested that idiopathic edema may also be a predisposing factor for diabetes.

Idiopathic edema is a term used to describe localized or generalized swelling, associated with accumulation of fluid in certain body tissues, the cause of which is unknown. The disorder most often affects women nearing the menopause who are overweight and emotionally tense and unstable. Studies of such patients now have suggested that idiopathic edema may be an early sign of diabetes. Scientists at the University of Vermont have found that these patients show both an abnormality of the small blood vessels and impaired carbohydrate tolerance, conditions which are known to precede the onset of clinically apparent diabetes. Their findings suggest that idiopathic edema may be an early sign of latent or mild asymptomatic diabetes. The investigators recommend that carbohydrate tolerance should be evaluated in idiopathic edema patients periodically, and treatment appropriate to the severity of any diabetic abnormality which may be found should be initiated.

SIGNIFICANCE OF LARGE BABIES

Other investigators at Boston City Hospital have questioned the concept that women who give birth to large babies (more than nine pounds) are likely candidates for diabetes. In a study of 5,534 pregnant women who were followed to term, elevated blood sugar levels were seen only in *overweight* women who gave birth to large babies. Overweight women with infants of average birth weight, as well as normal weight women with large babies had no such blood sugar elevation. This finding implies that it might be possible to make a more accurate clinical distinction than is now made between potential mothers who are most likely to develop diabetes and those who are not likely to develop the disease.

AUTOIMMUNE DIABETES

Grantee-scientists at the University of California, San Francisco, have obtained evidence to suggest that autoimmunity, the development and persistence of antibodies capable of action against one's own tissues, may play a role in

diabetes. They have reported that an autoimmune diabetes closely resembling the early juvenile type can be induced in rabbits by immunizing them with bovine insulin.

The investigators had shown earlier that rabbits immunized with bovine insulin developed antibodies directed against their *own* endogenous insulin. It was observed subsequently that several of these animals not only produced such antibodies, but also, as a result of the autoimmune phenomenon, became acutely diabetic. This observation raises the possibility that autoimmunity may not only be a contributing factor to the diabetic state in insulin-treated human subjects, but may also be an important underlying cause of the disease. At the present time, however, evidence that autoimmunity may play a role in the causation of diabetes is equivocal, and further studies will be necessary to determine its role, if any.

OUTLOOK

The story of diabetes, and its control, is one of the more heartening in the annals of medicine. Thanks to the fruits of past research, most diabetic patients today can enjoy a normal home and family life and can work with only minor complications. Continuing advances depend upon investigations of the natural history of the disease and of its complications in diabetic populations, of genetic factors in various diabetic animals, and of insulin action. It is in these areas that research has made greatest progress in recent years. New research areas of particular interest and importance are determination of the basis for development of the ocular, neurologic and vascular complications of diabetes and investigation of the diagnostic significance of capillary membrane thickening for detection and possible preventive therapeutic management of individuals destined to develop diabetes in future years. Progress in these two areas will contribute with particular effectiveness toward ideal control of this complex metabolic disorder of genetic origin.

NATIONAL CENTER FOR CHRONIC DISEASE CONTROL

High yield screening

Screening for diabetics and pre-diabetics is of major importance in the control of this disease. Recent advances in research give great hope for significant breakthroughs in either prevention of diabetes or in our ability to cure the disease. When such breakthroughs occur it is of extreme importance that we learn to whom to apply this new knowledge. While significant improvements have been made in the quantity and quality of screening, at current levels of expenditure we are barely keeping par with the growth in population and are hardly making a dent in the estimated 2,000,000 army of undetected diabetics and 5,000,000 pre-diabetics. Much more needs to be done to be able to apply current available information, to say nothing of knowledge immediately available from major breakthroughs in our understanding of the disease.

A continuous diabetes screening program for Federal employees offered an opportunity to evaluate, over a period of several years, the yield of new cases in persons with positive test results who had not been diagnosed as diabetic upon initial screening. Almost one in four of the persons with initial positive results were identified by a private physician as diabetic within the two year period.

Analysis of the data from the same Federal employee screening program reveals that new cases of diabetes are diagnosed more frequently among screenees with selected characteristics than among the general population.

Case yields are higher in those who are older, overweight, have a family history of diabetes, or have a history of births of large babies.

Diabetes screening reports to the Public Health Service for Fiscal Year 1965 indicate that there was a 15,000–20,000 increase, over fiscal 1964, in the number of persons screened (where blood tests were used). The number of new cases shows a substantial rise—6,929 compared to 6,073 in 1964. The new case yield is 9.6 per 1,000 screened as compared to 8.6 per 1,000 in fiscal 1964. The higher yield attests to the efforts being made throughout the Nation to concentrate on high-risk groups and to improve methodology.

Diabetes education

Serious deficits exist in the educational aspects of diabetes, both from the standpoint of professional as well as patient education. A physician in practice today who received his medical training over 10 years ago and has not had the opportunity to return to up-grade his knowledge of diabetes is sadly out of date

with the current level of the science of diabetes. Very little has been done to remedy this situation. The same is true of allied health professionals, for example, nurses who are the mainstay of patient education. Hundreds of them today do not know as much as we expect patients to know of their disease. Patient educational techniques are also seriously deficient. In a disease which requires as much self care as diabetes a much more comprehensive understanding is required than is currently being made available.

Diabetes is a self care disease. This means the patient must learn how to take his own medication including injection of insulin, make small adjustments in his dosage, test his own urine to evaluate his control and regulate his diet which may include weighing all of his foods. It can be seen that the patient must act as his own physician, nurse, dietitian and laboratory technician.

In order to do this, the patient must be firmly grounded in all the various aspects of his disease. Motivation also plays an important part. This disease is symptomatic only when the blood sugar is at the extremes, that is very high or very low. Levels of sugar short of these extremes do not cause the patient to feel ill but are considered by most diabetologists to be related in some way to the early vascular complications of diabetes. Therefore it is important that the patient realize the necessity for control even when he is symptom free.

Through preliminary data from the National Health Survey, we find many patients have not been given sufficient information about their diet and many others are not motivated to follow a diet. Also other deficits in the patient's knowledge will be revealed as the analysis of this data from the health survey progresses.

Anticipating these deficits, the Diabetes and Arthritis Control Program is exploring many avenues of patient education. In Boston, several hospitals are exploring the value of a programmed course of instruction to be used with a teaching machine. This hopefully will not only conserve valuable medical personnel time but will give these patients a base on which to build by individual instruction. Because of the wide range of intellectual ability of diabetics, another programmed course is under development in Cleveland which is aimed at those with less than a fourth grade level of education.

An aid to dietitians which is greatly needed but up to the present time expensive or of inferior quality are durable food models. During the past year, a project for development of inexpensive plastic food models was undertaken and these will be a reality shortly. This will enable the dietitian to more accurately express portion size to the diabetic.

A study was recently begun using a new concept of teaching both the patient and his family along with nursing, dietetic and medical students. The medical personnel will be separated from the patients by a one way mirror but will receive the same training as the patients for one week including the selection of foods from a cafeteria line according to the food exchange lists. This should prove to be a worthwhile method of two level education.

For improvement of physician education, a small project was begun in Maine which utilizes the service of a diabetes specialist for one week. Each physician schedules his difficult diabetic patients for office visits on a particular half day. The specialist goes from office to office reviewing these diabetics with the local physician. This method of teaching will be evaluated and promoted if successful.

It is known that a diabetes program consists of many facets including early casefinding, referral for proper treatment, and use of improved methods of patient and physician education. Many diabetes programs now excel in one or two of these facets but none has combined all of these at one time into a model program. Therefore in the past year, a community study was begun which attempts to combine the best means of detection, referral and education, and also adds the all important evaluation phase. All segments of the community from the policeman on the street to the diabetes specialist will be objectively evaluated before any community-wide effort and this evaluation will be repeated following an all out campaign to discover and treat the diabetics by the most effective methods known. Numbers of hospital admissions for diabetes complications, diabetic deaths and other criteria will be used in the evaluation.

Epidemiology of diabetes

Studies are being carried out at the Boston Field Station on the relationships between diabetes and pregnancy, the prevalence and incidence of diabetes in several communities (Sudbury and Oxford) and studies on the relationship between blood glucose, lipids and insulin in both the diabetic and nondiabetic.

These studies have been valuable in ascertaining to what extent any causal relationships exists between factors that are common in diabetes such as obesity and aging and the onset of the disease. Also effects of pregnancy as an etiologic factor in diabetes are being explored.

Outlook

Because of deficits existing in diabetes casefinding, patient education and knowledge of epidemiologic factors in diabetes, the Diabetes and Arthritis Control Program has used a multiple approach to the total problem. The development of more efficient and less costly methods of case finding is receiving high priority. Newer methods for patient motivation and education are being sought and older methods evaluated. Hopefully, the epidemiologic explorations in diabetes will be as valuable in this disease as in conquering contagious disease.

EPILEPSY

The convulsive disorders (epilepsy) affect an estimated one to two million Americans of all ages. The prevalence is higher in children than in adults.

Epilepsy has many manifestations. Minor seizures may appear as momentary lapses of consciousness (petit mal)—frequently unrecognized as seizures except by the trained observer. Psychomotor seizures cause transitory episodes of distorted perception or behavior. Partial (focal) seizures cause localized sensations or convulsive movements. The most severe (grand mal) are those causing generalized convulsions and profound unconsciousness.

Scientific opinion differs on the fundamental cause or causes of the disorder. Epilepsy not infrequently results from injury or disease of the brain. However, in other instances, no such cause is evident.

Some physicians hold that all forms of epilepsy, including both the generalized (grand mal and petit mal) and the localized (Psychomotor and focal) are a single disease entity with a common fundamental causative factor. Others believe that although certain mechanisms of neuronal discharge are operative in all cases, the causative chemical, anatomical, or functional defect may differ widely in different types of cases.

At the present time, physicians can control (but not cure) seizures in the majority of epilepsy patients by giving them anticonvulsant drugs. The recording of the electrical activity of the brain (electroencephalogram—EEG) is a widely used means for diagnosis and study of the disorder.

As is the case in many diseases, the Public Health Service has programs against epilepsy in two fields. The National Institute of Neurological Diseases and Blindness research program in epilepsy is designed to learn more of the factors causing the disorder (genetic, traumatic, infectious, biochemical, and socio-environmental); the factors precipitating seizures; and treatment, both medical and surgical.

The National Center for Chronic Disease Control supports applied research and epidemiologic studies, demonstrations, and educational programs. An Epilepsy Advisory Committee has been established to make recommendations to the Surgeon General on the national levels for service, service training, research, and research training. The Public Health Service programs are discussed in detail below.

NATIONAL INSTITUTE OF NEUROLOGICAL DISEASE AND BLINDNESS PROGRAM DEVELOPMENT

The Institute's program is focused on the development of a more refined classification of the epilepsies, better techniques for differentiating various types, deeper knowledge of the fundamental mechanisms of nerve activity underlying the seizure, and more effective procedures for prevention and therapy. The program is built upon a broad base of individual research project grants to scientists representing many disciplines in laboratories throughout the United States and overseas, and it includes projects within the Institute's laboratories at Bethesda. To provide focal points for a broad, interdisciplinary attack on the problem, a number of clinical and basic research centers have been established.

In addition, Institute scientists are coordinating the activities of a number of research centers in organized national programs. These programs, directed toward the intensive investigation of groups of epileptic patients and toward the development and testing of anti-convulsant drugs, may involve both university scientists and the pharmaceutical industry.

Four major clinical research centers in epilepsy have been established. One is located at the University of Washington where studies of the fundamental mechanisms underlying epilepsy are being conducted by a multidisciplinary research team. The disciplines of neurological surgery, electroencephalography, neurophysiology, neuroanatomy, behavioral physiology, and neuropharmacology are represented in this many-faceted approach to epilepsy. In addition, the center has established a Seizure Clinic where epilepsy patients may be studied and treated. A variety of seizure-associated clinical problems to be explored include: studies of the natural history of epilepsy, evaluation of anticonvulsant drugs, studies of the physiological mechanisms underlying seizures, studies of the effects of certain drugs on seizure mechanisms, the role of environmental stress in the precipitation of seizures, the effects of systemic metabolic disturbances on seizure thresholds, and an examination of the genetic patterns of epilepsy.

The epilepsy center at the University of Wisconsin also is conducting both clinical and basic research studies. Basic neurochemistry studies are now in progress on seizures induced by vitamin B_6 deficiency in laboratory animals. In the area of clinical research, genetic studies are being conducted with families having a history of epilepsy and with a group of school-age twins; new anticonvulsant drugs are being tested; neuropsychological investigations are evaluating intellectual and adaptive functions in epilepsy patients; and conditioning studies are under way on patients who have photosensitive, musicogenic, sound-induced, and pattern-evoked seizures.

A third center at the Brain Research Institute, University of California at Los Angeles, is concentrating on a study of the electrical processes underlying the epileptic state in animals and in man. Clinical studies at this center have been primarily concerned with temporal lobe epilepsy patients. Some of these patients have undergone surgery to alleviate seizures, and investigations have included evaluation of the beneficial effects of surgery in these cases as well as anatomical and pathological studies of the temporal lobes removed.

This year, the Institute initiated support for an epilepsy research center at Yale University where physicians are studying basic mechanisms of epileptic discharges in animals.

A study at the Neuropharmacology Research Center of the University of Utah is primarily concerned with the mechanism of action of anticonvulsants. An Institute-supported panel is continuing to evaluate methods of testing anticonvulsant agents. Specific problems of testing methods are being clarified prior to commencing the broad testing of anticonvulsants.

Computer centers for EEG analysis are a relatively new aspect of epilepsy research. The development of more sensitive amplifiers has made possible the better understanding of the essential nature of the electrical nerve discharge, and the recording of the electrical changes which accompany nerve activity. Computer techniques, which permit sophisticated and high-speed mathematical analysis of massive amounts of data from EEG recordings, make this information more meaningful. The Institute has supported an EEG-computer laboratory in Paris, which was the early pioneer in the use of these techniques and has aided in the development of a computer center for neurological research at the University of California at Los Angeles.

International research on epilepsy combines the special research knowledge and skills of scientists at several universities, both here and abroad. One relationship involves the University of Wisconsin and the Institute of Brain Research, Zurich, Switzerland. At these two centers, experts are studying the effects of conditioning on brain function. Other international research efforts are concerned with disturbed consciousness in epilepsy patients.

The Institute's newly launched collaborative study of epilepsy includes a pilot project seeking a standard therapeutic baseline for investigations into the control of seizures. Four medical centers—Marquette University, the University of Virginia, Montreal Children's Hospital, and the Tufts-New England Medical Center—are developing a network of units for this initial phase of the study. In the interest of uniformity, only one anticonvulsant, ethosuximide, is being used in the first 2-year portion of this program. Only one type of epilepsy—petit mal or loss-of-consciousness seizures—will be studied. This type occurs most often in children and adolescents.

In the Institute's clinical research program at Bethesda, as well as at Institute-supported centers, physicians also are conducting studies to determine the relationship of head injuries to the development of epilepsy, and are evaluating advanced surgical techniques and instrumentation with selected epilepsy patients.

Two important committees now provide guidance in the Nation's efforts against the epilepsies. In April 1965, the Department of Health, Education, and Welfare formed a Departmental Committee on Epilepsy with representatives from the Office of Education, Vocational Rehabilitation Administration, the Welfare Administration, and the Public Health Service. This committee keeps participating agencies apprised of current activities in epilepsy, prevents duplication, and encourages coordinated activities.

Also, the Surgeon General of the Public Health Service appointed an Advisory Committee on the Epilepsies this year to recommend action at the national level for the prevention and control of the epilepsies. The Committee consists of two subcommittees: one for service, the other for research. The Chairman of the full Committee is a former member of NINDB's National Advisory Council, and the Committee's Executive Secretary is an Associate Director of the Institute. Useful to the Committee in considering both research and service needs is the Institute's Monograph No. 1, "Epilepsy: A Review of Basic and Clinical Research," published this year, as well as the proceedings of an Institute-sponsored conference on "Neurological and Electroencephalographic Correlative Studies in Infancy."

RESEARCH ACCOMPLISHMENTS

Because the activity of nerve cells often becomes distorted in epilepsy and other brain disorders, the Institute is supporting research designed to clarify the form, structure, chemistry, and functioning of *normal* brain tissue. Such studies are providing data necessary for understanding the changes in the brain which cause or are caused by seizures.

Scientists are inducing epilepsy in experimental animals by electrical or chemical stimulation of a point on the brain's surface. This stimulation causes an irritative, seizure-producing focus. In one study, methionine sulfoximine (MSO) has produced seizures in animals that closely approximate clinical epilepsy in man. These seizures occur spontaneously and repetitively in experimental animals approximately 24 hours after they receive the compound. Chemical studies of brain tissue from these animals show alterations in the level of glutamine, a normally occurring constituent whose activities may relate to seizure susceptibility of the brain.

The development of a focus of epileptic tissue in one area of the brain may lead to the formation of a secondary focus in another area. Recording this electrical storm as it spreads throughout the brain verifies the formation of secondary foci. Studies of nerve cells within these foci have been designed to pinpoint the structural and chemical changes which occur in the epileptic brain cells.

A microtechnique for applying a chemical compound to a single neuron in the brain has been developed. With this technique, it is possible also to monitor the neuron at the time it is receiving the compound to note any changes that may occur. Certain compounds have been used to produce seizure activity in a single neuron in the brain of a laboratory animal. Following this, various substances have been tested for effectiveness in halting the abnormal activity. Results of these tests show that the application of control substances does not appear to be effective in arresting seizure activity and that seizure activity is a "spreading" phenomenon. It may spread from the single treated neuron to other untreated ones and result in a generalized seizure in the animal.

Scientists also have been concerned with the effects of sodium and potassium salt concentrations on brain cells. One researcher has observed the effects of varying concentrations of these salts placed in the ventricle of an animal's brain. By monitoring the brain's electrical activity after the salt solution was injected, he demonstrated that an increase in salt concentration, independent of the volume of solution applied, would produce a seizure.

In some patients, seizures are induced by sensory stimuli such as a flash of light, an unusual sound, or even certain types of music. In a clinical study, patients with sensory-evoked epilepsy were taught to tolerate the noxious stimuli by a conditioning process. A computer automation program was devised which would present the stimulus—which might be a certain musical composition, a startling noise, or a type of light—in combination with a similar but benign stimulus or at a benign frequency. When the patients became insensitive to the stimuli (seizure activity was no longer produced by it), they were taught to reinforce the conditioning to maintain their own insensitivity. Physicians working with these patients were afforded the opportunity to study one of the rarer forms of epilepsy and to develop an effective treatment, if not a cure, for it.

FUTURE PLANS

Following the recommendations of the PHS Advisory Committee on the Epilepsies, the Institute is expanding its epilepsy programs. Support now is being extended for epidemiologic studies, which will better identify the magnitude and complexity of this problem as well as provide an indication of future research needs.

Consideration is being given to the formation of an "epilepsy information center" which would provide a critical appraisal of the current field of knowledge and a method for the collection, storage, retrieval, and dissemination of medical data on the epilepsies.

A special effort currently is being made to encourage the production and testing of new anticonvulsant drugs. Twenty-nine drug firms have been surveyed for new drugs which have not yet been marketed and have been asked to cooperate in the development of ways whereby these can be brought promptly to clinical evaluation. A parallel survey has been made of university pharmacology departments to encourage their scientists to assist in research on the mode of action of anticonvulsants and in the training of neuropharmacologists.

Because a number of patients suffering from epilepsy cannot be controlled by anticonvulsants now available, the search for more efficacious compounds must continue. In addition, drugs with the same effectiveness as those currently in use, but which produce fewer or less serious side effects, are needed.

A visiting consultant has recently completed an in-depth analysis and evaluation of the nationwide research programs in neurocehmistry as applied to epilepsy. Similar analyses and evaluations will be undertaken in the field of neuropharmacology and other areas of basic research.

Expansion of the collaborative study of epilepsy is planned. While the pilot study progresses, plans are being made for an expeditious transition to long-range programs.

NATIONAL CENTER FOR CHRONIC DISEASE CONTROL

There are many questions relating to the natural history of epileptic disorders which await answers. Many problems at a clinical level remain to be solved by single or collaborative studies. From the public health viewpoint, the problems relating to epilepsy control are as follows: foremost, there is a need to continue medical research to uncover additional etiological factors and improve disease treatment; emphasis must continue to be focused upon augmenting adequacy of patient care, diagnostic facilities, treatment services, and much needed training activities. Epilepsy throughout history has and continues to place upon its victims oppressive social stigma based upon ignorance, misunderstanding, and ill-founded prejudices. Efforts in the area of public and professional information-education must be increased. The changing of public attitudes towards epilepsy represents a major challenge which must be aggressively pursued to assure the epileptic's reinstatement as a productive member of society.

Current program activity

The Neurological and Sensory Disease Control Program of the Center has as its mission the improvement of the level and quality of services available to the epileptic. In order to give effective direction to this effort, an Advisory Committee on the Epilepsies has been established to advise the Surgeon General. This committee will make recommendations on the national level for service, service training, research, and research training.

The Neurological and Sensory Diesase Control Program assists the committee in carrying out its work and will provide resources for implementing its recommendations.

The Neurological and Sensory Disease Control Program utilizes flexible approaches to carry out its mission. Major approaches are the support of applied research and epidemiologic studies to develop new methods of treatment and examine the extent of the problems; the support of demonstration programs which assist communities in establishing service programs and which identify unique elements of selected programs for widespread applicability; and support continuing education for physicians (general practitioners, pediatricians, internists), refresher courses for neurologists, post-residency training for specialists, and short and longterm programs for the vital allied medical disciplines of nursing, social work, and electro-encephalographic technicians.

A major study which the Neurological and Sensory Diesase Control Program is supporting is the epidemiology of convulsive disorders by the Mayo Clinic in Rochester, Minnesota. This study will determine the relevance of various suspected etiologic factors in the incidence and prevalence of epilepsy. It is anticipated that the results of this study will supply information to provide additional knowledge concerning the epidemiology of various types of epilepsy.

Our Program has encouraged and supported the development of State-wide demonstration epilepsy programs which project the skills of the University Medical Center to the outlying community and provide needed diagnostic and treatment services through these satellite clinics. Through these demonstration epilepsy projects, other States will gain the impetus and methodology for improving the care they provide to their epileptic patients.

In North Carolina four institutions (North Carolina State Board of Health, University of North Carolina at Chapel Hill, Duke University and the Dorothea Dix Mental Institute in Raleigh) were jointly supported in establishing a State-wide epilepsy demonstration program. Under the general guidance of an Advisory Committee, these institutions will establish four satellite clinics in selected areas of the State that do not have medical centers close by. This program demonstrates how medical centers of excellence and the State Board of Health can work together in providing neurological care for patients throughout the entire State, particularly for those who are otherwise unable to obtain neurological consultation and treatment. Because of the small number of neurologists now practicing in North Carolina, selected local physicians will receive sufficient neurological training to permit them to recognize and treat uncomplicated neurological disorders and refer more complex cases to the University Medical Centers. The value of this coordinated program will result in the establishing of a continuing program for North Carolina and a demonstration to other States.

Programs which have the same goal of improved services have also been supported in other States. Each of these programs have been tailored to specific factors of the geographical area:

(*a*) In Indiana, the services of the University of Indiana Medical Center are being provided to staff several satellite clinics located throughout the State.

(*b*) The University of Mississippi is coordinating two adult and seven pediatric satellite clinics through the State of Mississippi which are staffed by University and State Health Department physicians. The documentation of many new epileptic patients in the State of Mississippi has made possible an evaluation of serum drug concentration with degree of seizure control. This information was obtained through the NSDCP supported University of Mississippi "satellite clinics" project.

(*c*) The University of New Mexico School of Medicine has been established as a center for the referral of epileptic patients throughout that State and is preparing an epidemiologic study of epilepsy among the Indian population.

(*d*) The University of Missouri in Kansas City is providing an indigent epilepsy clinic where a clinical study of febrile seizures and hypsarhythmia is underway.

(*e*) In New Jersey, six monthly convulsive disorder clinics are held in six community areas at various locations in the State. A symposium on electro-encephalography was held for physicians by this group as part of their education program.

A demonstration project which has as its focus the provision of a full range of exemplary service in a metropolitan area has been supported at Barrow Neurological Institute, Phoenix, Arizona. Each patient receives a comprehensive medical work-up and the specialized services of a psychologist, social worker, and public health nurse, as necessary. Public and professional education and information programs have done much to overcome traditional biases and misconceptions, and stimulated cooperation among many local agencies. The project shows that by uniting medical and allied medical skills, the problems of epileptics can be dealt with to the benefit of the individual patient and the community.

The United Cerebral Palsy Association has been assisted in undertaking a health, education and community organization project in epilepsy in conjunction with its services to the cerebral palsy patient in San Francisco. This has resulted in numerous conferences and symposia for professional workers in

a health and education program including families of epileptics, employers, fellow employees, and for the general public.

Training is a program activity which has high priority because there is a desperate shortage of medical and allied medical personnel.

Specialized medical personnel are in the shortest supply. To overcome this shortage the Neurological and Sensory Disease Control Program provides continuing education for physicians. Recently continuing education programs have been supported in Pennsylvania, Wisconsin, Florida, Missouri, Massachusetts and Arizona. These programs are specifically geared to improving the local practioner's expertise in dealing with neurological impairments with particular emphasis placed on epilepsy. Local practioners feel a need to improve their competence because of the large number of epileptics they see in their private practice. Workshops in neurology with an emphasis on epilepsy have been supported in Brooklyn and are reaching an increasing number of general practitioners in the area. Senior clinical traineeships were awarded to five physicians interested in obtaining up to one year of specialized training in neurology including epilepsy.

Allied medical personnel perform a critical role in supporting the physician in the treatment of persons with epilepsy. The three most important are nursing, social work, and EEG technicans.

Neurological nursing is a specialty which, until recently, had no formal academic programs extant in the United States. Three of these programs (Florida, California and New York) have recently been established with grant support. These projects, when fully operative, will constitute the only formal academic programs in the United States where neurological nursing training can be obtained. Two of these programs will also provide continuing education opportunities for general nurses.

The Program has supported five projects to prepare social workers with unique field training in the management of neurological patients, including epilepsy. These projects are the only graduate social work programs supported by the Public Health Service in the area of chronic organic disorders.

Six EEG technician training programs have been supported in selected institutions throughout the country. Electro-encephalograph technicians administer the electro-encephalographic examination, a critical diagnostic procedure in the diagnosis of epilepsy. Continuing education is also provided for physicians who are interested in becoming more skilled in interpreting the EEG. Approximately 200 such physicians will receive training through the support of a program sponsored by the American Electroencephalographic Society.

Future program activity

The future plans for the Neurological and Sensory Disease Control Program will follow the recommendations of the Public Health Service Advisory Committee on Epilepsy. An early goal will be to establish an accurate prevalence rate for this condition among individuals in various socioeconomic groups and in various parts of the United States. The first step in this effort has been undertaken by the Mayo Clinic.

The enormous shortage of trained medical and allied medical personnel makes training of paramount concern to this Program. Post-graduate training for neurologists to increase their competence in diagnosing and treating epilepsy will be expanded. Local physicians will continue to treat most epileptics and these physicians need continuing training in the new methods of diagnosis and treatment. Program-supported continuing education efforts will be increased to reach these generalists.

It is vital to produce a significant increase in the number of nurses, social workers, and EEG technicians concerned with the problem of epilepsy. Programs will be geographically located so as to provide maximum regional and local opportunities consistent with acceptable training resources.

The Neurological and Sensory Disease Control Program has supported a number of regional demonstration programs in epilepsy. This type of program must be supported in the future and communities will be encouraged to utilize the experience of major programs to benefit their programs. Medical Centers will play a critical role in this effort because it is here that the finest in medical facilities and the most highly trained personnel are located. Satellite clinics staffed by specialists from the medical center and located in appropriate centers of population are vital. They must be responsive to the need of the people in the area. Finally, a broad-scale public information effort must be undertaken.

Epilepsy is a disorder which the average family fears and the general public considers a stigma. Only with a wide-ranging program to counter these myths will the epileptic and his family be able to most effectively function in the modern world.

BREAST CANCER

Despite all efforts by clinicians and research scientists, mortality rates for cancer of the breast have remained generally unchanged for the past 30 years. It is the most common single form of malignant disease in women in the United States. It is estimated that in 1967 breast cancer will be diagnosed in about 64,000 patients, and will claim 27,000 lives.

To reduce this threat of one of the most formidable problems in cancer, a Breast Cancer Task Force, working with the National Cancer Institute, was established, and had its first meeting in April 1966 to begin examination of a total research program against this disease. This Task Force is to serve as the operating and coordinating mechanism for an intensified program of clinical and nonclinical research.

Public Health Service programs at the National Cancer Institute and the National Center for Chronic Disease Control are described below.

NATIONAL CANCER INSTITUTE

Organization of the Breast Cancer Task Force followed the recommendation of a special Study Group of outstanding Government and non-Government experts appointed by the Director, National Cancer Institute, to formulate a general plan for investigation of the causation, diagnosis, and treatment of breast cancer. The Task Force, comprising 11 members from seven medical research institutions including the National Cancer Institute, represents a variety of disciplines involved in research on this disease, including endocrinology, chemotherapy, surgery, radiology, virology, and epidemiology.

Many independent but related projects have been conducted hitherto in a number of programs at the National Cancer Institute and elsewhere. Impetus for the fresh approach to the problem of breast cancer was provided by recent encouraging results achieved against acute leukemia of childhood and by the Congressional appropriation of $1.65 million in fiscal year 1966 specifically for the Breast Cancer Task Force activities. An additional $1 million, earmarked for development of special animal tumor screens and the pharmacologic research that must precede the clinical trial of drugs in women patients, will accelerate the Task Force activities in 1967. These funds have been awarded for research in addition to that supported until now by the Institute through contracts, grants, and in-house programs.

STUDY GROUP RECOMMENDATIONS

The Study Group report, which the Task Force accepted, noted that ultimately an effective program for control of breast cancer should aim at developing preventive measures based on knowledge of the causes and nature of the disease. However, present needs demand major research effort in developing effective programs for early casefinding, identifying useful indicators of a patient's outlook for survival, and devising improved treatment based on the utilization of such prognostic factors. In the opinion of this group, sufficient clues and techniques are available to plan productive research in these three areas.

Specific recommendations of the Study Group were for research to 1) identify high-risk groups to increase the percentage of patients diagnosed at a curable stage; 2) define localized, potentially curable disease and determine the biologic difference, if any, between this and widespread disease; 3) identify factors that favor spread of breast cancer; 4) develop techniques for predicting recurrence of the disease; and 5) develop animal models to facilitate study of hormonal and other drug treatment.

RESEARCH APPROACHES OF BREAST CANCER PROGRAM

Research approaches of the Breast Cancer Task Force program encompass four main areas: epidemiology and etiology, early diagnosis, prognosis, and therapy.

Epidemiology and etiology. Studies in this area yield information on the distribution of cancer in the population and provide a basis for developing a control program. Ideally, prevention is the best form of control. Consequently, a fund-

amental goal is identification of potentially controllable epidemiologic and biologic factors associated with breast cancer. A second goal is identification of high-risk population groups that warrant particular attention in casefinding programs directed toward the discovery of early, curable stages of the disease.

Early diagnosis. The objectives of investigations in early diagnosis are to 1) develop criteria for identifying high-risk groups, 2) develop and test screening techniques, 3) apply screening techniques to sample populations, and 4) develop screening programs for specific geographic areas and population groups.

If high-risk groups can be selected from the population, screening tests using X-ray, ultra sound, and measurement of skin temperatures may be more profitably explored, and the possibility that early diagnosis and therapy will reduce breast cancer mortality can be tested.

Prognosis. This area encompasses the nature of the tumor. Research is needed to develop techniques for identifying factors involved in tumor growth and spread, to relate these factors to progress of the disease, and to develop guidelines on the basis of this information for classifying patients for appropriate therapy. Specific information is essential on such factors as growth potential, or aggressiveness of the tumor; influence of the tumor on the hormonal pattern of the patient; response of the patient to the tumor, particularly with respect to her immune reactions; and identification of tiny growths of tumor in other parts of the body at the time of initial treatment.

Therapy. Research on therapy involves first the use of prognostic and clinical criteria to classify patients as having disseminated or apparently nondisseminated disease. Then criteria should be developed for selecting therapy suited to the extent of the disease in an individual patient, and, finally, increasingly effective drugs must be developed and tested in controlled clinical trials.

INITIAL TASK FORCE EFFORTS

In its early meetings, the Task Force considered the most urgent problems to be to: identify early cases and high-risk groups, determine whether breast cancer should be regarded as a local or generalized disease, and clarify its nature. A Subcommittee on Biological Determinants was formed to work on problems of identifying the patient who has a high risk of recurrence after initial treatment of her disease and consequently a poor outlook for long-term survival. A Subcommittee on Radiation and Surgery will attempt to organize a national study comparing radical mastectomy (removal of the breast and adjacent tissues including lymph node areas into which the breast drains) and simple mastectomy (removal of the breast) in the treatment of localized disease. A third subcommittee, on Animal Tumor Systems, is investigating animal tumors that can serve as models for studies of the biology and drug therapy of human breast cancer.

Biological determinants. A major effort was begun to investigate the patterns of steroid (sex hormone) excretion in the urine of cancer patients. Interest in this research stems from findings recently reported by British investigators that response of breast cancer patients to surgical removal of the adrenal glands can be predicted on the basis of a "discriminant" derived from data on certain breakdown products of steroids in the urine. This type of research is of particular importance for its possible usefulness in predicting high-risk groups: patients who may be expected to develop recurrence of the disease after treatment, and also populations of normal individuals with a high probability of developing cancer of the breast.

A contract was awarded to the Worcester Foundation for Experimental Biology, Shrewsbury, Massachusetts, for the evaluation of automated procedures to increase the available capacity for urinary steroid analysis. Another contract, awarded to the Ben May Laboratory, University of Chicago, has as its objective the measurement of the ability of human breast cancer specimens to concentrate radioactively labeled female sex hormone (estrogen). If this can be correlated with the clinical response of the patients to treatment, it would be a useful prognostic factor.

Results of such analyses will be integrated with the work of the Breast Cancer Cooperative Group and Surgery Adjuvant Groups, which conduct clinical trials of drug therapy and surgery under the sponsorship of the Institute's Cancer Chemotherapy Program. Plans call for a comprehensive study of the recurrence of disease, and survival of patients undergoing radical mastectomy. "Discriminants" measured in these patients will include examination of urinary steroids before and after surgery; morphological findings, such as involvement of lymph nodes, size of tumor, reaction of lymph nodes to tumor,

and location of tumor; possible determination of thyroid function and serum hormones; and any other factor definable as a potential prognostic tool. Protocols aimed at defining the poor-risk patient at the time of primary surgery are being developed. A central unit for the pathology of breast cancer is being organized to parallel the research on steroid patterns.

The data will be collected in a central statistical unit now being organized under contract at the Louisiana State University, New Orleans. Hopefully, after several years it will be possible to use these data to predict with reasonable accuracy the risk of recurrence for a particular patient with breast cancer. This should permit decisions on timing and selection of further therapy, such as, for example, administration of drugs immediately after the first operation.

The Task Force plans to stimulate the study of a variety of other biological factors that may be important in characterizing breast cancer but have not been studied systematically in the past. These include determination of the time it takes for tumor cells to reproduce themselves and response of host connective tissue to the tumor.

Radiation and surgery. The Subcommittee is investigating the medico-legal aspects of the problem of "informed consent" of patients, so that a basis may be worked out for developing uniform clinical procedures for the projected comparative study of radical and nonradical surgery for localized breast cancer. The need for this study is indicated by an increasing uncertainty as to which is the better surgical method. This study will be integrated with studies of the nature of the tumor.

The Radiation and Surgery Subcommittee has also established liaison with the Committee on Therapy of the American College of Radiology and the Committee on Cancer of the American College of Surgeons, and is discussing with them clinical studies to reduce breast cancer mortality.

Animal tumor systems. Following review of the relevant data of the Cancer Chemotherapy Program, the Task Force approved further investigation of breast tumors of the rat as models for studies of human breast cancer. The Subcommittee on Animal Tumor Systems has recommended studies of rat breast tumors induced by the chemical DMBA (dimethylbenzanthracene) and other transplantable tumors, including hormone-responsive tumors of origin other than the breast. It also recommended that characteristics of model animal systems be studied so that the tumors may be realistically related to human cancer. Such studies should include host factors, such as age and endocrine condition; environmental factors, such as diet; tumor growth rate; and response to drugs at various dosages.

The Task Force is supporting a contract with Southern Research Institute, Birmingham, Alabama, for studies of the response of DMBA-induced breast tumors of rats to procedures similar to those used for treating patients with breast cancer. The procedures consist essentially of administering male or female sex hormones and/or surgically removing the ovaries or pituitary gland. When maximum cell destruction has occurred, hormones and other drugs can be evaluated for their ability to maintain or re-induce tumor regression.

E. R. Squibb and Sons, New Brunswick, New Jersey, under contract with the Cancer Chemotherapy Program is conducting laboratory studies pertinent to Task Force interests. Their studies have shown that a combination of two synthetic hormone-like agents, 1-dehydrotestololactone and stilbestrol, was effective treatment for a transplanted rat mammary tumor. As a result of this finding, one of the investigators of the Breast Cancer Cooperative Group has initiated a study with this combination of agents in patients. In addition, results of biochemical studies of enzyme changes in this rat tumor, following treatment of the host with hormonal agents, have stimulated the interest of clinicians in studying biochemical changes of some human cancer tissue.

Other Task Force interests. Work on the possible viral causation of breast cancer is supported by contract in the Institute's Etiology Area. One is a study under test by Melpar, Inc., Falls Church, Virginia, using mouse breast tumor virus to develop a bioassay technique to indicate the presence of virus in mammary tissues. The second contract, with Georgetown University Medical School, Washington, D. C., provides for fractionation of mouse milk and human milk, including milk from breast cancer patients, to facilitate a search for virus particles with the aid of the electron microscope. When findings from these studies indicate that further work in patients with breast cancer would be profitable, these activities will be integrated with those of the cooperative groups.

RELATED INSTITUTE ACTIVITIES

Many elements listed in the Task Force's program have been actively investigated under National Cancer Institute auspices for many years. Such research at the Institute and other research organizations supported by grants and contracts will be continued and in many instances reoriented with sharpened focus on Task Force objectives. The Endocrine Evaluation Branch will have the primary responsibility for staffing Task Force activities.

In Institute epidemiological studies, a prospective study is planned to investigate the occurrence of breast cancer among approximately 180,000 nuns in the United States. Earlier studies showed that this disease occurs more frequently among single and childless married women than among women who have borne children.

Recent reports from a contract-supported study of mammography, or examination of the breasts by X-ray, indicate that cancers not detectable by clinical means are being revealed. The study group consists of 30,000 apparently healthy women, aged 40 to 64 years, selected at random from women participating in the Health Insurance Plan of Greater New York. In the group receiving the X-ray examination, a rate of detection of 2.50 cancers per 1,000 women was observed; in the control group, the rate was 1.53. Hopefully, early detection, which will permit prompt treatment, will result in increased survival of the patients.

Another Institute study of factors that correlate with survival of breast cancer patients, recently published, indicated clearly that involvement of lymph nodes in the armpit and size of the tumor do influence length of survival.

In addition to its support of the Task Force's objectives relating to identification of prognostic factors, the Breast Cancer Cooperative Group is continuing its studies of hormonal and nonhormonal drugs for treatment of disseminated cancer. Some 40 hormonal agents are being investigated in early stages of clinical testing. Dose-response studies with steroids of known effectiveness and special comparisons like that of 5-fluorouracil, and antimetabolite, with 1-dehydrotestololactone are under way.

The Institute has invested nearly $14 million during the past year in support of breast cancer and related research on tumors of hormone-dependent organs. About $2.3 million of this amount is for research conducted under contract, an additional $9.9 million for research grants, and $1.6 million for in-house research projects.

A recurrent theme in epidemiologic, laboratory, and clinical studies is the involvement of hormonal environment in breast cancer. Investigators in this field suspect that the hormonal pattern may predispose a woman to development of the disease or influence the success or failure of treatment. The direction of the initial efforts of the Task Force should shed light on this phenomenon and hopefully lay the groundwork for improved understanding and control of breast cancer.

NATIONAL CENTER FOR CHRONIC DISEASE CONTROL

The opportunity for control programing

When breast cancer is discovered before the lesion reaches 5 cm. in size, treatment results in a rate of long term survival that is much greater than that for cases discovered when the tumor is larger or the patient has metastatic lymph nodes in the axilla or elsewhere.

Mammography

Diagnostic x-ray, called mammography, offers the best adjunctive diagnostic tool developed to date. In a high percentage of cases, mammography can suggest whether a lesion is malignant or benign, show its location and size, and even discover lesions that are not identified by palpation. It is a useful guide to accuracy in histological diagnosis and to choice of treatment.

The Cancer Control Program established the validity and reproducibility of the procedure through carefully controlled studies in the early 1960's. In 1964, training requirements for practicing radiologists and technicians were explored. It was found that three to five days of concentrated study under preceptor control provides adequate familiarity with the techniques and practice of mammography. This is followed by the preceptor's review of the trainee's early work, to help him sharpen his interpretation.

A considerable number of radiologists were trained in connection with the earlier reproducibility studies. As a result, the Cancer Control Program has been able to provide grant support for twelve strategically located training centers which train up to 500 radiologists a year.

From 1961 to December, 1966, a total of 898 radiologists and 376 x-ray technologists have been trained in mammography. Recently a survey of the 8,000 members of the American College of Radiologists sought to determine the extent to which mammography is used and the needs of further training.

Preliminary data show that 1,725 radiologists are interested in obtaining basic training and that continuing education for those previously trained is desired. A large number of practicing radiologists are now attempting mammography, many of them with self-taught techniques. Over 250,000 mammograms are being done yearly.

If mammography is to become a true screening technique, it must become adaptable to rapid routine examination of large numbers of women. This would not be practicable at present because reliable use of the present procedures demands too much of the time of scarce personnel. At present the principal value of mammography is in its assistance to diagnosis where breast cancer is suspected, or known.

Mammography is also valuable, however, as a means of appraising other techniques proposed for the detection and diagnosis of breast cancer. Currently under exploration are such techniques as xerographic x-ray, thermography, and ultra-sonics. None of these at present can be designated as a diagnostic procedure of accepted reliability but each offers possibilities of developing useful diagnostic capability within limitations of its own.

The ideal mammograpric screening technique would require little of the patient's time, provide technically excellent diagnostic material, and permit most patients with negative findings to be safely eliminated from suspicion without examination of the results by a radiologist.

Projected control programing

The present breast cancer situation suggests that several approaches to improved control of the disease by present methods should be developed, in addition to the exploration and improvement of mammography and other diagnostic techniques.

It has been estimated that the victims themselves find 85% of all breast cancers. The average size of the lesions found is 5 cm. at diagnosis. This suggests that many of the cancers are too far advanced when diagnosed to offer much hope for cure.

The present cure rate is estimated at about 50 percent for all cases found. This suggests that many cases are being found in time by current detection methods. It also suggests that examination of the breast by physicians and breast self-examination have not been practiced as systematically as they should be.

Differences occur in breast cancer death rates for women of different ethnic and age groups. For example, the U.S. rate is about 20 per 100,000 women while that for Japan is only a fifth as high. Again, studies have found that death rates for women coming to the U. S. from Poland, Italy and Mexico have relatively low breast cancer death rates, and the American Indian woman rarely develops breast cancer. In addition, it is known that the risk increases with age. These facts suggest that it should be possible to identify more precisely characteristics that place women at high and low risk of developing breast cancer.

All of these facts suggest that a systematic approach to the problem could result in a significant improvement in the discovery of small lesions. The Cancer Control Program is developing such an approach through three kinds of demonstration projects.

First, the existing mammography training centers offer an avenue for development of epidemiological data on the cases they and their trainees are examining. Through correlation of the mammographic and histologic characteristic of these cases, several projects already are studying not only the diagnostic problem but also the natural history of the progress of the disease.

Secondly, the Program is examining the feasibility of adding breast examination to the uterine examination in many of the existing uterine cancer control demonstration projects.

Thirdly, the Program is developing breast examination project plans in which mammography would backstop other examining techniques for use in hospitals

that do not have cervical cancer control projects, and for use by other organizations that offer medical assistance to large numbers of women. These include such units as planned parenthood, industrial, pre-natal, infant care and other clinics, as well as breast examination clinics set up primarily for this purpose.

This three-way program, if it examined 1 to 2 million women (most of them more than once) in a five-year period, should produce several valuable results, such as:

(1) Early detection and cure of a significant number of unsuspected cancers of the breast;

(2) Demonstration of the strengths and weaknesses of palpation alone and with mammography as an early detection procedure;

(3) Evaluation of breast self-examination and of means of teaching the technique and of stimulating women to report small lesions to physicians early;

(4) Opportunities to test and develop new screening procedures, including modifications of mammography;

(5) Collection of comparable epidemiological information bearing on risk determination from a diversity of geographic areas for larger numbers of women than have been studied before.

A five-year projection of this program has been analyzed by the Cancer Control Program to determine how effective it would be in controlling breast cancer among the women examined. The study showed that the increased number of cases detected in curable stages would yield, in preservation of earning power and medical care savings alone, about four times what it would cost.

Epidemiology

The Breast Cancer Task Force of the National Cancer Institute has recognized epidemiology as one of the avenues of needed investigation. The demonstration program can contribute to this investigation while it is detecting breast cancer with the means now at hand. As the Task Force has said, the study of factors associated with the disease must look for clues to potential prevention as well as early detection. In either case, elimination of categories of women from suspicion would be almost as useful as identification of the so-called high risk groups. In the voluminous literature on breast cancer many factors have been reported to be associated with high or low incidence of the disease.

As the demonstration program develops, it will contribute valuable data on the positive or negative relationship of breast cancer to such factors as:

A. Hormonal relationships:
   1. Onset, history and cessation of menstruation.
   2. Hysterectomy, oophorectomy, and other interference with hormonal factors.
   3. Pregnancy, child bearing and breast feeding histories.

B. Medical characteristics:
   1. Correlation of histopathologic and other findings.
   2. Sizes, types of tumors detected and their locations in relation to metastases.
   3. Survival in relation to these factors.
   4. Correlation of breast cancer with estrogen effect discernible in cervical cytology.
   5. Traumatic histories.
   6. Correlation of age at diagnosis to tumor size.

C. Cultural, ethnic, socio-economic, geographic, and urban-rural or other population density factors.

INTERNATIONAL ACTIVITIES OF THE PUBLIC HEALTH SERVICE

MULTILATERAL HEALTH ACTIVITIES

The Public Health Service continues to play a major role in the activities of the World Health Organization and its regional office, the Pan American Health Organization. Each year several hundred U.S. health officials, many of whom are PHS officers and employees, serve as advisors on WHO Expert Panels. Public Health Service personnel are serving with WHO in Geneva as well as in the regional offices, and the Deputy Director of PAHO is a Service officer.

The Public Health Service, in cooperation with the Department of State, determines U.S. policy on world health problems coming before the annual Assembly of the World Health Organization. Policy is determined through review and evaluation of the Organization's budget and program documents and through continuous evaluation of programs carried on throughout the world. Official delegations to these Assemblies include the Surgeon General, other Service officers, and representatives from nongovernmental U.S. health agencies. Annual sessions of the Pan American Health Organization and the Western Pacific Regional Committee of the World Health Organization are also attended by Service officers who help comprise the official U.S. delegation.

The Service actively supports disease control and special program activities of WHO, such as the worldwide malaria eradication program. By the end of the past year, 1,214 million people (three-fourths of the population of the originally malarious areas of the world) were living in countries where malaria programs had been successfully completed or were being undertaken. The control or eradication of other major diseases of the world, such as tuberculosis and smallpox, are also important activities of WHO to which the Service provides advice and support. The United States has supported, through both voluntary financial contributions and supportive discussions at international meetings, the water supply programs of WHO and PAHO.

In addition to actively participating in programs of WHO and of PAHO, the Service also assists in the development of U.S. positions on health-related matters of such international agencies as the Food and Agriculture Organization, the United Nations Children's Fund, the International Labor Organization, other United Nations components, and South Pacific Commission.

The Public Health Service assists WHO and PAHO in the conduct of their disease and health programs through the detail of Service officers. During 1966 a total of 10 Service officers were on long-term detail and 103 other Public Health Service personnel gave advice or consultation on a short-term basis.

The Service also makes available to international organizations its technical and research facilities. Sixteen of the WHO Reference Centers for the study of various diseases are located at health installations in the United States. The Service is a resource for short-term consultants for Expert Committee Meetings, international seminars, symposiums, and training courses sponsored by WHO or PAHO, and provides assistance in meeting emergency needs, particularly with furnishing staff for epidemiology and immunization programs.

BILATERAL HEALTH ACTIVITIES

The Public Health Service works with other U.S. agencies and organizations in developing programs and carrying out U.S. commitments in international health. The PHS works with these agencies and organizations to assure that U.S. assistance to foreign governments, in the field of health, meets the health needs of the country.

There are several ways the PHS helps to meet these health needs. One way is by inter-agency agreements whereby the PHS assumes responsibility for carrying out programs which give assistance in health areas to other countries. Under inter-agency agreements, the PHS places the administration of program operation in those areas of the Service which have corresponding domestic program responsibility.

Other ways the PHS helps are in furnishing short-term consultant services, and the detailing of PHS health professionals to other agencies and organizations.

Individual reports have been submitted by each program area having international activity. These reports follow and give in detail the story of PHS international involvement.

EXCHANGES WITH THE SOVIET UNION

In March of 1966 the fifth consecutive biennial cultural exchange agreement was signed in Washington, envisaging the completion of a full decade of exchanges of persons. The exchanges in the field of public health and medicine are arranged jointly by the Public Health Service in the United States and the Ministry of Health in the USSR.

No American delegations in the medical or health sciences visited the Soviet Union in 1966, but ten individuals continued or began research or observation programs there. One Soviet delegation, in virology, and five individuals visited various medical institutions in the United States. No joint scientific sessions were held in either country during the year.

THE NATIONAL LIBRARY OF MEDICINE

The Library has a close and continuing involvement with foreign medical and research activities through the literature it acquires and through the various services it provides to libraries in the United States and abroad. During fiscal year 1966 the Library added more than 98,500 pieces of medical literature, over 70,000 of which came from foreign countries. In fact, 75 percent of the more than 18,500 journals, regularly received by the Library, come from abroad.

For many years, the Library has carried on an international publications exchange program under which it offers to its exchange partners the major serial titles as well as the monographic publications of the Public Health Service. The Library has over 700 foreign exchange partners from whom it receives more than 6,000 regularly issued foreign periodicals and monographs.

During fiscal year 1966 the Library photoduplicated a total of 302,025 pages of journal articles in response to requests from 82 foreign countries, approximately 14 percent of the Library's photoduplication services. In the same period, reference services were provided by mail in response to requests from 252 institutions and individuals in foreign countries. Foreign requests represented 17 percent of the total reference correspondence.

The Library has developed a computer-based system, MEDLARS (Medical Literature Analysis and Retrieval System) which it uses to provide searches of the medical literature published since 1963. It intends to duplicate the magnetic tapes for sharing this machine retrieval power with other countries, and has encouraged the development of MEDLARS search centers in Sweden and in the United Kingdom. Other countries have expressed keen interest in utilizing this system, and it is anticipated that further agreements will be concluded.

NATIONAL CENTER FOR HEALTH STATISTICS

The international activities in health statistics are concerned with further development of research, statistical classification of diseases, and training of vital and health statisticians for developing countries. Research on problems of health statistics are carried out under dollar contracts and under Public Law 480. A contract study of infant mortality trends and differentials in England, Scotland, the Netherlands, Denmark and Norway has been underway to explain their favored position over the U.S.A. on this health problem. Another similar investigation of general mortality trends is being carried on with Finland, Norway, and Sweden.

Research financed under P.L. 480 has required an increasing amount of technical and professional assistance from U.S.A. consultants on the existing projects. The growth of interest in utilizing statistical methods to study population and health problems has necessitated increasing demands on staff to work up and negotiate further studies.

Under an arrangement with the Agency for International Development, the Center is for the second year giving a training course in practical vital and health statistics techniques for personnel from developing countries who are or are to be charged with important responsibility in their own country. Nine persons completed the 1965–1966 course and nine were registered for the 1966–1967 course.

Representation from the Center is in continued demand for international conferences both on an advisory and participatory basis. In particular, active assistance to WHO and PAHO has been important in this respect. In addition, many foreign scientists visit the Center for short periods to learn about advanced techniques.

BUREAU OF DISEASE PREVENTION AND ENVIRONMENTAL CONTROL

The Bureau of Disease Prevention and Environmental Control was established officially on January 1, 1967 under a Presidential reorganization of the Public Health Service. The Bureau is composed of five National Centers, each of which contain elements of many ongoing PHS programs and each of which sponsor and cooperate in international activities. The Centers are the National Communicable Disease Center, which includes the former Division of Foreign Quarantine; the National Center for Chronic Disease Control, formerly the Division of Chronic Disease Control; the National Center for Radiological Health, formerly a Division; the National Center for Air Pollution Control, also formerly a Division; and the National Center for Urban and Industrial Health, which contains the programs of the former Division of Environmental Engineering and Food Protection, Division of Occupational Health, and Division of Accident Prevention.

THE NATIONAL COMMUNICABLE DISEASE CENTER

Training, research, and consultation

Participant training.—Over 300 professional health workers from 78 different countries were programmed and received training at the National Communicable Disease Center during Fiscal Year 1966. These included directors of health services, senior public health workers, professors of medicine and hygiene, laboratory workers, recent master of public health graduates, and other specialists in the related health disciplines of communicable disease control. This training and consultation sought by scientific and technological personnel from abroad constituted an increase of 9 percent from the previous year.

Special training projects.—In addition to the training rendered to foreign and international health workers at the National Communicable Disease Center in Atlanta and its field stations around the country, Center training staffs have been assigned to a 200-bed general and maternity hospital in Monrovia, Liberia, for training of paramedical personnel who will eventually staff this project. Instructive communications utilizing the principles of programmed instruction are being designed for individual study by personnel involved in the field of malaria eradication, but who do not have the opportunity to come to training centers to receive instructions.

Consultations.—There was a total of 116 Center staff members who participated in research and consultation rendered abroad. This involved travel to 65 countries in FY 66 for purposes of consultation, working on expert health committees, rendering field training, conducting on-the-spot research and investigation, or participating in international meetings, or to serve on special projects under agreements with WHO, PAHO, AID, or in conjunction with active NCDC projects.

Research.—The Center supports research in various fields of communicable disease control. Individual physicians and scientists are assigned to the SEATO Cholera Research Laboratory in Dacca, to the Middle America Research Unit in Panama, to Israel to study the epidemiology of hepatitis, and to the Vallore Medical College in India to study enteroviruses. A number of officers assigned are also on long-term assignments to the Wright-Fleming Institute of Microbiology, London, England, to the London School of Hygiene and Tropical Medicine in London, England, and to Lahore, West Pakistan.

Malaria eradication

On March 3, 1966, a participating agency service agreement (known as PASA) was signed between the Agency for International Development and the Public Health Service, transferring to PHS responsibility for the administration of the Malaria Eradication Program.

In the assumption of its responsibilities, the Public Health Service has established a Malaria Eradication Program in the National Communicable Disease Center. The Program will plan, direct, and administer the PHS effort and provide services and assistance to the U.S.-assisted countries in areas of planning, operations, training, research, and evaluation. At present there are 16 countries being assisted by the U.S. Government in malaria eradication activities. Negotiations are in progress with two more countries.

The Malaria Eradication Program plans to increase the number of PHS malaria personnel in all of the U.S. assistance programs in the next fiscal year. This expanded malaria staff will maintain close working relationships with their counterparts in the country programs at the national level, in an effort to help solve some of the operational, administrative and technical problems which have hindered malaria eradication in the past. PHS personnel in the field will receive technical support, guidance, and direction from the Malaria Eradication Program at the Center. U.S. support given to a participating country will continue to be closely coordinated with support being provided to the country by WHO, UNICEF, and other international agencies.

With the establishment of the Center's Malaria Eradication Program, backed by the extensive technical resources of the Center, the role of evaluation in the U.S.-supported malaria programs is strengthened. The availability of epidemiological, entomological, parasitological, training and administrative personnel and facilities provides a significant pool of competencies that will be helpful to the assisted countries. The advantages of these resources will be apparent in the ability of the Malaria Eradication Program to carry out effective evaluations of on-going malaria control activities and to provide the necessary data on which to base technical and administrative decisions.

Smallpox eradication

On May 18, 1965, the President pledged "this government is ready to work with other interested countries to see to it that Smallpox is a thing of the past by 1975." Since then, the Agency for International Development (AID) and the National Communicable Disease Center have collaboratively offered assistance to 18 West and Central African countries in eradicating smallpox and controlling measles. Financed by AID and directed by the Center, this is the first international disease control program planned, developed, and directed by the United States Public Health Service. Africa is one of four major reservoirs of smallpox in the world and a potential source of importation of smallpox to countries free of the disease. Measles, regarded in this country as a common childhood disease, is catastrophic in Africa. Measles kills approximately 1 in 10 African children and leaves uncounted numbers mentally retarded, deaf, or blind. American medical and non-medical personnel are assigned in the countries to assist in organizing mass campaigns to vaccinate the entire population against smallpox and for children five years of age and under against measles. It will be necessary also to strengthen surveillance activities for detection, diagnosis, and control of all smallpox cases. Thirty-nine officers assigned to Africa this year were trained at NCDC during the summer of 1966 in epidemiology, vital statistics, equipment and vehicle maintenance and repair. All received instruction also in African geography and culture and intensive language training. As of December 12, 1966, program agreements with Mauritania and Mali will bring to a total of 11 the number of agreements between the United States and western African nations in the 18-national Smallpox Eradication/Measles Control project administered by the Center and financed by AID.

Epidemic assistance

The Epidemic Intelligence Service rendered assistance or participated in the fight against: Cholera in Pakistan, Iran, Turkey and Iraq; mumps in Pribilof Island; poliomyelitis in Honduras; yellow fever in Senegal; smallpox in Germany; salmonellosis in Canada; and leukemia in New Zealand. The Center's Epidemiology Program continues to develop international surveillance activities over communicable diseases in collaboration with the Foreign Quarantine Program and others and to recommend control measures.

Eradication of yellow fever mosquito

The *Aedes aegypti* eradication program in the United States is a part of the international effort to eradicate this vector of yellow fever, dengue, and hemorrhagic fever from the Western Hemisphere. In fiscal year 1966, the program proceeded as planned.

The United States is fully committed to the eradication of *Aedes aegypti* by declarations of the authorized representatives to the Government Bodies of the Pan American and World Health Organizations. The southeastern states, Hawaii, Puerto Rico, and Virgin Islands, are not adequately protected against incursion of *Aedes aegypti*-transmitted diseases. Moreover, these infested areas constitute a continuing hazard to other countries of the Western Hemisphere where eradication has been completed. Many countries of Central and South America are concerned over possible reintroduction of *Aedes aegypti* through commerce with the United States and continue to urge acceleration of the continental campaign against this mosquito.

Venereal disease control and eradication

At the request of the Pan American Health Organization, a seminar on venereal diseases was presented in Washington for the health authorities of Latin America. The Center, through its Venereal Disease Program, serves as a clearing house between our State Health Departments and other nations of the world for the exchange of epidemiological information related to syphilis. The manual of Serologic Test for Syphilis and other educational and technical material, including films, were distributed for use throughout the world and have been translated into several languages. Since 1954, the Venereal Disease Research Laboratory has continued to serve as a WHO Serological Reference Center. Field courses in laboratory methods for the diagnosis of venereal diseases were given in Santiago, Chile, and Buenos Aires, Argentina, in FY 1966, along with consultative visits to Uruguay and Brazil. The number of foreign laboratories entering the syphilis serological evaluation study has steadily increased, with a total of 24 countries participating in the current study. Standardization programs, similar to the one developed in VDRL for the United States have been adopted in many geographic areas.

Laboratory services

Biological Reagents.—The National Communicable Disease Center provided diagnostic reagents for use as reference material in collaborating laboratories around the world. Over 8,000 ml of diagnostic reagents were supplied to WHO, PAHO, to the International Influenza Center for the Americas, and other miscellaneous laboratories around the world at the cost of some $13,000.

Reference Centers.—The Center continued to provide assistance to international organizations by serving as a reference center in several areas. These reference centers are the International Shigella Center, the International Influenza Center for the Americas, the Regional Reference Laboratory for Viral Respiratory Diseases other than Influenza, the Regional Laboratory for the Arboviruses in the Americas, and the WHO Serologic Reference Center for Syphilis.

Research grants

Funds amounting to $308,000 were granted to the following projects: Effect of Tuberculosis Infection on Mortality Risk in Denmark; Studies on Methods of Treating Canine Echinococcosis by PASB; Ecology of Overwintering of JEV in Japan; Studies on Serum Therapy of Type B Botulism in Japan; Alternatives to Insecticides in Canada; Insecticide Resistance and Vector Control by WHO; and Bionomics and Control of Mosquito Vectors of East Asia in Japan.

Audiovisual services

The Public Health Service Audiovisual Facility in FY 1966 conducted a three-month advanced course in biomedical audiovisual communication to train the Director of the Medical Illustration Unit at the University of Lagos Medical School. The course includes instruction in micro- and macro-photography, motion picture and television, closed circuit TV, film processing and editing and other audiovisual theory and practice.

"Miracle in Tonga," a 16 mm color motion picture produced in FY 1965 by the Facility to document smallpox immunization of the entire Tongan population, has been used this year for training in West African nations Smallpox Eradication and Measles Control Program. The film has also been used in numerous immunization programs around the world. Center officials heading the Smallpox Eradication and Measles Control Program are interested in using "Spot Prevention," a color animation film about the measles inoculation, for training and public information in the African campaign. "Cholera Today," judged the best medical film of the year by the Association of Military Surgeons, is being used by WHO for viewing in Turkey, India, and Iran. Requests for prints come from areas where cholera is a major health problem.

The PHS Audiovisual Facility provides three basic services to AID, WHO, and other international health organizations and medical institutions:

International audiovisual storehouse.—This year, the Facility loaned 52,835 motion pictures and film strips to 72 foreign countries and states. Since 1963, Facility films have been used to teach Vietnamese civilians and military personnel surgical techniques and sanitation control. Peace Corps physicians in Morocco are training hundreds of medical professionals in laboratory techniques and social hygiene with Facility films.

Education and development.—The facility's Educational Studies and Development Program provides consultation to foreign countries in their efforts to use audiovisual resources to solve communications problems. The Facility Staffers spent a week consulting with Pan American Health Organization studying the feasibility of establishing a centralized motion picture production studio in South America for the development and sale of medical films on personal hygiene, basic sanitation and population control. Plans are awaiting funding from AID. AID has contracted with the Facility to produce filmstrips to distribute throughout the world for untrained teachers instructing courses in TB, venereal disease, and nutrition.

Cataloging and indexing.—Through international cooperation with motion picture distributors and producers, the Audiovisual Facility maintains a complete up-to-date catalogue of all films concerned with health or medicine. The PHS Catalogue, the Film Reference Guide for Medicine and Allied Sciences and the Neurological and Sensory Disease Catalogue are published each year by the Facility. The catalogues contain films produced and made available from England, the Netherlands, Denmark, Argentina, Belgium, Japan, Sweden, Hong Kong, Canada, Iran, Malaysia, New Zealand, India, Cuba, French Morocco, Puerto Rico, Scotland, Australia, Guam, and other nations.

Guarding the U.S. against the introduction of diseases from abroad is one of the first and most important missions of the Public Health Service. Carrying out this function is the responsibility of the Center's Foreign Quarantine Program.

The program provides for health inspections and medical examinations at more than 400 ports of entry around the country, and, when necessary, applies health controls to international traffic to prevent disease from being brought into the United States. At 37 locations abroad, the Program conducts medical examinations for visa applicants to detect those with mental or physical conditions specified as excludable in immigration law.

The volume of international traffic continues to increase. In fiscal year 1966 over 130 million persons were medically inspected upon arrival at U.S. ports of entry. It is estimated that the total persons inspected will climb to 144 million in 1968.

The United States has for many years been free of outbreaks of smallpox, cholera, yellow fever, plague, and louse-borne typhus and relapsing fever known to have been brought in from abroad. But we cannot lower our guard. Increasing numbers of world travelers are entering the United States every day between 24 to 48 hours after leaving areas in Africa, Asia, and South America, where smallpox and the other quarantinable diseases are present. Owing to the vast increase in the numbers of international travelers and in the speed which they travel, there has never been a greater need for vigilance at the land, sea, and air grateways to our country.

NATIONAL CENTER FOR CHRONIC DISEASE CONTROL

The National Center for Chronic Disease Control has participated in international health activities in several ways; consultants to international health organizations, consultants to investigators or institutions in foreign countries, participants in international conferences and support of foreign research projects which are mutually beneficial to the United States and the foreign country.

Staff members have served as consultants to such organizations as the World Health Organization, the International Cancer Congress and the Pan American Health Organization in diabetes detection programs, control of rheumatic fever, status of smoking and cancer control programs and in other chronic disease activities.

Staff members have served as consultants and collaborators in the planning of health projects in foreign countries in automated electrocardiogram analysis, physical activity in relation to heart disease and improved techniques of screening populations for hearing loss. In addition, two staff members participated with other experts from the PHS Health Services Research Study Section in a survey of health and medical facilities of the Scandinavian countries. The purpose of this survey was to exchange information with health personnel on the latest techniques in the study and provision of medical care.

The National Center for Chronic Disease Control has supported a research study in England to determine what effects can be expected in persons who have been tested as positive for diabetes.

NATIONAL CENTER FOR URBAN AND INDUSTRIAL HEALTH

Within its Water Supply and Sea Resources Program, the National Center for Urban and Industrial Health carries out joint inspections of shellfish growing areas and handling facilities in Japan and Canada in accordance with bilateral agreements. There has also been a continuing exchange of technical information between the three countries. Discussions have been continued with the Government of France on development of a bilateral shellfish sanitation agreement, and a PHS scientist has spent several weeks in France making a preliminary evaluation of the French control practices. Discussions of shellfish sanitation problems have been continued with representatives of the government of South Korea.

The following research grants were awarded by the Center to foreign countries in FY 1966:

Australia—University of Sydney	$15,600
Canada—University of Western Ontario	13,700
Japan—Chiba University	7,000
Japan—National Institute of Health	4,196
Total	40,496

All of the awards were made for microbiological and toxicological studies of food.

The Center's urban environmental health planning activities included appointing a Public Health Service engineer and providing consultation of other Service engineers and scientists to work on the sanitation problems of the U.S.–Mexico Border under agreements of 1963 and 1965. Center personnel also participated in a joint Pan American Health Organization-Mexico-United States seminar on Urban Planning for Environmental Health, November 7–12, 1966, in Mexico City. The participants adopted 14 recommendations to the Mexican Minister of Health and the Surgeon General of the Public Health Service concerning the furtherance of the U.S.–Mexico Border project mentioned above. In still another action, the Center drafted the United States reply to the World Health Organizations Subject Outline for the Discussion of the Challenge to Public Health or Urbanization in preparing for technical discussions at the 20th World Health Assembly in 1967.

Public Health Service engineers and sanitation specialists in the Center's Environmental Sanitation Program provided consultation, on request, on the sanitary design of new vessels in Scotland and Italy and on the sanitary design of aircraft galleys in Canada.

The Chief of the former Special Engineering Services Branch, now part of the Environmental Sanitation Program, represented the Public Health Service at the International Congress on Sports Medicine at Viareggio, Italy, February 19–20, 1966. Delegates to the Congress met to discuss minimum hygiene and sanitation standards for various types of sports installations, including swimming pools, gymnasiums, stadiums, and other areas where sports events are held. The PHS delegate presented a paper describing legislation and requirements generally applicable in the United States. The International Congress, recognizing the need for the application of such standards at international sports events, passed a resolution recommending that the International Federation of Sports Medicine approve the development of such standards and that the World Health Organization be asked to assist in this work.

The Occupational Health Program of the National Center for Urban and Industrial Health has continued its international activities through grant support to European, Japanese, and South American scientists. These grants have supported studies on: (1) the effects of low atmospheric pressures on the development of silicosis in miners; (2) the influence of work on cardiovascular disease; (3) the effect of chronic exposure to irritating gases; and (4) the toxic effects of manganese dust.

Adoption of the Solid Waste Disposal Act (Public Law 89–272) resulted in numerous requests from various foreign countries for information relating to the Act and indicating the desirability of exchanging technical information.

The Solid Wastes Program of the National Center for Urban and Industrial Health is currently cooperating with the German Federal Government to exchange information on solid waste disposal practices and techniques. A special report on solid waste disposal techniques, with emphasis on biodegradation techniques used in Germany, is being prepared under contract.

The Center's Injury Control Program has a representative who participates in the Organization for Economic Cooperation and Development (OECD). The purpose of OECD is to encourage and promote international cooperation in road safety research and organize meetings to explore how cooperative research can be devised. The representative has attended preparatory group meetings on road safety research.

The names of the three groups in which he participates are:

1. Effect of alcohol and drugs on behavior and their importance as a cause of road accident.

2. Crash injury and especially the efficiency of protective devices such as seat belts and crashhelmets.

3. Where pedestrians cross the road, the care they take in doing so, and its relation to accidents.

In addition, he will attend the Conference of OECD members at which plans for constituting a formal organization will be discussed. This organization would be devoted to continuing on a firmer basis the tentative plans earlier developed for international cooperation in road safety research.

NATIONAL CENTER FOR AIR POLLUTION CONTROL

Representatives of the National Center for Air Pollution Control have acted as advisors to the World Health Organization in connection with the development of potential cooperative projects. A Center employee, who had been detailed for two years to WHO to assist in epidemiology studies relating to air pollution, has returned.

Another employee who has spent the past two years in Japan studying Tokyo-Yokohama asthma will return in February 1967.

Four grants are being given to scientists in Sweden, Austria, England and Canada. Seven foreign fellowships are being provided for American scientists to study abroad.

In cooperation with the Pan American Health Organization, equipment, supplies, and instructions for sampling air particles are being furnished to stations in Santiago, Chile; Caracas, Venezuela; Lima, Peru; Buenos Aires, Argentina; Kingston, Jamaica; and Trinidad, West Indies.

Representatives of the National Center for Air Pollution Control participated in the following international meetings and conferences:

1. Second International Conference on Aerobiology in Chicago, March 1966.
2. International Academy of Pathology Meeting in Cleveland, March 1966.
3. International Conference on Atmospheric Emissions from Sulphate Pulping Operations in Sanibel Island, Florida, April 1966.
4. Central Electricity Generating Board, Peter Spence and Sons, Ltd., London, May 1966.
5. International Biometeorological Congress in New Jersey, August 1966.
6. First Session of Group of Rapporteurs on Air Pollution of the E.C.E. in Paris, July 1966.
7. Royal Microscopical Society in Chicago, August 1966.
8. International Clean Air Congress in London, August 1966.
9. International Congress of Sanitary Engineers in El Salvador, December 1966.
10. Three meetings of the Organization for Economic Cooperation and Development in Paris, September 1966, dealing with air pollution survey techniques, the preparation of a four language glossary, and a plenary session of the Committee for Scientific Research of OECD.

NATIONAL CENTER FOR RADIOLOGICAL HEALTH

The National Center for Radiological Health collaborates with the National Academy of Science, the Atomic Energy Commission, and the Japanese National Institute of Health in an extensive epidemiological study concerned with the delineation of the long-term radiation effects among the survivors of Hiroshima and Nagasaki, Japan. Seven to eight Public Health Service commissioned officers are assigned to this project on a rotation basis.

The National Center for Radiological Health, in cooperation with the Atomic Energy Commission, is participating in a study related to the proposed construction of the Ismuthian Canal by use of nuclear explosives. The Center is responsible for the health-related environmental effects portion of this study.

A Service officer was assigned to the Royal Cancer Hospital Sutton, Surrey, England, for training and experience with an internationally recognized staff in measuring the heavy radioactive elements in environmental and biological samples, and a second to the World Health Organization, Geneva, Switzerland, for service as a Research Health Consultant to that body. Two research contracts in the amount of $77,000 were awarded to foreign recipients and two foreign research grants, totaling $42,800, were awarded for studies of radiation in humans.

NATIONAL INSTITUTE OF MENTAL HEALTH

International resources form an indispensable component to the Institute's wide-ranging mental health programs. In developing collaborative activities with outstanding foreign clinicians and scientists throughout the world, NIMH has added a depth and perspective to its planning which domestic resources alone cannot provide. The small investment of funds required in the Institute's highly selective international activities is continuing to contribute significantly to our knowledge of the causes, treatment, rehabilitation and prevention of mental illness.

NIMH participates in the world scientific community through a variety of channels: the development by staff of collaborative research projects with foreign investigators, the award of foreign research grants of high programmatic relevance and exceptional scientific caliber, the sponsorship of international symposia and working conferences, a modest program to fund necessary research training of young American scientists in outstanding foreign research settings, the fostering of international scientific and professional interchange through the reception of foreign visitors and participation in the NIH Visiting Scientist Program, and the development of a series of projects for the collection and analysis of information on foreign treatment, research, and rehabilitation programs. In addition, Institute staff collaborate with, and serve as special advisors to, the World Health Organization and other international and intergovernmental health organizations.

Comprehensive community mental health programs

As part of its policy of developing an integrated and focused program of international activities, the Institute has been encouraging international exchanges of ideas, with special emphasis on comprehensive community mental health programs. A research seminar on mental health in Asia and the Pacific was held at the East-West Center in Honolulu in March 1966. Thirty-four scientists from nine countries participated. In May, the Institute sponsored the International Research Seminar on Evaluation of Community Mental Health Programs, held at Airlie House, Warrenton, Virginia. Seventy invited guests from twenty countries attended. Members of the Institute staff participated actively in both seminars. Major publications are expected from both, edited by Institute staff. Plans are underway to continue both of these activities, as well as to have an official mission to the U.S.S.R.

In Canada, a grant to the University of Saskatchewan for the evaluation of a community health program of home care for psychiatric patients is providing an opportunity to field test one part of the recommendations of the Joint Commission on Mental Health and Mental Illness. The findings of this highly experienced group to date have indicated that with the exception of dangerous psychopaths, all psychiatric patients can be treated in open wards in general hospitals; that general practitioners can greatly improve their therapeutic knowledge and skill in psychiatry by, in collaboration with psychiatrists, treating their own psychiatric patients on a psychiatric ward, and that rural general practitioners can work in collaboration with psychiatrists and effectively deal with most of the psychiatric problems in their practice. The project has demonstrated that psychiatrists, in such settings, should function more as consultants and less as general practitioners of psychiatry—underscoring our need to make the most effective use of the all too few psychiatrists available to Americans today.

Another demonstration grant to the Department of Psychiatry at the University of Ibadan in Nigeria is providing an opportunity to compare and evaluate hospital care of acutely ill mental patients with community care, in a unique semi-rural therapeutic community which has been in operation since 1954. A systematic analysis is being made of the special community conditions facilitating or impeding improvement, and the study is expected to yield results of general theoretical importance to community programs.

This series of activities is designed to provide the Institute with ideas and understandings concerning special problems which may arise in the current major effort to develop mental health centers, and concerning new and promising types of programs which might be applied in the United States. A procedure to provide a continuous flow of information of this type to persons responsible for the development and evaluation of mental health programs in this country is being designed.

Psychopharmacology

In the high priority area of psychopharmacology, the Congress has directed that NIMH carry out a broad-scale, intensive program of research stimulation and evaluation. The Institute's psychopharmacology program continues to draw upon unique research opportunities in other countries to further mental health research and practice in the United States. For example, a large panel of collaborating general practitioners in Great Britain received contract support for the carrying out of controlled comparative studies of the effectiveness of antianxiety and antidepressant drugs in the kinds of patients treated by general practitioners for these symptoms. No such research facility capable of obtaining comparable data exists in this country.

Early Clinical Drug Evaluation Units in France and Canada are supported under research grants, both because of the unique expertise of their senior investigators, and because they have access to certain drugs not yet available for study in the United States. The Canadian investigator also receives support for a controlled study of drugs in geriatric psychiatric patients, the only program of this kind currently capable of carrying out such studies with a high degree of sophistication.

The Adult Psychiatry Branch of the NIMH intramural research program has been collaborating with a Danish psychiatric institute in an evaluation of the usefulness of Lithium in the treatment of manic-depressive and depressive patients, utilizing a careful double-blind methodology. The Danish psychiatrist had had more experience with the clinical use of Lithium than anyone else in the world, and is currently using this drug actively in a hospital setting. Results to date indicate that Lithium can be successful in changing behavior and psychotic thinking patterns in some manic patients, and that the drug may prove to be both a useful therapy and a research tool.

At a more basic level, work on the active principles and the metabolism of marijuana is under consideration for grant support in both Israel and Greece.

Diagnosis, classification, and epidemiology of mental illness

Clinicians and researchers alike have been increasingly aware of the problem of psychiatric diagnosis and the realization that lack of objective and reliable systems for diagnosing mental disorders severely limits the range of important basic research in psychopathology. International collaboration is of crucial significance in this field. The National Institute of Mental Health, therefore, has been collaborating very closely with the World Health Organization in the development of programs that will: (a) improve the international classification of mental disorders and provide eventually comparable international data on the care, treatment and rehabilitation of the mentally ill; strengthen national statistical programs on psychiatric disorders; (b) achieve greater comparability in diagnostic practice and use of clinical terminology among psychiatrists of various countries; and (c) develop the scientific methodologies and case finding instruments required to carry out comparative international research on the incidence and prevalence of specific mental disorders and the fate of the patients with such disorders.

Staff of the Institute have also participated in a series of WHO seminars—a long-term project to develop a better understanding of the extent of, and reasons for, disagreement on present diagnostic practice between different schools of psychiatry, and different countries, and eventually to acquire facts which will lead to the development of a more acceptable international classification of psychiatric disorders. The WHO has established a "nuclear group" of twelve experts from different countries, who will continue to assist the program throughout the ten years of this project.

Clinical research

Clinical research opportunities abroad are continuing to provide special settings and patient populations not available in the United States. NIMH, therefore, funds a few outstanding research grants and research contracts to utilize exceptional investigators, settings, and projects in its over-all programming.

Perhaps the best known name in the history of psychiatry appears on an NIMH research grant in England, where Dr. Anna Freud, daughter of Dr. Sigmund Freud and founder and director of the Hampstead Child-Therapy Clinic, is conducting a study of psychopathology in childhood. Dr. Freud's approach is based on her belief that because the child is a developing, incomplete being, the usual guides to the assessment of mental illness or health in an adult, symptomology of failure or success in life roles, are not reliable. A much more significant guide to a child's mental future is the capacity to develop progressively, or damage to that capacity. Dr. Freud and her group have been developing a tool for assessment of a hypothetical developmental norm, the "developmental profile," and an extension of the "profile" known as "lines of development." They are also working systematically to refine and clarify theoretical and clinical concepts in psychoanalytic therapy, an effort particularly important in a field where research, and even communication between investigators, has been hampered by lack of any common definition of frequently-used concepts. The Hampstead Clinic represents a unique facility in many respects: in Dr. Freud's leadership; in the large group

of sophisticated psychoanalysts who share case materials, concepts, and refinement of concepts; in the range of disturbance represented in approximately seventy children seen regularly in intensive analytic therapy, including neurotic, borderline, autistic, delinquent, deprived, and physically handicapped children; and in ancillary facilities, including a child-guidance clinic, nursery schools for blind and sighted children, and well-baby and pediatric clinics. Dr. Freud's work has had a demonstrable impact on a number of psychoanalytic centers in the United States, and her "developmental profile" is already being tried out in several U.S. settings.

Danish resources play a prominent role in a research study planned by the NIMH Laboratory of Clinical Science, and in large part carried out under a contract to the Psychological Institute of the Kommune-hospitalet and Institute of Human Genetics in Copenhagen. Denmark, like other Scandinavian countries which have small, non-migratory populations, possesses extensive records of genealogy, adoption and mental illness. These records are now being carefully screened to obtain evidence on the relative weighting of genetic and experiential factors in the etiology and pathogenesis of schizophrenia. The investigators hope to determine the incidence of schizophrenia in the biological and adoptive families of schizophrenic individuals, who were adopted at an early age by families not biologically related to them.

This research has important implications. No definite answers have yet been provided to the problem of nature-nurture relationship in schizophrenia. Recent research has brought into serious question the high concordance rate for schizophrenia previously reported in monozygotic twins. Objective and definitive information leading to a more valid assessment of the relative roles of genetic and experiential factors, and of the interaction between them, in the etiology and development of schizophrenia should be invaluable—both in terms of the emphasis to be placed upon biological and experiential factors in future research and in the prevention and treatment of this major mental disorder.

Behavioral science research

A very large share of both the NIMH intramural and extramural programs is devoted to research in the behavioral sciences—investigations carried out by a variety of basic scientists united by the common objective to enlarge our fundamental understanding of emotional processes and their mal-functioning. This wide-ranging research area includes studies in the biological sciences as well as those with a focus on social and cultural factors. Collaborative research with outstanding foreign investigators and special foreign research grants are adding significant dimensions.

Biology and mental illness.—Despite the great twentieth century advances in neurophysiological research, the fundamental physiological mechanisms underlying such behavioral processes as sleep, learning and memory remain largely unknown. A knowledge of the mechanisms and processes through which the human brain and central nervous system control behavior is essential to an eventual understanding and alleviation of mental disorder.

An internationally recognized brain investigator, who holds an NIMH research grant in Mexico, has recently published a neurophysiologic model of dreams and hallucinations. The similarity between these two phenomena has been recognized since ancient times, and has recently attracted new interest as an aid to understanding mental disturbance which frequently involves hallucinatory activity.

Other fundamental research on the brain and central nervous system is being forwarded by the collaboration of Japanese scientists with the NIMH Laboratory of Neurobiology in an effort to elucidate the physiochemical nature of the excitable membrane of nerve cells, and to understand its normal electrophysiological function. It is expected that only a thorough appreciation of the molecular mechanism underlying normal excitation can provide answers to understand abnormal processes in nervous tissue.

Socio-cultural factors in mental illness.—Foreign resources are essential in the study of socio-cultural factors influencing the etiology, development, and parameters of psychoses, neuroses, alcoholism, drug addiction and juvenile delinquency. Any determination of how social and cultural phenomena operate to affect behavior will be useful in the diagnosis, control and treatment of the range of mental disorders.

In utilizing extra-national resources for the study of socio-cultural factors of mental illness, NIMH sponsors comparative studies both of normal and abnormal behavior. The Institute recognizes the need to extend our knowledge

of the total range of functions and behavior patterns which may be viewed "normal." Studies of other cultures are underway therefore, on the development of personality patterns in different cultures, on the ways in which health and illness are perceived, and on the ways in which cultures affect vulnerability to mental illness.

Development of information on foreign resources

NIMH, in planning its program of international activities, has recognized the need for developing selective background information on foreign research and service resources. For a number of years, valuable published and unpublished information on foreign programs has flowed in to the Institute from the NIH overseas offices, from reports of NIMH staff, as well as from grant-supported investigators and NIMH consultants attending foreign scientific meetings or visiting foreign institutions. In addition, the institute has funded a small number of pilot projects designed to provide specialized background information on research and service programs abroad, for use in program planning and development.

This year, the American Psychological Association, in collaboration with the International Union of Psychological Sciences, under NIMH grant support, has published the results of a four-year survey, entitled *International Opportunities for Advanced Training and Research in Psychology*.—For the first time detailed, international information on training and research resources in 95 countries throughout the world is available to NIMH and to American and foreign scientists through this publication.

Another useful publication, the product of an NIMH contract, recently became available in Sylvan Furman's study of *Community Mental Health Services in Northern Europe* (Washington, D. C.: U. S. Government Printing Office, 1965). The study consists of a series of direct observations of programs together with an interpretative overview, and points up models which may serve as stimuli for the development of new patterns of U. S. community mental health programs.

Through a collaborative research grant to the International Brain Research Organization and a contract to the National Academy of Sciences, NIMH has also been developing a comprehensive survey of world resources for research and training in the basic sciences of brain research. The published reports which have resulted from this major survey have already led to a substantial cross-fertilization of the brain sciences and an improvement of international collaboration in this field. The survey is also providing NIMH with valuable background information on foreign resources in this priority research area.

Plans are underway to provide a continuous flow of information on developments in mental health service programs abroad to U. S. psychiatrists and others responsible for the development and evaluation of mental health programs.

Foreign fellowships

A few training centers abroad offer unique opportunities for training in important areas of mental health research. While the great majority of NIMH research fellowships awarded are for training in the United States, a modest and highly selective fellowship program is enabling U. S. scientists to train in outstanding foreign research centers. All NIMH fellows who have studied abroad have returned to the United States, continuing their research with a broadened perspective and sharing new conceptualizations with other American scientists.

The visiting scientists and foreign visitors program

A reciprocal contribution to scientific interchange is found in NIMH participation in the over-all NIH "Visiting Scientist" program, and in the development of a program for professional interchange with foreign visitors to the Institute.

The NIH Visiting Scientist Program, which has been in operation for a number of years, provides funds to bring a limited number of foreign scientists to the Clinical Center to participate in collaborative research. In the past year NIMH sponsored thirteen visiting scientists from eight foreign nations in collaborative research with NIMH intramural scientists at the Clinical Center. In addition, both basic research and clinical investigations laboratories of NIMH opened their doors for period of several weeks to several months to foreign investigators funded by other sources.

Most recently, NIMH is developing a program to maximize the benefits of communication with foreign mental health officials and research investigators who visit NIMH and U.S. mental health research and service centers.

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Research and program development in mental health are inherently complex. They must be based on a broad approach, utilizing a wide variety of resources and situations, some of which can only be found on an international basis. Within the high priority areas listed above, three considerations, in particular, point to the need for the continued development of a well-organized and coordinated program of international activities.

First, several countries have developed techniques for the treatment, management and prevention of mental disorders which, after careful study, could be adapted for use in the United States.

Second, it is generally agreed that the etiology of mental disorders encompasses many factors, including biological, developmental and sociocultural ones. Hence it is important to engage in comparative studies on a cross-cultural basis.

Third, it is important to utilize certain kinds of resources not found in the U.S., such as population registers, access to certain well defined population groups, the existence or use of certain kinds of drugs or other modes of therapy and the existence of panels of respondents.

It is also important to maintain and increase channels of international communication in mental health, through working seminars, travel of staff abroad, the fellowship program, and special arrangements for regular flow of information.

NATIONAL INSTITUTES OF HEALTH

To an increasing degree the Service has utilized international opportunities to further scientific objectives. These overseas extensions permit the Service to join with foreign institutions and foreign colleagues in solving problems of common interest under conditions where a mutual effort is particularly appropriate.

Among the mechanisms employed are grants to foreign scientists (under special conditions), support of U.S. nationals for research and training abroad and of foreign nationals for research training in the United States, collaborative research agreements with foreign institutions, grants to U.S. universities for projects abroad and for the establishment of research centers overseas, and research units in foreign countries.

NIH foreign grants do not constitute a separate program; rather they are extensions and integral parts of the grants program of the nine categorical Institutes. Although NIH provides general research support to institutions in the United States, it is authorized to support in foreign countries only well-defined individual projects of specific interest to its own program.

Grants to foreign scientists are made only for projects of very high scientific merit which further program objectives of the Service; consideration is also given in reviewing proposals to the secondary and long-term effects of strengthening scientific institutions abroad. The foreign grant programs are carried out in a context and under terms and conditions which promote the assumption of increasing responsibility on the part of the recipient countries for support and further development of their own programs and resources. Financial commitments for more than 3 years are, therefore, made only under unusual conditions.

The visiting scientist program, authorized in 1950, enables the Service to invite a limited number of foreign scientists to collaborate in its projects at Bethesda. Of approximately 1,500 scientists working at NIH, about 150, or 10 percent, were foreign citizens temporarily in the United States for collaboration with U.S. investigators.

Awards for study and research to U.S. nationals at foreign institutions are made under the same general conditions as post-doctoral fellowships at domestic institutions.

A variety of unusual or unique opportunities exist in foreign countries to pursue studies of substantive importance to medical science and to the health of the United States. Investigations in the field of geographic pathology and epidemiology on an international basis are likely to continue to provide important clues to the causes of certain diseases which cannot be studied adequately in more restricted environments.

To assure that there will be available in the future adequate numbers of capable American internationally oriented investigators to meet the needs of the

Service, opportunities are provided for promising young scientists to work abroad as members of established research groups. The existing research associate program has been broadened to provide for the assignment of 8 to 10 Service officers each year to research projects and programs overseas.

The international postdoctoral fellowship program supports highly promising young foreign investigators for work in the United States on fellowships for 1 year, but occasionally up to 2 years. Nominations are made through a special committee in the home country, of which there are 43 at present, each making up to 6 nominations per year. A condition of nomination and appointment is that the candidate must return to his home country upon completion of the fellowship. Fellows are eligible for special priming research grants for periods of 3 years upon returning to their home countries; these grants are calculated to assist these promising young scientists in continuing medical research of interest to both the United States and the cooperating country.

In the International Health Research Act of 1960 (Public Law 86-610) funds were authorized "to advance the status of the health sciences in the United States and thereby the health of the American people through cooperative endeavors with other countries in health research and research training." Under this authority funds have been made available to research and research training U.S. centers which have developed domestic and foreign affiliate sites to conduct investigations relevent to U.S. domestic research interests.

Each international center currently in operation consists of two basic elements: (1) a university-based organization devoted to a research and research training program in the United States which is closely related to the specific research and training activities conducted within; and (2) an overseas counterpart facility where American scientists may take advantage of unusual or unique environmental, ethnic, and medical conditions not available for study within the continental United States.

A SEATO-Pakistan cholera laboratory, concerned with all phases of cholera research, is supported in part by Pakistan, by the Agency for International Development, by the Service (with Public Law 480 funds) and by contributions from Australia and the United Kingdom.

The U.S.-Japan Cooperative Medical Science Program was started as a result of talks between President Johnson and Prime Minister Sato. The program is concerned with diseases of mutual interest, namely cholera, tuberculosis, leprosy, virus diseases, parasitic diseases and malnutrition. The office of International Research, National Institutes of Health, functions as U.S. Secretariat. Both countries have appointed members to constitute a U.S.-Japan Cooperative Medical Science Committee. The committee has designated the six areas of research mentioned above and established panels in each disease category to implement the research program. The United States and Japan share the cost of the program. Projects of U.S. scientists will be supported by the United States and those of the Japanese scientists by Japan. The exchange of scientists between the two countries is encouraged as a matter of principle and may be supported by official or unofficial agencies of either country.

PUBLIC LAW 480 PROJECTS

During the last five or six years an increasing number of PHS programs have studied and found ways of extending the frontiers of basic and applied biomedical science through the use of excess foreign currencies (P.L. 480) in eight countries—Burma, India, Israel, Pakistan, Poland, United Arab Republic (Egypt), Yugoslavia and Ceylon. These efforts, expressed in the form of precise research protocols, agreed to between U.S. and foreign scientists, are directed toward the utilization of unique research opportunities represented by a population with a high incidence of some clinical manifestation of medical interest; environmental, biological, and medical factors limited to certain geographical areas, specialized laboratory facilities, or the outstanding competence of scientific personnel within the host country.

During FY 1966, 48 new agreements were signed, 3 existing agreements were extended, and the total dollar equivalent committed rose from $13,554,277 to $19,541,297. The NIH continued to expand their overseas commitment with these funds and a number of other areas undertook new or additional projects, such as those in chronic disease, accident prevention, medical care utilization, translations and critical reviews of strategic biomedical publications, air pollu-

tion and occupational health, transmission of leprosy, the possible relationship between trachoma and glaucoma, population studies, and nutrition.

MONDAY, APRIL 3, 1967.

HEALTH MANPOWER EDUCATION AND UTILIZATION

WITNESSES

DR. LEONARD D. FENNINGER, DIRECTOR, BUREAU OF HEALTH MANPOWER
DR. JOSEPH A. GALLAGHER, DEPUTY DIRECTOR, BUREAU OF HEALTH MANPOWER
DR. VIRON L. DIEFENBACH, DIRECTOR, DIVISION OF DENTAL HEALTH
MISS JESSIE M. SCOTT, DIRECTOR, DIVISION OF NURSING
FREDERICK ERICKSON, ACTING DIRECTOR, DIVISION OF ALLIED HEALTH MANPOWER
RAYMOND F. DIXON, DIRECTOR, DIVISION OF HEALTH MANPOWER EDUCATIONAL SERVICES
JOHN W. HAMBLETON, FINANCIAL MANAGEMENT OFFICER, BUREAU OF HEALTH MANPOWER
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G. R. CLAGUE, ACTING CHIEF FINANCE OFFICER
JAMES B. CARDWELL, DEPUTY ASSISTANT SECRETARY, BUDGET

Object classification

[In thousands of dollars]

		1966 actual	1967 estimate	1968 estimate
	Personnel compensation:			
11.1	Permanent positions	4,634	6,172	7,011
11.3	Positions other than permanent	267	310	399
11.5	Other personnel compensation	19	14	15
	Total personnel compensation	4,920	6,496	7,425
12.0	Personnel benefits	534	636	727
21.0	Travel and transportation of persons	508	606	745
22.0	Transportation of things	61	86	96
23.0	Rent, communications, and utilities	207	381	417
24.0	Printing and reproduction	131	206	243
25.1	Other services	454	411	445
	Project contracts	2,080	2,729	3,244
25.2	Services of other agencies	36	25	25
25.3	Payment to:			
	"National Institutes of Health management fund"	33	38	38
	"Nurse training fund"		3,500	
26.0	Supplies and materials	169	239	283
31.0	Equipment	152	213	203
33.0	Investments and loans	31,403	42,807	34,550
41.0	Grants, subsidies, and contributions	47,672	93,168	132,871
99.0	Total obligations	88,360	151,542	181,313

Personnel summary

	1966 actual	1967 estimate	1968 estimate
Total number of permanent positions	630	723	795
Full-time equivalent of other positions	42	44	54
Average number of all employees	530	669	767
Average GS grade	8.5	8.8	8.9
Average GS salary	$8,690	$9,369	$9,497

NOTE.—Estimate is for activities previously carried under the following titles:

	Thousands
"Injury control"	$103
"Chronic diseases"	397
"Community health services"	130,050
"Communicable diseases"	267
"Dental services and resources"	9,963
"Nursing services and resources"	28,630
"Construction of health educational facilities"	950
"Office of the Surgeon General, salaries and expenses"	53

The amounts obligated in 1966 and 1967 are shown in the schedule as comparative transfers.

Program and financing

[In thousands of dollars]

		1966 actual	1967 estimate	1968 estimate
	Program by activities:			
	1. Physician manpower:			
	(a) Research grants	624	661	783
	(b) Direct operations	1,717	2,595	2,918
	2. Dental services and resources:			
	(a) Grants:			
	(1) Research	941	1,152	1,453
	(2) Fellowships		50	100
	(3) Training	2,549	2,949	3,500
	(b) Direct operations	3,699	4,273	4,730
	3. Nursing services and resources:			
	(a) Grants:			
	(1) Research	2,166	2,087	2,655
	(2) Fellowships	412	462	520
	(3) Training	13,336	25,080	23,080
	(b) Direct operations	1,898	2,143	2,783
	4. Allied health professions manpower (direct operations)	406	867	1,104
	5. Health manpower educational services:			
	(a) Training grants	23,836	52,230	88,500
	(b) Student loans	31,403	46,307	34,550
	(c) Scholarships	3,808	8,497	12,300
	(d) Direct operations	561	954	1,102
	6. Program direction and management services	1,004	1,254	1,254
10	Total program costs, funded—obligations	88,360	151,542	181,313
	Financing:			
16	Comparative transfers from other accounts	−88,360	−108,692	
28	Appropriation available from subsequent year		−42,850	−53,750
29	Appropriation available in prior year			42,850
40	New obligational authority (appropriation)			170,413
	Relation of obligations to expenditures:			
10	Total obligations	88,360	151,542	181,313
70	Receipts and other offsets (items 11–17)	−88,360	−108,692	
71	Obligations affecting expenditures		42,850	181,313
72	Obligated balance, start of year			42,850
74	Obligated balance, end of year		−42,850	−152,222
90	Expenditures			71,941

Mr. FLOOD. We have the biographical sketch of Dr. Fenninger, which we will insert at this point in the record.

(The document follows:)

BIOGRAPHICAL SKETCH OF PRINCIPAL WITNESS

Name: Leonard D. Fenninger, M.D.
Position: Director, Bureau of Health Manpower.
Birthplace and date: Hampton, Virginia, October 3, 1917.
Education: A.B. Princeton, 1938; M.D. University of Rochester, 1943.
Experience:
Present: Director, Bureau of Health Manpower, PHS.
1961–1966: Physician, Medical Director, Strong Memorial Hospital, Rochester, N.Y.
1958–1961: Associate Dean, Associate Professor of Medicine, University of Rochester.
1954–1958: Assistant Dean, Professor of Medicine, School of Medicine and Dentistry, University of Rochester.
1953–1954: Research Associate, part time, George Washington University, School of Medicine.
1953–1954: Head Section, General Medicine, National Cancer Institute, Bethesda, Maryland.
1953: Surgeon (R) USPHS.
1952–1953: Senior Assistant Surgeon (R), USPHS.
1948–1952: Fellow, Cancer Research, Rochester.
1947–1952: Instructor in Medicine, Rochester.
1946–1947: Assistant Resident Physician, Rochester.
1945–1946: Assistant, Pathology, Rochester.
1945: Assistant, Radiology, Rochester.
1944: Assistant, Medicine, School of Medicine and Dentistry, University of Rochester.
1944: Intern, Medicine, Strong Memorial Hospital, Rochester.

Mr. FLOOD. Doctor, I see you have a statement.

This is quite a program. I see your purpose clause here. Your jurisdiction has no horizon. That is quite a burden. Do you feel up to it?

Dr. FENNINGER. I think so, sir.

Mr. FLOOD. Go ahead.

GENERAL STATEMENT

Dr. FENNINGER. Mr. Chairman and members of the Committee:

I am pleased to discuss with you some of the health needs of the people of the United States.

I am Dr. Leonard D. Fenninger, Director of the new Bureau of Health Manpower, a post which I have held for about 2 months. The ultimate mission of the Bureau is to assure that skilled and dedicated people will be prepared to serve the health needs of the people of this Nation. In many ways my new responsibilities represent a culmination of my interests and my experience. My life work has been associated with institutions dedicated to service to men, women, and children. These institutions have served people through education, through the quest for new knowledge and understanding, and through keeping people well and rendering care to the sick.

My previous position as associate dean and director of Strong Memorial Hospital of the University of Rochester has enhanced my concern for the dignity of man and has made me acutely aware of the urgent need for many more people, possessing great skill, and dedicated to the care of those who are sick.

The degree of success and progress in any endeavor depends fundamentally on the availability of good people and the opportunity given them to use their abilities to the utmost. People who contribute to our health—as individuals and as a nation—are needed in large numbers at every level of education and skill. They must be encouraged to enter the health field. They must work in settings which allow them to use their abilities most effectively. They must be recognized for the significance of their contributions. Our most important task in the field of health is to prepare enough people with knowledge and skill so that the expectation of every individual to have good health and to fulfill himself as a human being can be realized.

DEMAND FOR HEALTH MANPOWER

The Nation's increasing demand for health manpower stems from many sources. Important among them are the growth and change in the population, increasing understanding of the value of health services, increasing medical knowledge which has produced an increasing array of available and potential services, a continuing lowering of financial barriers to care, and the emergence of a social concept that medical care should be related to medical need. The factors have produced a great disparity between the demand for health care and the resources available to provide it—that is, the men and women who are prepared to give this care and the organizations and institutions which have evolved to provide services to those who need them. Although we shall never have resources enough to fulfill every desire of every individual in any society, good health of every person in every community is of paramount importance to all social progress. I use "good health" to mean a sound mind in a sound body functioning in a favorable environment. Yet to assure this good health we need people—people skilled in many different aspects of health care working together with a common objective.

How are we to attract the people we need in the health fields? We must acquaint young people with the many and varied opportunities that exist. We must make these opportunities a source of great personal satisfaction with adequate recompense for their services.

Of particular importance is the provision of educational opportunities for professional and technical careers in health at all levels of skill commensurate with the abilities of each individual who enters the field. In no area can Federal and local, public and private partnership be more productive. While the institutions which provide this education are a national resource, they are also local. It is in them that men and women develop ideas and knowledge and acquire the necessary skills and techniques.

LEADERSHIP ROLE OF BUREAU OF HEALTH MANPOWER

The Bureau of Health Manpower as a Bureau of the Public Health Service has the responsibility to provide Federal leadership in this partnership and, to support those who are undertaking careers in health, and the institutions which prepare them to do so. To do this wisely, we must have knowledge of national needs, of educational methods and curricula, of the ways in which health care is organized, and of programs which will encourage people and institutions to

explore new ways to provide better care. Judgment must be based on valid information and knowledge so that our national resources may be used to the best advantage of all. Schools which offer curricula for the preparation of various kinds of professional and technical personnel must be strengthened and enlarged. New schools will have to be created if we are to prepare sufficient numbers to meet the need.

Important steps have already been taken by the Congress to close the gap between the needs of the people for health care and the number of individuals capable of rendering such care. In the past several years broad health legislation has been enacted to provide means for undertaking the following programs: Construction grants to colleges and universities to create more and better teaching facilities; grants to improve teaching in schools for the training of health personnel.

Mr. FLOOD. Schools? What is the school after you leave colleges and universities?

Dr. FENNINGER. These are all schools of higher education. Junior colleges, colleges and universities, and divisions of universities.

TWO-YEAR CERTIFIED TECHNICAL INSTITUTES

Mr. FLOOD. Do you have an interest in 2-year certificated technical institutes like those in Europe for people who don't want to go to college, who don't want degrees.

Dr. FENNINGER. Yes, sir; we have great interest in using all of the educational facilities that exist in this country.

Mr. FLOOD. But they don't exist in this country.

Dr. FENNINGER. The 2-year junior college movement which has been growing rapidly in recent years——

Mr. FLOOD. Recent years? How many years?

Dr. FENNINGER. Its major growth has been since World War II although in some States it existed before that.

Mr. FLOOD. There are not very many really, are there?

Dr. FENNINGER. This has been predominantly a movement of the last decade.

Mr. FLOOD. Five years, perhaps?

Dr. FENNINGER. I would say longer than that, but the great impetus has been in recent years.

Grants for long- and short-term training or retraining of health personnel have also been made, and scholarship and loan programs——

Mr. FLOOD. Short-term training? What does that mean?

Dr. FENNINGER. Special courses in special technologies. It might be a matter of a week or two, or a series of lectures or seminars that might go on, on a 1-day-a-week basis for a period of some months as compared with a full year or 2 years or the prolonged training periods that are required for physicians, dentists, and nurses. They would be aimed primarily at people who had professional backgrounds, or technical backgrounds, and this would add to their experience and to their ability to use new technical knowledge.

Mr. FLOOD. Plus refresher courses?

Dr. FENNINGER. Plus refresher courses.

I would like to mention again the scholarship and loan programs for students to enable them to undertake education for careers in health service.

Mr. FLOOD. Should there be a rash of 2-year institutes throughout the United States following the European pattern? These would be not diploma institutions, but 2-year certificates to supply these laboratory technicians, dental technicians, and all the health technicians that you want? You need so very, very many. You are not going to get them through colleges and universities. Can you wait 4 or 5 years?

Dr. FENNINGER. I think the 2-year schools—the community colleges, the junior colleges—will be in the future a major source of technical help——

Mr. FLOOD. And you think the junior college and the community college system is now being really pushed, that it is going to fill this void?

Dr. FENNINGER. It is going to fill a number of other voids as well. There is tremendous interest in this country at the present time and I think probably this is the most rapidly growing, single segment of the educational system.

Mr. FLOOD. I hope so.

Dr. FENNINGER. I shall now discuss some of the ways in which we are strengthening the schools which provide education in the health professions.

UTILIZATION OF MANPOWER

Knowledge of the ways in which people do their work in the field of health is essential. Sound information must be the basis for educational programs, the design of curriculum, the design of facilities and the organizational frameworks within which the prevention of illness and the care of patients takes place. This information must include ways in which the efforts of health workers are used and the tasks they perform. This knowledge provides the means for judging the effectiveness of existing programs and for the creation of new programs to improve the health in the future.

Information currently available about education for the health professions and the ways in which health manpower functions is limited and piecemeal. Some disciplines, notably dentistry and nursing, have devoted serious attention to defining the functions of people working in certain settings, and to developing different kinds of health workers and new settings in which their skills may be used more effectively. Less has been done in the fields of medicine and in the other health professions and technologies which are emerging, and whose contributions to health services are increasing. Studies are underway within the Public Health Service and in a variety of institutions supported by funds made available to them by the Public Health Service through both grants and contracts.

DENTAL ASSISTANTS

Among the significant studies is the program operated by the Dental Division at Louisville, Ky., where dentists, technicians, and other dental personnel are working together in specially designed facilities to improve the effectiveness of the dentist, to increase the number of patients to whom he can give care, and to heighten the quality of care being given. This study looks to the efficiency of the physical setting in which the dentist functions, the most effective relationships of the

dentist to the dental assistant, hygienist, the dental laboratory technician and the quality of services performed for the patient.

Mr. FLOOD. These people other than the dentists—the dental assistants and hygienists and dental laboratory technicians and others—there is a course of instruction for them working with this dentist.

Dr. FENNINGER. There is an experience on the job to determine their role and their effectiveness.

Mr. FLOOD. Here I am in northeastern Pennsylvania. How do I get in the Dental Division at Louisville as dental laboratory technician?

Dr. FENNINGER. I have Dr. Diefenbach, who is head of the Dental Division, with me and he has been instrumental in the development of this program. Perhaps you would like to have him answer that.

Mr. FLOOD. Yes.

What is the procedure?

Dr. DIEFENBACH. Perhaps I should preface the answer by saying the fundamental purpose of this experimental project is to expand the capacity of dentists to produce more dentistry of high quality.

Mr. FLOOD. I understand that, but I am talking about the assistant.

Dr. DIEFENBACH. At the Louisville project we have been recruiting and employing only dental assistants, local young ladies who are "certified dental assistants."

Mr. FLOOD. They have already been trained?

Dr. DIEFENBACH. Yes; they have been trained as chairside assistants.

Mr. FLOOD. I am concerned about the people that have not been trained who want to be dental technicians. What do you do about them?

Dr. DIEFENBACH. These young people will be trained in technical schools, in special vocational courses, in junior colleges, et cetera. This is where the huge supply of dental assistants and other auxiliaries will have to be trained.

Mr. FLOOD. Go ahead, Dr. Fenninger.

Dr. FENNINGER. While I am speaking of dentistry, I might add an explanatory note about one of the items in our current budget. For 1967 there is $1 million budgeted for the Dental Division to provide formula grant support to all 50 State health agencies and those of Guam, Puerto Rico, Virgin Islands, and the District of Columbia to strengthen and expand programs for the prevention and control of dental diseases. Funds for this purpose in 1968 are included in the appropriation "Comprehensive health planning and services" in the Office of the Surgeon General. We will continue, of course, to provide to the States necessary professional and technical guidance in connection with this program.

EDUCATION OF HEALTH PERSONNEL

Improvement of both the quality and the quantity of people in the field of health depends on the availability of strong programs in junior colleges, colleges, and universities where students in the health and allied professions receive their education. Through the educational improvement grants we assist schools to improve their curricula in the fields of health by enabling them to obtain the additional teachers and equipment necessary to strengthen their teaching programs.

MAKING HEALTH CAREERS ATTRACTIVE TO JUNIOR COLLEGE STUDENTS

Mr. FLOOD. Is there enthusiasm of any sort on the part of young people in the junior colleges to get into public health work?

Would they rather do something else?

Dr. FENNINGER. I think, Mr. Flood, it varies a good deal from one community to another and depends somewhat on the junior college program and its relationship with health care facilities and other health care institutions in the community.

There is no question in some communities there is a tremendous interest.

Mr. FLOOD. What do you think? Do you have a feel for it? There is no trouble getting people for the Peace Corps, no trouble getting dedicated people for VISTA, young and old. Is there a feeling throughout the country that young people will get into these courses in these community colleges and junior colleges?

Dr. FENNINGER. I think many of them will. I think in general we have not done as well in making health careers seem significant to younger people as we should have. This is one of the things we are very much concerned about, and nursing, in particular, has been working toward development of a good program.

There is of course the long history that the compensation of people who render health services has been at a lower level than the compensation of other equally responsible people in society. So I think this is part of the problem that contributes to the apparent lack of interest of some young people in the health field.

On the one hand, we have not done well in acquainting them with the unusual opportunities and the sense of adventure that goes with taking care of or assisting other people and of keeping people from getting sick.

On the other hand, as a society, we have not recognized the contribution made by those working in the health fields and compensating them adequately for it.

Incidentally, I think we are moving rapidly in the direction toward reasonable compensation, particularly as a result of title XVIII and title XIX legislation—however, we have a long way to go.

In the fields of medicine, dentistry, osteopathy, optometry and podiatry approximately 170 schools will be able to improve and augment their present curricula with the $57,500,000 requested for improvement under the Health Professions Educational Assistance Act.

The development of new health knowledge and technology and the changes which are occurring in the ways in which health services are rendered has made the roles of those in the allied health professions increasingly significant. This is particularly the group you were speaking of, Mr. Flood.

The passage of the Allied Health Professions Personnel Training Act in the fall of 1966 recognized the need to educate more men and women in these fields and also recognized the contribution to be made by junior colleges, colleges and universities and their affiliated hospitals. The request for $9,750,000 will provide educational improvement grants to these institutions, to improve their curricula, expand teaching programs, and support the faculties necessary to teach increasing numbers of students in the health field.

STUDENT ASSISTANCE: SCHOLARSHIPS, OPPORTUNITY GRANTS AND STUDENT LOANS

Provision of faculty and equipment in educational institutions is but one facet of increasing the supply of health manpower. It is also essential that qualified students have the resources to enter the health field and to complete their education. No economic barriers should keep able students from becoming important contributors to the health of others.

Education for all health professions has become more costly for students. Scholarships and opportunity grants are therefore of the utmost significance in giving opportunities to good students to become professionals in the health field. Scholarships are of particular importance in nursing, whose students have traditionally come from families of lower income. The $5,000,000 which is requested in nursing will provide aid to approximately 8,000 able high school graduates of exceptional financial need who could not otherwise undertake a career in nursing.

Funds amounting to $8,200,000 are also requested for scholarships for able students from low income families who, without this assistance, could not pursue their courses of study in medicine, dentistry, osteopathy, optometry, pharmacy and podiatry. These funds will support over 3,000 first year students and provide continuing support for over 3,000 second year students who will be entering in the fall of 1967.

Many students who are undertaking careers in the health professions have some resources of their own but require additional funds to complete their education. These needs can be met through loan funds that are made available to them.

Teachers in the health professions and those who have a high degree of specialized skill are scarce. They are essential if we are to increase the numbers of trained health workers. Fellowships and traineeships are designed primarily to produce additional teachers, administrators, supervisors and highly skilled practitioners in professional specialites, particularly in nursing and the allied health professions.

TRAINING HEALTH ADMINISTRATORS

Mr. FLOOD. Let me ask you, we admit we have a great need for these technicians. We also apparently have a great need for administrators.

Is this not a separate breed altogether, the administrator from the health worker?

Dr. FENNINGER. I think, Mr. Flood, anybody who has professional or technical skill has some administrative responsibility associated with every job. When I speak of administrators here, I am speaking particularly of the people who will serve as administrators in programs of nursing service, people who will administer laboratories.

Mr. FLOOD. And you are going to train them as administrators?

Dr. FENNINGER. We should enable them, from the basis of their professional knowledge or technical skill, to add understanding of principles of management and the capacity to relate their technical skill on the one hand and to the necessary organization to get the job done on the other.

This is what I mean by administrators in this particular context.

Mr. FLOOD. We are not talking about quite the same thing, are we?

Dr. FENNINGER. In addition to that, there is the group of people who administer total health service programs such as the hospital administrator, who has all of these groups. Part of his responsibility is to relate them to one another, to deliver health services.

Mr. FLOOD. But I am concerned about these community colleges and these junior colleges, these 2-year people. Are you not going to train people to be health administrators who have just this 2-year formal education.

Dr. FENNINGER. Yes, it is quite possible within the junior college setting to prepare people to be managers of hospital nursing divisions or supervisors of certain supporting services in health care systems.

Mr. FLOOD. We are going to pick up the 40 percent of my nurse's time that is spent on paperwork and let her do what she is trained to do.

Dr. FENNINGER. Some portion of it, yes, and the people responsible for nontechnical aspects of operation of health services.

Mr. FLOOD. Do you have such a course in mind? A technical course is not prerequisite for an administrator is it?

Dr. FENNINGER. Not necessarily.

Mr. FLOOD. I want to know absolutely.

Dr. FENNINGER. In the support of the legislation, the preparation of certain kinds of technical personnel came under the Allied Health Professions Act.

In the nurse training programs there is the provision for advanced training for preparation of administrative people.

Mr. FLOOD. Here are two girls that sign up at the community college. One I would think you might train as a technician, the other as some kind of administrator—that is not quite the word, but this is not a technician.

Dr. FENNINGER. A division supervisor-manager.

Mr. FLOOD. Something of that sort.

Dr. FENNINGER. This group of people is not included within the programs which are authorized at the present time.

Mr. FLOOD. They had better be pretty soon.

Dr. FENNINGER. The administrators we are speaking of here are people from a professional background.

Mr. FLOOD. Yes, I understand. I picked a bad place to raise the question.

Dr. FENNINGER. In addition to the administrative and supervisory group, there is always a great need——

Mr. FLOOD. You understand exactly what I am talking about, do you not?

Dr. FENNINGER. Yes, I think I do.

These are supervisors of nonprofessional functions, the general business functions and general operating functions that support health services.

Mr. FLOOD. Yes.

Dr. FENNINGER. For which there is a great need but to which the particular legislation and appropriation we are discussing do not apply. It aims at the health section which involves the technical and professional base for administrative skills.

Mr. FLOOD. That is very clear.

Dr. FENNINGER. There is also a great need for the developing of highly skilled practitioners, particularly in nursing and the allied health professions.

This morning there was some discussion of intensive care units and coronary care units. One of the major areas in which there is need for special preparation for nursing is in this kind of unit which will increase in its significance and numbers throughout the United States over the next decade.

Mr. FLOOD. And not just coronary?

Dr. FENNINGER. No. I simply selected that example because it was mentioned this morning.

RESEARCH AND DEVELOPMENT IN EDUCATION AND UTILIZATION OF HEALTH PERSONNEL

I have spoken of the utilization of health manpower and of support for educational programs through educational improvement grants in the health professions. The application of new knowledge and technologies to education for the delivery of health services requires the development of new curriculums, new ways of imparting knowledge and the testing of new organizational patterns. Funds for research administered by the Bureau of Health Manpower are requested primarily to support efforts in curriculum development and experimentation in the institutions concerned with teaching students in the health professions and with preparing them to render health services.

CONSTRUCTION OF FACILITIES

Students and teachers require facilities in which to learn and to teach. The programs which I have discussed all require facilities appropriate to the teaching to be done if we are to accomplish the ends which we seek; namely, the best health care than can be provided for every person who needs it and the provision of the best environment for the best possible health of everyone. Although the construction program for which we are requesting $203,000,000 will be presented in greater detail later, I should point out that the Health Professions Educational Assistance Act and the Nurse Training Act have been of great value in providing the facilities for education in the health professions. The need for more and better facilities for education in all the health professions continues.

Mr. Chairman, you have seen that the Bureau of Health Manpower has the goal of providing adequate numbers of skilled and dedicated people to serve the health needs of the people of the Nation. This goal will be accomplished in partnership with educational and health institutions and organizations through—

The development of increasingly effective and efficient use of the people working in the field of health;

The support of the institutions in which these people receive their education and train;

The support of students pursuing careers in health;

The development of teachers who will stimulate these students;

The development of new ways to teach and new ways to use the skills of those who are taught;

The provision of suitable facilities for education.

To summarize, Mr. Chairman, $170,413,000 is requested to carry out the program purposes I have enumerated. This is $21,915,400 above the $148,497,600 available for these purposes during 1967.

The increase of $21,915,400 will provide additions to the following Divisions: Physician Manpower, $425,000; Dental Services and Resources, $1,359,000; Nursing Services and Resources, $3,516,000; Allied Health Professions Manpower, $237,000; Health Manpower Educational Services, $16,378,400.

We shall be happy to answer any questions which you may have.

Mr. FLOOD. You did that very well for a beginner.

Dr. FENNINGER. Thank you.

SUMMARY OF BUDGET REQUEST

Mr. FLOOD. As you said, the estimated amount available for these activities in 1967 is $148,497,600. You are requesting $170,413,000 for 1968. That is a net increase of $21,915,400. However, there are some adjustments.

Did you work on this justification? How long have you been on board?

Dr. FENNINGER. I came on the 27th of January.

Mr. FLOOD. There are some adjustments here, such as shifting a large part of the loan program to revolving funds, that result in a total decrease of $26,056,000. Taking all of these adjustments into consideration, the increase that would be provided if Congress approves your request totals $47,453,000.

EDUCATIONAL OPPORTUNITY GRANTS

Over half of this increase is $27,500,000 for the new program, and I quote "Educational improvement grants."

This is an increase, Doctor, of over 90 percent. Are you aware of that?

Dr. FENNINGER. Yes.

Mr. FLOOD. Tell us just what is done under these grants, who is eligible, what is the formula for allocating funds. We are experts in formulas here. What is the formula for allocating the funds?

Suppose we financed you at the 1967 level; how unhappy would you be?

Dr. FENNINGER. I would be personally quite unhappy. At the present level of funding——

Mr. FLOOD. First of all, what do you do with these grants. Somebody gets a grant. What happens?

Dr. FENNINGER. There are two different kinds of grants authorized at the present time, Mr. Flood, one of which has to do with the basic improvement of educational programs in the health profession schools.

Mr. FLOOD. Who would get that?

Dr. FENNINGER. This would include schools of medicine, dentistry, osteopathy, optometry, and podiatry.

Mr. FLOOD. You have regular set procedures for that that they must go through?

Dr. FENNINGER. We send them instructions at their request. These instructions outline the purposes of the programs and the limit within which the programs operate.

Mr. FLOOD. Do you solicit this or do they come to you?

Dr. FENNINGER. We send out announcements to all of the schools and they in turn determine whether they will make application or not.

Mr. FLOOD. You have two types of grants. What are they?

BASIC IMPROVEMENT GRANT

Dr. FENNINGER. The basic improvement grant, which is allocated according to formula and is essentially an entitlement grant.

Mr. FLOOD. There is that word "formula." Who gave birth to this formula?

Dr. FENNINGER. Perhaps Mr. Hambleton can answer. This is in the law.

Mr. HAMBLETON. The formula provides for payment to each school $25,000 plus the product obtained by multiplying $500 by the number of full-time students in that school.

Mr. FLOOD. That is in the law. Who thought it up.

Mr. HAMBLETON. I do not know who did.

Mr. CARDWELL. I say it is a matter of substantive law. I would imagine the Surgeon General would have commented on the law at some length while under consideration as a substantive bill. Beyond that I do not know.

SPECIAL IMPROVEMENT GRANTS

Mr. FLOOD. What is your second class of grants?

Dr. FENNINGER. The other class of grants are the special improvement grants which are on a project basis and these are competitive.

Mr. FLOOD. Competitive?

Dr. FENNINGER. In the sense there is no automatic entitlement. A school must come in with a proposal, a program.

Mr. FLOOD. That is competition between the schools?

Dr. FENNINGER. There is competition among the schools.

Mr. FLOOD. Here are four schools and x dollars. How do you decide which applicant wins?

Dr. FENNINGER. These determinations are made by study committees and a national advisory council made up of experts knowledgeable in the various fields covered by these programs. The study group and advisory council review all of these applications, determine their effectiveness, and make their recommendations to the Surgeon General.

Mr. FLOOD. So these decisions are not made by some fellow in a remote ivory tower by himself?

Dr. FENNINGER. No.

Mr. FLOOD. What is the eligibility requirement for each type of grant?

Dr. FENNINGER. To be eligible for a basic improvement grant these schools must be approved, accredited schools in the various health professions. In order to be eligible for a special improvement grant, a school must have an approved basic improvement grant, as well as competing with others as to the relative merits of their improvement projects.

Mr. FLOOD. That leaves you to explain why do you need this?

Dr. FENNINGER. The present formula for the basic improvement grants includes a fixed amount per school plus an amount per student enrolled in the school. At the 1967 level of the funding the formula

provides for only 95 percent of the basic improvement grants and there are no moneys available for special improvement grants.

DEMAND FOR IMPROVEMENT GRANTS

Mr. FLOOD. Have you ever worked for the Government before any place, State or local, outside of your hospital career?

Dr. FENNINGER. I was with the National Institutes of Health.

Mr. FLOOD. This is a 90-percent increase, Doctor. Do you think you would be able to spend those funds?

Dr. FENNINGER. We have done a good deal of planning already for the special improvement grants as well as the basic improvement grants which come under the authorization.

Mr. FLOOD. You are not going to wind up with a lot in escrow at the end of the year that you are not going to be able to use.

Dr. FENNINGER. No, sir; I think the need is very great among all schools in the health professions; the need is great for the increased numbers of students. In the act there is a provision that schools must increase their enrollment of students to be eligible. This is a stimulus to schools to expand their capacities.

Mr. FLOOD. It is quite a stimulus. We have been here a long time. We have seen many of these programs that you just could not stimulate enough.

Do you think you can or are they already stimulated?

Dr. FENNINGER. I would say the expectations and the needs of the American public are such that the schools are quite well stimulated to begin with, and feel the responsibility to increase both quality and quantity of people in the health professions. I think the need exists and the stimulus is already there for special improvement grants.

SCHOLARSHIP GRANTS

Mr. FLOOD. Now you also have a new program, scholarship grants, and you are asking for $8.2 million. That is more than double the amount for 1967.

Dr. FENNINGER. A percentage comparison, Mr. Flood, is a little misleading. We have in existence a scholarship program in which we have over 3,000 first-year students we are currently supporting and the amount of money required for that is a little in excess of $4 million.

Next year they will be second year students and 3,000 more will be coming into medical and the other professional schools. So we will be supporting students in both the first and second year.

Mr. FLOOD. Tell us a little bit about the program itself.

Dr. FENNINGER. The programs are administered by the individual professional schools and they receive the funds from the Public Health Service in accordance with their request and in accordance with the formula.

Mr. FLOOD. Does it go through a State department of any kind or do they apply directly to you?

Dr. FENNINGER. This is an application directly to the Public Health Service and the grant is made directly to the schools. The program is operated by the schools, so the relationship is between the student and the school.

Mr. FLOOD. What power of veto do you exercise?

Dr. FENNINGER. We exercise no veto at all.

Mr. FLOOD. What else can you tell us about the program?

Dr. FENNINGER. The program was designed to enable students that come from economically less well financed families to undertake the long and arduous training in the health professions. We are providing scholarships for over 3,000 at the moment and 3,000 first-year and 3,000 second-year students next year.

OPPORTUNITY GRANTS

Mr. FLOOD. You have a new program of so-called "opportunity grants" for nurses. That is another scholarship program, is it not? Why do you call it "opportunity grants"?

Dr. FENNINGER. I cannot speak to the origin of this particular name.

Mr. FLOOD. Is it not a scholarship program?

Dr. FENNINGER. It is in effect a scholarship program.

Mr. FLOOD. The increase is from $750,000 to $5,000,000. Suppose you give us a little rundown on that program.

Dr. FENNINGER. This is a program that was authorized under the Allied Health Professions Personnel Training Act that was passed last fall. It provides aid for students who come from economically deprived families to undertake the study of nursing. And, as I said in my opening statement, historically people entering the profession of nursing come from relatively low income families in the United States. We believe there are a great many able students in high school whose finances make it difficult for them to even contemplate a career in the profession of nursing. The availability of "opportunity grants," as they are called, would encourage students in high school to consider and actually to undertake and accomplish careers in nursing. We would be increasing the source of people coming into nursing and at the same time we would be increasing the number of students of ability who are applying to nursing schools. Ability does not depend on the purse. We think this is a very good program from both points of view.

GRANTS TO DIPLOMA SCHOOLS

Mr. FLOOD. Have you given up on the diploma schools. You are asking for $3 million. That is $2 million less than the 1967 appropriation and less than one-third of your authorization. Sometimes these things just do not work out. Is that it?

Dr. FENNINGER. Yes, sir, sometimes they do not work out. Let me say something in general about diploma schools and perhaps Miss Scott, the director of the division of nursing, would like to enlarge on this, and perhaps Mr. Hambleton could add something to it.

As you know, there is a major reexamination of all education for nursing going on in the United States at the present time, and as you also know, the traditional ways in which education has been provided, both in terms of curriculum and in terms of financing, are changing quite rapidly in the field of health, particularly in the field of nursing. With the emergence of 2-year community colleges, there is another resource for nursing education, and with the increasing need for teachers and for high clinical skills brought about by the

changes in medical technology, there is a growth in the baccalaureate, 4-year programs. Diploma schools are still the major source of nurses. I believe 75 percent of all our professional nurses come from diploma schools.

Mr. FLOOD. But when did you find this out? Why didn't someone tell us that last year?

Dr. FENNINGER. I believe the estimates were made on the best information we had at the time and experience in administering the program has changed our recognition of the need.

Mr. FLOOD. You must realize this is an appropriations committee.

Dr. FENNINGER. I do realize that. Perhaps Miss Scott could speak to the reason why the diploma schools could not utilize these funds.

Mr. FLOOD. If Miss Scott doesn't have the answer nobody has.

Miss SCOTT. I do not know that I have the complete answer, but I think there are two factors involved here. Schools to be eligible for funds under the Nurse Training Act must be either accredited or have reasonable assurance of reaching accreditation standards, but in this instance schools must be fully accredited thus eliminating those having reasonable assurance. Secondly, to receive funds the formula requires the school to expand its enrollment, or have students on nursing loans or both. The capability of some schools to expand has not been great enough to permit them to take advantage of funds under this section of the Act.

Mr. FLOOD. Why didn't we know about that last year? This is a bad miss.

Miss SCOTT. I believe our experience in the first year was entirely inadequate to have made a good judgment last year. Also in the first year there seemed to be misinformation existing in the schools about their eligibility.

Mr. FLOOD. As a matter of fact, you had trouble getting some of them to take it, did you not? I know of some.

Miss SCOTT. There are some that are now eligible and they are not applying for it. I do not know why they are not. I cannot answer that.

Mr. FLOOD. I think I understand it.

PHYSICIAN MANPOWER

You are requesting funds for 23 more positions under the heading "Physician Manpower." You have 87 now. What do you want with 23 more?

Dr. FENNINGER. I think they are working quite hard. The new programs and the expanding programs that we are requesting, particularly the expansion of programs, will require the additional people. For example, in the studies of the supply and utilization of physicians, which is really crucial to the adequate provision of care, we have a great need to establish good studies and determine firm data about how physicians are being used.

Mr. FLOOD. You have 87 people in your shop who will analyze and determine how these physicians will best be utilized?

Dr. FENNINGER. No, sir.

Mr. HAMBLETON. 60 of the 87 work in the educational facilities construction program for architectural review, review of applications, negotiation with schools, and the like.

Mr. FLOOD. What does that have to do with the best utilization of physicians and surgeons? Is the AMA aware that this section exists?

Dr. FENNINGER. Yes, we have been working closely with the AMA and other groups who are equally and vitally interested in this.

Mr. FLOOD. What period of time do you think it will take before we can show any affirmative results?

Dr. FENNINGER. I think within a year certainly, definitions of kinds of roles and the development of methods of accumulating these data over the years—will be accomplished however this must be a continual study I think. The definitions can be made in a year's time, but it takes time of the Bureau staff to develop the interest and the capabilities.

Mr. FLOOD. But, doctor, I have seen studies go on like Tennyson's brook. You say in a year. Do you think you can produce something in a year?

Dr. FENNINGER. I think we can, yes. I might say these studies are going on and no doubt will be modified from time to time as all health education changes and as hospitals and physicians and others in the health professions change their patterns of rendering health services.

Mr. FLOOD. Is anybody against it?

Dr. FENNINGER. I have not encountered anybody who is against defining the roles of physicians and the ways in which their skills are used.

DENTAL SERVICES AND RESOURCES

Mr. FLOOD. You also have a request for 24 additional positions for "Dental Services and Resources." You have 249 now. That is a lot of people. What is wrong with 251? Is there anything sacred about an increase of 24?

Dr. FENNINGER. These are the estimates made for the programs to be strengthened over the coming year in a variety of ways. I can speak to these increases and where these people would be used, or Dr. Diefenbach will speak to that.

Mr. FLOOD. Between you and Dr. Diefenbach. Suppose you do that at this point in the record.

Dr. FENNINGER. Yes, sir.

(The following was submitted for the record:)

DENTAL SERVICES AND RESOURCES—NEW POSITIONS REQUESTED FISCAL YEAR 1968

DISEASE PREVENTION AND CONTROL

Since the 1966 "National Dental Health Assembly, Emphasis: Fluoridation," the demands on the Division for assisting states and communities with their fluoridation programs have increased several fold. More than 100 communities not now fluoridating their water systems are planning fluoridation programs. The fluoridation of water supplies in rural schools will be stepped-up. New educational materials on fluoridation for the general public will be widely disseminated and special training and workshops on fluoridation will be provided on request for entire states. To provide these services, an increase of five positions is requested.

The prevention and control of diseases which destroy the tissues around the teeth is clearly the next logical step to improve the Nation's dental health. Studies already completed by the Division have shown that organized programs aimed at improving oral hygiene habits can help prevent most pyorrhea and related gum diseases. Putting these programs into effect on a widespread basis, including preventive programs in the schools and early detection programs

in the communities, is what should be done. To carry out this work, two additional positions are needed.

Commissioned officer	Senior grade.
Public health program specialist	GS–12.
Statistician	GS–11.
Public health program specialist	GS–9.
Public health program specialist	GS–7.
Clerical assistant (2)	GS–4.

MANPOWER SUPPLY AND UTILIZATION

Various elements of undergraduate dental education are being investigated with the aim of making the dental educational process more effective and efficient. Studies are now underway in four areas—recruitment and selection of dental students, development of dental teachers, design of instructional facilities and methods of instruction.

Research on methods of dental instruction has received major program emphasis. New teaching technics are being evaluated. An investigation has been completed which explored the value of "intensive" instruction in the teaching of clinical skills. Future research efforts will focus on the potential of computer-assisted instruction in dental schools.

Three positions are requested to conduct new studies on dental school staffing, enrollment, cost of education, dental manpower characteristics and future estimates. In addition, two other positions are requested for advanced work in educational research including experimental studies using electronic teaching devices and studies to evaluate teaching methods.

Public health program specialist	GS–13.
Statistician	GS–13.
Public health program specialist	GS–12.
Public health program specialist	GS–7.
Clerical assist	GS–4.

DENTAL HEALTH CENTER

Research and demonstration projects have been undertaken to increase the quality of instruction in continuing education for dentists. Programed instruction, for example, has been adapted and tested to make available refresher courses for practicing dentists in their home towns. Also the Division is evaluating various educational media for extension programs. Specific modifications of teaching machines are being made in cooperation with industry and the potentials of other media such as educational television in continuing education are being explored. Similar research also has been initiated in dental health education for patients.

In the epidemiology program, initial studies of cleft lip and palate conducted at the Center have been primarily descriptive in nature. Data on congenital anomalies, collected from 29 states and two cities for a four-year period, and from four states for a ten-year period, have provided a better understanding of the variations in the occurrence of these defects according to such variables as: race, age of parents, weight at birth, length of gestation, season of birth and geographic location. These data are providing leads for more comprehensive follow-up studies such as a detailed study of affected twins and their families in an attempt to separate environmental from hereditary factors involved in cleft etiology.

Three new positions are requested to increase the continuing education activities as described above and four additional positions are requested to continue and expand the epidemiological studies in cleft lip and palate, malocclusion and periodontal diseases.

Commissioned officer	Senior grade.
Statistician	GS–13.
Public health program specialist	GS–12.
Public health program specialist	GS–11.
Administrative staff assistant	GS– 9.
Clerical assistant (2)	GS– 4.

RESEARCH AND DEVELOPMENT IN DENTAL TECHNOLOGY

Applied clinical research aimed at evaluating and comparing new and conventional dental materials, dental procedures and dental devices is underway to provide information that will lead to better dental care for the public. Clinical evaluation studies on the actual performance of dental materials in the mouth are conducted to determine whether laboratory properties of these materials with respect to adhesion, color stability, strength, solubility, resistance to wear and general effect on tissues of the mouth, are valid insofar as actually benefiting patients.

In cooperation with industry, universities and the dental profession, this research program is aimed at improving restorative and prosthetic materials for clinical practice and developing more efficient technics and procedures and more serviceable devices, resulting in reduced manpower requirements for the delivery of high quality dental care.

An increase of five positions is requested to make possible these studies in applied clinical research in dental materials, procedures and technics.

Commissioned officers (2)	Full grade.
Public health program specialist	GS–12.
Statistician	GS–11.
Clerical assistant	GS– 4.

FLUORIDATION OF DRINKING WATER

Mr. FLOOD. It is pretty late in the day to start this one, but what advances have been made in the last year in the fluoridation of drinking water? First of all, have any cities dropped it?

Dr. DIEFENBACH. Yes. Two cities by referendum last fall decided not to continue to fluoridate water.

Mr. FLOOD. Will you at this point in the record list the cities and the vote where the referendum lost and give us the names of the two that discontinued fluoridation.

Dr. DIEFENBACH. Very good.

(The information follows:)

Lost	Vote		Lost	Vote	
	For	Against		For	Against
1. Delano, Calif.	1,500	1,700	14. Richland, Wash.	3,597	5,626
2. Sebring, Fla.	365	933	15. Shelton, Wash.	888	1,499
3. McPherson, Kans.	1,404	2,401	16. Wenatchee, Wash.	2,914	3,178
4. Weymouth, Mass.	4,066	6,968	17. Burlington, Wis.	760	1,418
5. Austin, Minn.	3,068	2,745	18. Cross Plains, Wis.	120	135
6. Independence, Mo.	6,983	9,653	19. Holmen, Wis.	87	97
7. Osmond, Nebr.	120	186	20. La Farge, Wis.	93	168
8. Athens, Ohio	1,523	1,950	21. Montfort, Wis.		
9. Milford, Ohio	499	906	22. Muscoda, Wis.	197	265
10. Mount Vernon, Ohio	1,553	3,619	23. New Lisbon, Wis.	143	176
11. Knoxville, Tenn.	15,000	26,000	24. Tomah, Wis.	735	1,232
12. San Antonio, Tex.	12,518	26,341	25. Viroqua, Wis.	606	1,074
13. Cashmere, Wash.	350	411	26. Winneconne, Wis.	159	253

Communities that dropped fluoridation:
Austin, Minn.
LaFarge, Wisc.

NOTES

Where no figures appear, vote was not reported to Public Health Service.
There were two referendums in McPherson, Kans. On April 5, fluoridation won. On November 8 it lost.

Mr. FLOOD. Now, how about the other side?

Dr. DIEFENBACH. The overall increases have continued, not spectacularly, but on a better than average year, so that there are now 72.5 million Americans regularly drinking fluoridated water. This is an

increase of about 2.5 million over last year. There were 103 additional communities last year which began fluoridation. The grand total of correctly fluoridated communities was 5,485 at the end of 1966.

Mr. FLOOD. Is your opposition adamant and vocal?

Dr. DIEFENBACH. Yes, but in referendums fluoridation is doing better. In former years, fluoridation lost three out of every five referendums.

Mr. FLOOD. I think since I asked you to put in where you lost, put in where you won too.

Dr. DIEFENBACH. Very good.

(The information follows:)

Fluoridation referendums in 1966

Won	Vote		Won	Vote	
	For	Against		For	Against
1. Conway, Ark	2,664	1,334	13. Utica, Nebr	158	112
2. Monticello, Ark	1,148	413	14. Camden, S.C	884	522
3. Aurora, Ind	1,023	819	15. Shelburne, Vt	594	192
4. McPherson, Kans	1,285	1,090	16. Chehalis, Wash	1,246	821
5. Ashland, Maine			17. Balsam Lake, Wis	146	65
6. Bangor, Maine	6,619	2,859	18. Colby, Wis	360	89
7. Brewer, Maine	1,505	306	19. Cudahy, Wis	3,047	2,153
8. Bronson, Mich	372	271	20. Deerfield, Wis	132	86
9. Detroit, Mich	161,867	154,096	21. Hustisford, Wis	174	127
10. Flint, Mich	15,720	11,321	22. Niagara, Wis	469	354
11. Manistee, Mich	1,400	1,100	23. Rock Springs, Wis	84	57
12. Bellevue, Nebr	861	827	24. West Salem, Wis	231	123

Dr. DIEFENBACH. Of the referendums held in 1966, fluoridation wins-and-losses were about even.

In addition, a recent poll by the National Opinion Research Center of Chicago indicated that more than 70 percent of the adults in the United States are in favor of fluoridation. So there seems to be a definite favorable public sentiment.

Mr. FLOOD. You have not sampled anybody but adults, have you? You have not sampled children?

Dr. DIEFENBACH. No. I was quoting my reference which specifically used the word, "adults."

NURSE RECRUITING CONTRACTS

Mr. FLOOD. Here is a new one, a small one but a new start, and of course new starts are in a very hazardous position this year. In connection with your activities in the nursing field you are asking $100,000 for recruiting contracts. What is that all about?

Miss SCOTT. As you say, Mr. Chairman, this is a new program in which we are intensely interested. The program will enable us to award contracts to nursing schools or to other institutions or agencies to develop recruitment programs on a local level.

Mr. FLOOD. What kind of a recruitment program?

Miss SCOTT. We are particularly interested in a school of nursing establishing a close working relationship with the secondary school system to interest the students in nursing while they are still in high school. We believe recruitment should start, in the sophomore year in high school or even earlier to begin to work with students who are having some difficulty in making a career choice.

Mr. FLOOD. Will you send out recruiters in the field or will this be done by local agencies?

Miss SCOTT. It will be done by local agencies.

Mr. FLOOD. You will not go far with $100,000, so it will be done mostly locally?

Miss SCOTT. Yes, sir.

Mr. FLOOD. Is that good?

Miss SCOTT. I think so.

ALLIED HEALTH PROFESSIONS MANPOWER

Mr. FLOOD. You have 46 positions in "Allied Health Professions Manpower" and you are requesting 13 more. What do these people do?

Dr. FENNINGER. The increased positions will be used to improve the ability of the division to determine the shortage and the needs in the allied health manpower fields and to develop demonstrations to improve techniques.

Mr. FLOOD. Where will the demonstrations take place?

Dr. FENNINGER. In the individual schools.

Mr. FLOOD. Are you going to send them the curriculum and say, "This is the demonstration"?

Dr. FENNINGER. No; the schools will develop programs they wish to undertake and if they meet with the approval of the Advisory Council they will be recommended for the Surgeon General for funding. The experience gained in these programs can be extended beyond the schools which initiate them. The additional positions provide staff to review the programs and advise the schools.

Mr. FLOOD. The 13 new people will not do much on this program, will they?

Dr. FENNINGER. This, with our present staff, will be engaged in all of the efforts of the Division, but particularly important are the efforts to develop relationships with schools in new teaching methods and in studies of the allied health professions.

Mr. FLOOD. Do you not think it is about time we had relations established with schools and universities after giving them billions of dollars? Do you not think they should know something about us?

Dr. FENNINGER. Yes, I think they should know something about us but we are dealing with a large number of schools which have had little experience with the programs of the Public Health Service in the past.

Mr. FLOOD. The junior colleges?

Dr. FENNINGER. This is one of the new programs in which junior colleges will work with the Public Health Service.

STUDENT AID PROGRAMS

Mr. FLOOD. You talked about student loans. Will this budget provide enough for loans to all eligible applicants, in your opinion, this plus the revolving fund?

Dr. FENNINGER. I do not know that it will supply all the eligible applicants. It will provide loans for about 25,000 students in the health professions and loans for approximately 25,000 nursing students, a total of 50,000 students.

Mr. FLOOD. Suppose you insert at this point in the record a table showing for each loan, scholarship, and fellowship program, the number of individuals expected to benefit in 1967 and in 1968.

Dr. FENNINGER. Yes, sir.

(The table follows:)

Individuals benefiting from loan, scholarship, and fellowship programs, 1967–68

Program and discipline	Participating schools		Number benefiting	
	1967	1968	1967	1968
Dental fellowships: Dentistry	[1]	[1]	3	7
Nursing fellowships: Nursing	[1]	[1]	85	94
Nursing educational opportunity grants (scholarships): Nursing	[2]	[2]	1,250	8,000
Health professions student loans: [3]				
Medicine	88	93	11,989	13,037
Dentistry	46	47	5,935	6,634
Osteopathy	5	5	1,138	1,261
Optometry	10	10	712	748
Pharmacy	45	48	1,960	2,311
Podiatry	2	2	173	208
Veterinary Medicine	----------	18	----------	1,350
Total	196	223	21,907	25,549
Nursing student loans: [3] Nursing	614	637	20,205	24,906
Health profession scholarships: [3]				
Medicine	88	95	1,532	3,075
Dentistry	49	50	753	1,510
Osteopathy	5	5	147	300
Optometry	10	10	128	260
Pharmacy	70	73	883	1,790
Podiatry	5	5	56	115
Total	227	238	3,499	7,050

[1] Fellowships are awarded directly to the student.
[2] Not available.
[3] Based on applications and reports received from participating schools as of Apr. 5, 1967.

Mr. FLOOD. As I told you when you sat down, this appropriation covers many important activities and subactivities and sub-sub-activities. I have no intention of asking you about all of them at this time. We have your justifications and, of course, they will all be in the record. But there might be one I did not touch on, that is close to your heart, and about which you would like to add something.

SPECIAL IMPROVEMENT GRANTS

Dr. FENNINGER. Particularly close to my heart is the provision of special improvement grants to the schools in the health professions and the allied health professions, for the schools that will develop curricula and acquire faculty to create much stronger programs than they have been able to provide heretofore. And of course all of the other programs are aimed at preparing individuals to provide health services to all people of the United States.

Mr. FLOOD. If you would like, you may add to the record at this point.

Dr. FENNINGER. Very good.

(The information follows:)

SPECIAL IMPROVEMENT GRANTS

I consider the increase of $27.5 million requested for Health Professions Educational Improvement Grants to have highest priority. Of this increase,

we estimate that $2.5 million above the amount which was available in 1967 will be needed to satisfy the statutory formula for basic improvement grants to about 172 schools. The remainder, estimated at $25 million, would be used to implement the special improvement grants program which was authorized in 1965, but for which funds have not been available.

I assign highest priority to this request because of the great need to strengthen the educational programs of schools of medicine, osteopathy, dentistry, optometry and podiatry. At present serious imbalance exists in the adequacy of support for the research and teaching functions of these schools. Funds to support research are reasonably available while teaching budgets are generally starved. Yet the primary function of these schools is to train the physicians, dentists and other health professionals which are needed to supply health services to the people. Concomitantly, great disparity exists between schools of the same types in the adequacy of support for their teaching programs. This results in disparity in the quality of their educational programs. In the case of some schools, inadequate teaching budgets have resulted in their being only provisionally accredited. The accreditation of other schools is in jeopardy and the training provided to students is seriously weakened in still others. Although the graduates of each of these schools have the same responsibility to provide high quality care to their patients, they are not equally prepared to discharge this responsibility. As a Nation we cannot afford for this situation to continue.

Basic educational improvement grants are made to all eligible schools in amounts determined by a formula. These funds make an important contribution in each school but do not narrow the gap in instructional quality between schools. This gap can and will be narrowed by special improvement grants.

In awarding special improvement grants, highest priority will be given to applications from schools which are provisionally accredited and to others which have serious weaknesses in their educational programs due to inadequate financial support.

The statutory maximum amount of a special improvement grant in 1968 is $300,000. Every eligible school, in our opinion, can identify needs of sufficient National importance to justify an award in the maximum amount. We expect the 172 schools to request not less than $50,000,000 in 1968. Only half of this demand would be met from the amount requested. There is, therefore, no question concerning our ability to absorb the increase or to utilize the funds judiciously.

STAFFING REQUIREMENTS

Another area of activity deserves particular emphasis if we are to accomplish our mission. If we are to make sound estimates of needs for health manpower, and to create the new schools and the new curriculum necessary to meet the health service needs of the people of our Nation, it is essential that the Bureau make a major effort now to develop reliable, meaningful information about the numbers of people in the various health professions, projections of future supply, the roles that they are playing, the organizational patterns in which their knowledge and skills are used, and the ways in which they can be better prepared for new tasks which are certain to develop in the fields of health.

Of equal importance, we must marshall and develop the competency to render timely assistance, advice, and counsel to States, localities, educational institutions, and users of health services on the ways and means of assessing health manpower requirements and resources and planning to meet requirements. This must include planning and development of curricula and new teaching programs having increasing relevance to health service needs. We must develop meaningful information and make it available as rapidly as possible as agencies and institutions throughout the Nation come to grips with the planning and development of resources for meeting our national health manpower needs. These tasks require the additional staff requested for 1968, so that the Bureau will have special competence in methods of identifying health manpower needs, planning resources to meet these needs including the development of teaching programs, and assessing the effectiveness of using health manpower to provide health services to people of the Nation.

PARTICIPATION SALES

Mr. FLOOD. There are two other closely related appropriation items. One is "Participation Sales Authorization" and the other is "Payment of Sales Insufficiencies." It strikes me these are almost identical to

what we have already discussed in some detail in connection with the Office of Education. We will place your statement in the record but I have no questions.

(The statement referred to follows:)

HEALTH PROFESSIONS EDUCATION FUND
AND
NURSE TRAINING FUND

The Health Professions Educational Assistance Act of 1963, as amended, and the Nurse Training Act of 1964 each provided for the establishment of student loan programs. With the moneys provided by Congress through Fiscal Year 1967, 196 medical, dental, optometric, podiatric, and pharmacy schools have established Student Loan Funds. Such Funds also have been established in 614 schools of nursing.

During 1967, $25,000,000 has been appropriated for the health professions schools and $16,800,000 for the nursing schools. It is estimated that 38,000 students will borrow from these Funds, 21,000 for health professions students and 17,000 nurses. These programs lessen economic barriers which might otherwise limit the number of students entering the health professions.

The enactment last fall of the Allied Health Professions Personnel Training Act of 1966 provided two sources for increasing the number of students entering the field of health by establishing the Health Professions Education Fund and the Nurse Training Fund. These funds were established on a revolving basis to enable greater utilization of Federal funds, to provide an opportunity for the private sector of the economy to participate more directly in supporting health professional and nursing students of the highest quality, and to enable more students to obtain loans. The schools may choose to borrow funds from these revolving funds, or receive a Federal capital contribution from regular appropriations or both. Institutions electing to borrow are relieved of their present obligation to contribute at least 10% of the capital of their Loan Funds.

To have the funds available to meet the needs of students this fall who need to borrow from these revolving funds, we have requested supplemental appropriations of $12,000,000 in 1967. This is the full amount authorized for these two funds and is only authorized for F.Y. 1967. This amount, which will be available in 1968, is in addition to the $31,000,000 requested in our regular appropriation "Health manpower education and utilization" for student loan programs for medical, dental, optometric, podiatric, pharmacy, veterinary and nursing students. The two mechanisms will make it possible for 3,000 additional needy students to obtain financial support.

In the appropriation language, we are requesting two new provisions necessary for the operation of the revolving funds. The "Participation Sales Authorization" sets a $15,000,000 limitation on the sale of participation certificates by the Federal National Mortgage Association for these programs. This provision is necessary as the Participation Sales Act of 1966 requires that the Congress authorize in advance, in appropriation Acts, the maximum amount of participations that may be sold.

The second language provision entitled "Payment of Sales Insufficiencies" provides authority to spend from general funds such amounts as may be necessary to assure timely payments to the holders of Federal National Mortgage Association certificates which are secured by notes from health professions and nursing schools. This provision assures lenders and the public that funds are backed by the full faith and credit of the government. We estimate that approximately $250,000 will be expended from general revenue for this provision, covering a six month interest payment due the Federal National Mortgage Association in F.Y. 1968, on notes sold for us shortly after the school year begins in September 1967.

Mr. Chairman, I shall be glad to answer any questions you may have concerning these programs.

Mr. FLOOD. I would take it for granted under these circumstances you have no further comment to make about it at this time?

Dr. FENNINGER. I think we covered most of the matters that had to be covered.

Mr. FLOOD. Thank you, ladies and gentlemen. 10 o'clock tomorrow morning.

JUSTIFICATION MATERIAL

Health Manpower Education and Utilization

Amounts available for obligation

	1967	1968
Appropriation		$170,413,000
Comparative transfers from—		
"Injury control"	$102,600	
"Chronic diseases"	397,400	
"Community health services"	101,238,000	
"Communicable diseases"	266,600	
"Dental services and resources"	8,604,000	
"Nursing services and resources"	24,364,000	
"Construction of health educational facilities"	722,000	
"Office of the Surgeon General, salaries and expenses"	53,000	
Program supplemental proposed for separate transmittal	12,750,000	
Total, new obligational authority [1]	148,497,600	170,413,000

Description	1967 estimate		1968 estimate		Increase or decrease	
	Positions	Amount	Positions	Amount	Positions	Amount
Physician manpower:						
(a) Research grants		$661,000		$763,000		+$102,000
(b) Direct operations	87	2,595,000	110	2,918,000	+23	+323,000
Dental services and resources:						
(a) Grants:						
(1) Research		1,152,000		1,453,000		+301,000
(2) Fellowships		50,000		100,000		+50,000
(3) Training		2,949,000		3,500,000		+551,000
(b) Direct operations	249	4,273,400	273	4,730,400	+24	+457,000
Nursing services and resources:						
(a) Grants:						
(1) Research		2,087,000		2,655,000		+568,000
(2) Fellowships		462,000		520,000		+58,000
(3) Training		20,330,000		22,580,000		+2,250,000
(b) Direct operations	173	2,142,800	183	2,782,800	+10	+640,000
Allied health professions manpower (direct operations)	46	867,400	59	1,104,400	+13	+237,000
Health manpower educational services:						
(a) Training grants		50,485,000		85,750,000		+35,265,000
(b) Student loans		54,225,000		31,000,000		−23,225,000
(c) Scholarships		4,030,000		8,220,000		+4,170,000
(d) Direct operations	79	934,000	81	1,102,400	+2	+168,400
Program direction and management services	89	1,254,000	89	1,254,000		
Total, new obligational authority [1]	723	148,497,600	795	170,413,000	+72	+21,915,400

[1] Excludes estimated obligations due to advance obligational authority, details of which are on page 215.

Advance obligational authority

	1967 estimate amount	1968 estimate amount
New obligational authority	$148,497,600	$170,413,000
Appropriation available from subsequent year	42,850,000	53,750,000
Appropriation available in prior year	−27,055,753	−42,850,000
Total obligations	164,291,847	181,313,000

Obligations by objects

		1967 estimate	1968 estimate	Increase or decrease
	Total number of permanent positions	723	795	+72
	Full-time equivalent of all other positions	44	54	+10
	Average number of all employees	669	767	+98
11	Personnel compensation:			
	Permanent positions	$6,172,400	$7,011,400	+$839,000
	Positions other than permanent	310,000	399,000	+89,000
	Other personnel compensation	14,000	15,000	+1,000
	Total personnel compensation	6,496,400	7,425,400	+929,000
12	Personnel benefits	636,000	727,400	+91,400
21	Travel and transportation of persons	606,000	745,000	+139,000
22	Transportation of things	86,000	96,000	+10,000
23	Rent, communications, and utilities	381,000	417,000	+36,000
24	Printing and reproduction	206,000	243,000	+37,000
25	Other services	411,400	445,400	+34,000
	Project contracts	2,729,000	3,244,000	+515,000
	Services of other agencies	24,800	24,800	
	Payment to:			
	National Institutes of Health management fund	38,000	38,000	
	Health professions education fund	10,000,000		−10,000,000
	Nurse training fund	5,500,000		−5,500,000
26	Supplies and materials	239,000	283,000	+44,000
31	Equipment	213,000	203,000	−10,000
33	Investments and loans	42,806,886	34,550,000	−8,256,886
41	Grants, subsidies, and contributions	93,918,361	132,871,000	+38,952,639
	Total obligations by object	164,291,847	181,313,000	+17,021,153

Summary of Changes

Proposed supplemental	$12,750,000
Comparative transfers from other accounts	135,747,600
1967 total NOA	148,497,600
1968 total NOA	170,413,000
Total change	+21,915,400

	Base		Changes from base	
	Positions	Amount	Positions	Amount
INCREASES				
A. Built in:				
Annualization of 93 new positions authorized in 1967				$518,400
B. Program:				
1. Physician manpower:				
Research grants		$661,000		102,000
Direct operations	87	2,595,000	23	255,000
2. Dental services and resources:				
Research grants		1,152,000		301,000
Fellowships		50,000		50,000
Research training grants		200,000		100,000
Dental auxiliary utilization grants		2,649,000		351,000
Continuing education grants		100,000		100,000
Direct operations	249	4,273,400	24	392,000
3. Nursing services and resources:				
Research grants		2,087,000		568,000
Fellowships		462,000		58,000
Opportunity grants		750,000		4,250,000
Direct operations	173	2,142,800	10	558,000
4. Allied health professions manpower	46	867,400	13	136,000
5. Health manpower educational services:				
Health professions educational improvement grants		30,000,000		27,500,000
Allied health professions traineeships		750,000		750,000
Allied health professions educational improvement grants		2,785,000		6,965,000
Allied health professions new methods		200,000		800,000
Scholarships		4,030,000		4,170,000
Direct operations	79	934,000	2	47,000
Total program increases			72	47,453,000
DECREASES				
A. Nonrecurring program costs				−59,000
B. 1 less day's pay (261 days in 1967; 260 days in 1968)				−22,000
C. Payments to diploma schools of nursing		5,000,000		−2,000,000
D. Grants to schools of public health		3,750,000		−250,000
E. Project grants for graduate public health training		5,000,000		−500,000
F. Health professions student loan program		35,325,000		−20,325,000
G. Nursing student loan program		18,900,000		−2,900,000
Total, decreases				−26,056,000
Total net change requested			+72	+21,915,400

EXPLANATION OF CHANGES

Increases

Physician manpower

Research grants.—The requested increase of $102,000 will support investigations related to medical education and the general strengthening of manpower in the health professions, particularly the numbers and types of ancillary personnel and their training and utilization. Approximately 14 research projects will be supported in 1968 compared with 12 in 1967.

Direct operations.—The requested increase of 23 positions and $255,000 will permit expansion of the Division's efforts in the areas of physician education, physician supply and utilization, and educational facilities construction (10 positions) for which a $43,000,000 increase in grants is being requested in another appropriation in 1968.

Dental services and resources

Research grants.—The requested increase of $301,000 will support investigations in dental health such as epidemiological and socio-psychological aspects of cleft lip and palate, and attitude change with regard to dental care and preventive measures. Approximately 43 research projects will be supported compared with 41 in 1967.

Fellowships.—The requested increase of $50,000 will provide for three additional fellowships and one career development award for research in the basic dental behavioral and clinical sciences and in public health dentistry. Three fellows were supported in 1967.

Research training grants.—The requested increase of $100,000 will extend training in research into the prevention and control of dental disease and disorders, community disorders, and the behavioral sciences. One new program will be established in 1968.

Dental auxiliary utilization grants.—The requested increase of $351,000 will provide undergraduate dental students with a longer and more comprehensive chairside experience with auxiliaries under professional supervision.

Continuing education grants.—The requested increase of $100,000 will support two additional grant programs to improve teaching methodology and to develop appropriate systems to bringing continuing education to practicing dentists everywhere. Two grant programs were supported in 1967.

Direct operations.—The requested increase of 24 positions and $392,000 is for the following programs: Seven positions and $87,000 for the Division's support of State and local fluoridation efforts and in periodontal diseases; five positions and $90,000 for assessment studies and education research in manpower supply and utilization; seven positions and $130,000 for research activities in cleft lip and palate, malocclusion and periodontal disease and for continuing education activities at the Dental Health Center; and five positions and $85,000 for additional cooperative efforts with State and local health departments, dental schools and other agencies in dental technology research and development.

Nursing services and resources

Research grants.—The requested increase of $568,000 will support investigations in nursing education and nursing service, with the focus on patient-centered care, and on problems of nursing service administration and recruitment. Approximately 67 research projects will be supported in 1968 compared with 51 in 1967.

Fellowships.—The requested increase of $58,000 will provide for nine additional fellowships to nurses for research training at the pre- and post-doctoral levels looking toward fuller understanding and improvement of nursing care. Eighty-five fellows were supported in 1967.

Opportunity grants.—The requested increase of $4,250,000 will provide approximately 6,750 additional scholarships, through schools of nursing, to qualified high school graduates of exceptional financial need, who could not otherwise pursue a nursing career. Approximately 1,250 scholarships will be supported in 1967.

Direct operations.—The requested increase of 10 positions and $558,000 is for the following programs: Five positions and $57,000 are requetsted for general consultation and program support for comprehensive State and area planning for facilities, personnel and programs; five positions and $401,000 for manpower resources (1) to determine guidelines for the training and utilization of para-nursing personnel, and (2) to study the causes of low pay scales and poor working conditions of nurses; and $100,000 for contracts with State and local educational agencies and others to encourage qualified youths of exceptional financial need to complete secondary school and to enter the field of nursing.

Allied health professions manpower.—The requested increase of 13 positions and $136,000 will improve the capability of the Division to undertake a coordinated effort to determine shortages and needs in allied health manpower, to develop studies and demonstrations to improve educational techniques and curricula, and to provide needed consultation and technical assistance to educational institutions, professional groups and employers of allied health and public health workers.

Health manpower educational services

Health professions educational improvement grants.—The requested increase of $27,500,000 will provide for basic and special improvement grants to approximately 172 schools of medicine, dentistry, osteopathy, optometry and podiatry to improve the quality of their teaching. Most of the increase will be used to make special improvement grants to medical schools. Basic improvement grants will be increased by approximately $2,500,000 to a total of $32,500,000 for supporting additional teachers and providing teaching and scientific equipment. Special improvement grants will be awarded for the first time with a total of approximately $25,000,000 for schools whose applications are recommended by a national advisory council to strengthen areas of weakness which cannot now be accomplished through the basic grants.

Allied health professions traineeships.—The requested increase of $750,000 will provide traineeships to students in the allied health professions. The 1968 program level of $1,500,000 will train approximately 330 students.

Allied health professions educational improvement grants.—The requested increase of $6,965,000 will provide for educational improvement grants to junior colleges, colleges and universities to improve curricula, expand training and support faculty in the allied health professions. Approximately 650 institutions will be assisted.

Allied health professions new methods.—The requested increase of $800,000 will provide for grants to support projects to develop, demonstrate and evaluate curricula for training the new types of allied health professions personnel which will be needed as the organization and technology of health problems continue to change. Approximately 20 new projects will be supported.

Scholarships.—The requested increase of $4,170,000 will provide scholarships to students from low income families who, without this assistance, would be unable to pursue their courses of study in schools of medicine, dentistry, osteopathy, podiatry, pharmacy and optometry. These funds will support approximately 2,000 new first year students and will provide continued support to approximately 2,000 second year students.

Direct operations.—The requested increase of two positions and $47,000 will enable the Division to meet the additional workload resulting from rapid expansion of the Health Professions and Nursing Student Loan program.

Decreases

Payments to diploma schools of nursing.—Indications are that the $5,000,000 available in 1967 will not be fully utilized. On this basis, a reduction of $2,000,000 is reflected in 1968.

Grants to schools of public health.—The decrease of $250,000 will result in a proportional reduction in payments to the 13 schools participating in the program authorized by section 309 of the Public Health Service Act, effective July 1, 1967.

Project grants for graduate public health training.—In 1967, approximately 145 projects were supported in 85 schools of public health, nursing, engineering, medicine and dentistry. With the decrease of $500,000 in 1968, approximately 115 projects will be supported.

Health professions student loan program.—The decrease of $20,325,000 is attributable in part to a supplemental request in 1967 of $10,000,000, for a revolving fund, which is non-recurring in 1968 but which will be available in that year. The 1968 request of $15,000,000 together with revolving fund amounts will support approximately 21,000 students, the same number as were supported in 1967.

Nursing student loan program.—The decrease of $2,900,000 is attributable in part to a supplemental request in 1967 of $2,000,000, for a revolving fund, which is non-recurring in 1968 but which will be available in that year. The 1968 request $16,000,000 together with revolving fund amounts will support approximately 20,000 students; 17,000 were supported in 1967.

AUTHORIZING LEGISLATION

The legislative authority in Section 301 of the Public Health Service Act which provides for the award of grants for research, research training, and fellowships is included in the section of the justifications under the tab, "Preamble Paragraph" in Volume V.

Traineeship for professional public health personnel

"SEC. 306. (a) There are hereby authorized to be appropriated for the fiscal year ending June 30, 1957, and for each of the next twelve fiscal years, such sums as the Congress may determine, but not to exceed $4,500,000 for the fiscal year ending June 30, 1965, $7,000,000 for the fiscal year ending June 30, 1966, $8,000,000 for the fiscal year ending June 30, 1967, and $10,000,000 each for the fiscal year ending June 30, 1968, and the succeeding fiscal year, to cover the cost of traineeships for graduate or specialized training in public health for physicians, engineers, nurses, and other professional health personnel."

Project grants for graduate training in public health

"SEC. 309. (a) In order to enable the Surgeon General to make projects grants to schools of public health, and to other public or nonprofit private institutions providing graduate or specialized training in public health, for the purpose of strengthening or expanding graduate or specialized public health

training in such institutions, there are hereby authorized to be appropriated not to exceed $2,000,000 for each fiscal year in the period beginning July 1, 1960 and ending June 30, 1964, $2,500,000 for the fiscal year ending June 30, 1965, $4,000,000 for the fiscal year ending June 30, 1966, $5,000,000 for the fiscal year ending June 30, 1967, $7,000,000 for the fiscal year ending June 30, 1968, and $9,000,000 for the fiscal year ending June 30, 1969."

Grants to schools of public health

"SEC. 309. * * *

"(c) There are also authorized to be appropriated $5,000,000 each for the fiscal year ending June 30, 1968, to enable the Surgeon General to make grants, under such terms and conditions as may be prescribed by regulations, for provision, in public or nonprofit private schools of public health accredited by a body or bodies recognized by the Surgeon General, of comprehensive professional training, specialized consultive services, and technical assistance in the fields of public health and in the administration of State or local public health programs, except that in allocating funds made available under this subsection among such schools of public health, the Surgeon General shall give primary consideration to the number of federally sponsored students attending each such school."

Dental auxiliary utilization training grants and grants for continuing education of dentists

"SEC. 422. * * *

"(f) provide training and instruction and establish and maintain traineeships, in the Institute and elsewhere in matters relating to the diagnosis, prevention, and treatment of dental diseases and conditions with such stipends and allowances (including travel and subsistence expenses) for trainees as he may deem necessary, the number of persons receiving such training and instruction, and the number of persons holding such traineeships, to be fixed by the Council, and, in addition, provide for such training, instruction, and traineeships through grants, upon recommendation of the Council, to public and other nonprofit institutions."

Health professions student loans

"SEC. 742. (a) There are hereby authorized to be appropriated to the Secretary of Health, Education, and Welfare to carry out this part (other than section 744) $5,100,000 for the fiscal year ending June 30, 1964, $10,200,000 for the fiscal year ending June 30, 1965, $15,400,000 for the fiscal year ending June 30, 1966, and $25,000,000 each for the fiscal year ending June 30, 1967, and the two succeeding fiscal years. There are further authorized to be appropriated to the Secretary such sums for the fiscal year ending June 30, 1970, and each of the two succeeding fiscal years as may be necessary to enable students who have received a loan under this part for any academic year ending before July 1, 1969, to continue or complete their education. Sums appropriated pursuant to this subsection shall be allotted among loan funds at schools which have established loan funds under this part."

Loans for students of veterinary medicine

"SEC. 3. (a) Subsection (a) of section 740 of the Public Health Service Act (42 U.S.C. 294) is amended by striking out 'or optometry' and inserting in lieu thereof 'optometry, or veterinary medicine'.

"(b) Paragraph (4) of subsection (b) of such section 740 is amended by striking out 'or doctor of optometry or an equivalent degree' and inserting in lieu thereof 'doctor of optometry or an equivalent degree, or doctor of veterinary medicine or an equivalent degree'.

"(c) Subsection (b) of Section 741 of the Public Health Service Act (42 U.S.C. 294a) is amended by striking out 'or doctor of optometry or an equivalent degree' and inserting in lieu thereof 'doctor of optometry or an equivalent degree, or doctor of veterinary medicine or an equivalent degree'.

"(d) Subsection (c) of such section 741 is amended by striking out 'or optometry' and inserting in lieu thereof 'optometry, or veterinary medicine'.

"(e) Section 742(a) of the Public Health Service Act is amended by inserting immediately after the first sentence thereof the following new sentence: 'In addition to the sums authorized to be appropriated by the preceding sentence, there are authorized to be appropriated $500,000 for the fiscal year ending June 30, 1967, $1,000,000 for the fiscal year ending June 30, 1968, and $1,500,000 for the fiscal year ending June 30, 1969, which sums shall be available for carrying out this part (other than section 744) solely with respect to students of veterinary medicine.'"

Payments to schools to cover certain costs incurred in making student loans from borrowed funds

"SEC. 744. * * *

"(b) If a school borrows any sums under this section, the Secretary shall agree to pay to the school (1) an amount equal to 90 per centum of the loss to the school from defaults on student loans made from such sums, (2) the amount by which the interest payable by the school on such sums exceeds the interest received by it on student loans made from such sums, (3) an amount equal to the collection expenses authorized by section 740(b)(3) to be paid out of a student loan fund with respect to such sums, and (4) the amount of principal which is canceled pursuant to section 741 (d) or (f) with respect to student loans made from such funds. There are authorized to be appropriated without fiscal year limitation such sums as may be necessary to carry out the purposes of this subsection."

Health professions student loan revolving fund

"SEC. 744. (d) * * *

"(4) In addition to the sums authorized to be appropriated by section 742(a), there are authorized to be appropriated to the fund established by this subsection $10,000,000 for the fiscal year ending June 30, 1967."

Grants to improve the quality of schools of medicine, dentistry, osteopathy, optometry, and podiatry

"SEC. 770. There are authorized to be appropriated $20,000,000 for the fiscal year ending June 30, 1966, $40,000,000 for the fiscal year ending June 30, 1967, $60,000,000 for the fiscal year ending June 30, 1968, and $80,000,000 for the fiscal year ending June 30, 1969, for grants under this part to assist schools of medicine, dentistry, osteopathy, optometry, and podiatry to improve the quality of their educational programs."

Scholarship grants to schools of medicine, osteopathy, dentistry, optometry, podiatry, or pharmacy

"SEC. 780. (a) The Surgeon General shall make grants as provided in this part to each public or other nonprofit school of medicine, osteopathy, dentistry, optometry, podiatry, or pharmacy, which is accredited as provided in section 721 (b)(1)(B) or section 773(b)(2), for scholarships to be awarded annually by such school to students thereof.

"(b) The amount of the grant under subsection (a) to each such school shall be equal to $2,000 multiplied (1) for the fiscal year ending June 30, 1966, by one-tenth of the number of full-time first-year students of such school; (2) for the fiscal year ending June 30, 1967, by one-tenth of the number of full-time first-year students and second-year students of such school; (3) for the fiscal year ending June 30, 1968, by one-tenth of the number of full-time first-year students, second-year students, and third-year students of such school; and (4) for the fiscal year ending June 30, 1969, by one-tenth of the number of full-time students of such school. For the fiscal year ending June 30, 1970, and for each of the two succeeding fiscal years, the grant under subsection (a) shall be such amount as may be necessary to enable such school to continue making payments under scholarship awards to students who initially received such awards out of grants made to the school for fiscal years ending prior to July 1, 1969."

Grants to improve the quality of training centers for allied health professions

"SEC. 792. (a) There are authorized to be appropriated $9,000,000 for the fiscal year ending June 30, 1967; $13,000,000 for the fiscal year ending June 30, 1968; and $17,000,000 for the fiscal year ending June 30, 1969; for grants under this section to assist training centers for allied health professions to develop new or improved curriculums for training allied health professions personnel and otherwise improve the quality of their educational programs."

Traineeships for advanced training of allied health professions personnel

"SEC. 793. (a) There are authorized to be appropriated $1,500,000 for the fiscal year ending June 30, 1967; $2,500,000 for the fiscal year ending June 30, 1968; and $3,500,000 for the fiscal year ending June 30, 1969; to cover the cost of traineeships for the training of allied health professions personnel to teach health services technicians or in any of the allied health professions, to serve in any of such professions in administrative or supervisory capacities, or to serve in allied health professions specialties determined by the Surgeon General to require advanced training."

Grants for development of new methods

"SEC. 794. There are authorized to be appropriated $750,000 for the fiscal year ending June 30, 1967; $2,250,000 for the fiscal year ending June 30, 1968; and $3,000,000 for the fiscal year ending June 30, 1969; for grants to public or nonprofit private training centers for allied health professions for projects to develop, demonstrate, or evaluate curriculums for the training of new types of health technologists."

Grants for improvement in nurse training

"SEC. 805. (a) There are authorized to be appropriated for grants to public and non profit private diploma, collegiate and associate degree schools of nursing to assist them in meeting the additional costs of projects of limited duration which will strengthen, improve, or expand their programs to teach and train nurses, $2,000,000 for the fiscal year ending June 30, 1965, $3,000,000 for the fiscal year ending June 30, 1966, $4,000,000 for the fiscal year ending June 30, 1967, and each of the next two fiscal years, and such sums for each of the next four fiscal years as may be necessary to complete projects for which a grant was made under this section from funds appropriated for the fiscal year ending June 3, 1969, or any preceding year."

Payments to diploma schools of nursing

"SEC. 806 (a) In order to prevent further attrition and promote the development of public and nonprofit private diploma schools of nursing, there are hereby authorized to be appropriated $4,000,000 for the fiscal year ending June 30, 1965, $7,000,000 for the fiscal year ending June 30, 1966, and $10,000,000 for the fiscal year ending June 30, 1967, and each of the two succeeding fiscal years, to defray a portion of the cost of training students of nursing whose enrollment in such schools can be reasonably attributed to the provisions of this title."

Traineeships for advanced training of professional nurses

"SEC. 821. (a) There are authorized to be appropriated $8,000,000 for the fiscal year ending June 30, 1965, $9,000,000 for the fiscal year ending June 30, 1966, $10,000,000 for the fiscal year ending June 3, 1967, $11,000,000 for the fiscal year ending June 30, 1968, and $12,000,000 for the fiscal year ending June 30, 1969, to cover the cost of traineeships for the training of professional nurses to teach in the various fields of nurse training (including practical nurse training), to serve in administrative or supervisory capacities, or to serve in other professional nursing specialties determined by the Surgeon General to require advanced training."

Nursing student loans

"SEC. 824. There are authorized to be appropriated to the Secretary of Health, Education, and Welfare for Federal capital contributions to student loan funds pursuant to section 822(b)(2)(A) $3,100,000 for the fiscal year ending June 30, 1965, $8,900,000 for the fiscal year ending June 30, 1966, $16,800,000 for the fiscal year ending June 30, 1967, $25,300,000 for the fiscal year ending June 30, 1968, $30,900,000 for the fiscal year ending June 30, 1969, and such sums for the fiscal year ending June 30, 1970, and each of the two succeeding fiscal years as may be necessary to enable students who have received a loan for any academic year ending before July 1, 1969, to continue or complete their education. Sums appropriated pursuant to this section for any fiscal year shall be available, in accordance with agreements under this part, for Federal capital contributions to schools with which such agreements have been made, to be used, together with deposits in such fund pursuant to section 822(b)(2)(B), for establishment and maintenance of student loan funds."

Nursing student loan revolving fund

"SEC. 827. (d) * * *

"(4) In addition to the sums authorized to be appropriated by section 824, there are authorized to be appropriated to the fund established by this subsection $2,000,000 for the fiscal year ending June 30, 1967."

Opportunity grants for nursing education

"SEC. 861. * * *

"(b) There are hereby authorized to be appropriated $3,000,000 for the fiscal year ending June 30, 1967, $5,000,000 for the fiscal year ending June 30, 1968, and $7,000,000 for the fiscal year ending June 30, 1969, to enable the Secretary to make payments to schools of nursing that have agreements with him entered into

under section 867, for use by such schools for payments to undergraduate students for the nursing educational opportunity grants awarded to them under this part. Sums appropriated pursuant to this subsection for any fiscal year shall be available for payment to institutions until the close of the fiscal year succeeding the fiscal year for which they were appropriated."

Explanation of transfers

	1967 estimate	Purpose
Comparative transfer from—		
"Injury control"	$102,600	To incorporate the staff and responsibilities of existing health manpower activities in the Public Health Service under the new Bureau created by the reorganization of the Service.
"Chronic diseases"	397,400	
"Community health services"	101,238,000	
"Communicable diseases"	266,600	
"Dental services and resources"	8,604,000	
"Nursing services and resources"	24,364,000	
"Construction of health educational facilities"	722,000	
"Office of the Surgeon General, salaries and expenses"	53,000	

PHYSICIAN MANPOWER

Introduction

The Division of Physician Manpower was activated on January 1, 1967. Its mission is to provide national leadership for the improvement of the quality, quantity, utilization and effectiveness of physician manpower in the United States. Under the authority of the "Health Professions Educational Assistance Act of 1963", as amended, this Division administers a grants program to assist in the construction of teaching facilities for the training of physicians, dentists, pharmacists, optometrists, podiatrists, veterinarians, nurses, and other professional public health personnel. Further, under the "Nurse Training Act of 1964" and the "Allied Health Professions Personnel Training Act of 1966", it administers a grants program to assist in the construction of new and replacement or rehabilitation of existing teaching facilities for nurses and allied health professions. The Division also has a program responsibility for the professional aspects of "Basic and Special Educational Improvement Grants" budgeted in the Division of Health Manpower Educational Services to improve the quality of education in schools of medicine and osteopathy.

In 1960, 261,424 physicians and osteopaths were in active private practice in the United States, which represented an overall physician-to-population ratio of 141 per 100,000 population. In 1965, 285,550 physicians and oesteopaths were in active private practice and the overall ratio had increased to 143 per 100,000 population. The above data on practicing physicians and osteopaths includes graduates of Canadian and other foreign medical schools who are in private practice in the United States. It should be emphasized at this point that the physician-to-population ratio is only one factor in determining the availability of adequate physician care for all Americans. The geographic distribution, supply and utilization, specialty areas of training, and quality education of physicians are also important questions in determining a meaningful index. This Division is concerned with all of the factors involving physician manpower and will develop programs at the national level to provide for improvements in adequate physician manpower services. The major effort will be to develop programs at the national level which will increase the number of physicians and osteopaths in active private practice from 285,550 in 1965 to approximately 324,000 by 1972.

Along with these efforts to increase the quantity of available physician manpower, the Division will implement programs to improve the quality of basic medical education; assess the utilization and supply of the manpower available; and provide recommendations for continuing education.

The objective of preparing more qualified physicians is being accomplished by (1) grants programs for the construction of new, and expansion of existing, teaching facilities leading to the professional Doctor of Medicine (M.D.) and Doctor of Osteopathy (D.O.) degrees; (2) manpower studies on physician requirements; (3) research grants in the general area of health manpower; (4) research and development, demonstration, consultation and assistance in the fields of curricula development and continuing education for physicians; and

(5) major emphasis on the assessment of geographical distribution, supply and utilization in terms of future requirements.

To accomplish these ends, the Division is organized into four major Branches. They are Physician Supply and Utilization, Physician Education, Educational Facilities, and Continuing Education. The funding requirements for each of the Branches, as well as the requirements for support of research grants are discussed below:

Research grants

	1967 estimate		1968 estimate		Increase or decrease	
	Number	Amount	Number	Amount	Number	Amount
Noncompeting continuations	8	$443,000	6	$298,000	−2	−$145,000
New grants	4	218,000	8	465,000	+4	+247,000
Total	12	661,000	14	763,000	+2	+102,000

The need to expand the supply and improve the utilization of health manpower has stimulated tremendous interest in research into the various facets of physician education and the general strengthening of manpower in the health professions.

At present, we are studying the effective use of medical manpower to assess the rate at which designated skills of clinical specialties are acquired. With the results of this research we expect to move closer to answering the question of how to produce improvement in quality training in shorter training periods. Other studies include one aimed at developing objective criteria of performance for the practicing physician, one on continuing education of physicians in which it is hoped to establish the effectiveness of home study using programmed texts, and one related to the occupational structure of paramedical personnel. It is expected that the increasing demands, standards and costs which have characterized the health field will continue, and that staffing of these services will increase in numbers as well as in categories. The process of identifying what facets in the delivery of health care must be performed by physicians and what tasks may be performed by ancillary groups must continue. Investigation in this area, for which much information is not available, is therefore urgently needed and will be accelerated.

Direct operations

	1967 estimate		1968 estimate		Increase or decrease	
	Positions	Amount	Positions	Amount	Positions	Amount
Personnel compensation and benefits	87	$820,000	110	$1,059,000	+23	+$239,000
Other expenses		1,775,000		1,859,000		+84,000
Total	87	2,595,000	110	2,918,000	+23	+323,000

Physician supply and utilization

The objectives of the physician supply and utilization program are to secure sound statistical information on the availability of active physician manpower in the United States and to determine the accurate geographical distribution of this manpower. Present information on physician supply and utilization is very uncertain. Much work has been done by the American Medical Association and other public and private organizations in this area. However, the lack of common objectives and goals has resulted in inadequate data. Because of the rapidly changing manpower structure, due to changing concepts in the delivery of health care, social and economic changes, and technological advances, it is necessary to develop a responsive information system to produce and retrieve accurate data on national, regional and local physician manpower. These objectives will be achieved through contracts and grants to public and non-profit organizations, and by cooperative working agreements with professional socie-

ties, schools of medicine, and other non-profit medical research groups. A start is being made in 1967 to provide information on the supply of trained physician manpower by specialty and geographical distribution.

The data supplied by such a system is needed by regions, medical schools, hospitals, long-term care facilities, medical societies and the total medical community in every state. The whole national health effort must have a scientific analysis of its present physician manpower capability and a projection of its future requirements in the supply and efficient use of physicians. The Nation's health manpower requirements, to provide adequate health care for all of our people, have never been established. This activity's goals are to determine how many physicians are in active practice, their geographical distribution, utilization etc., in order to project future requirements based upon such factors as population growth, social and economic changes, and technological advances and changing concepts in the patterns of the delivery of health services. Alternate plans for various levels of health care services with available physician manpower will be developed. Special studies will be undertaken to determine the required training and supply and utilization of physician manpower needed for the delivery of adequate health care.

In order to meet an ever-increasing national health manpower crisis, the improved utilization of all health disciplines and all health facilities is essential. One of our most important activities will be to assist in determining the health services that only physicians can provide. We propose to consult and work very closely with the medical leadership of the country in attempting this definition. Their assistance will guide us in developing information on physician supply and utilization. Information obtained from the foregoing studies will be made available to all interested organizations and individuals in the health manpower area.

Another important function will be to maintain surveillance over the progress made in producing additional teaching facilities and in increasing enrollments, and the extent to which additional facilities are required in the various States or geographical areas of the country.

An increase of six positions is requested to administer this program. These positions will provide leadership in stimulating research projects to identify the most effective methods for establishing a national physician manpower data referral system so that adequate health care can be provided for all Americans.

Physician education

The physician education activity brings together for the first time many of the diverse elements of physician education activities that existed throughout the Service, Department, and other areas of the Federal government. The education of the Nation's physicians has been referred to by some distinguished men of medicine as too long in length (25 years from kindergarten through medical school) and lacking in its responsiveness to provide quality and comprehensive medical care to the American people. This Branch will concentrate its efforts on improving the quality of the secondary, collegiate, graduate and specialty education curricula that lead to the development of physicians who can provide improved health care services for our people. The program will have intramural and extramural activities. By contracts, consultation, advice and cooperative working agreements with universities, professional societies and other non-profit research associations, it will identify curricula needs, improvements, and new areas of medical study. Superfluous curricula will be identified through these cooperative efforts and newly developed curricula and instruction techniques will be recommended to prepare physicians for today's and future health service needs. A contract to develop ways and means of returning inactive women physicians to medical practice or administration through appropriate recruitment mechanisms and to develop a curricula of refresher courses in continuing education for these inactive women physicians is presently underway. This contract, in the amount of $97,000 with the Presbyterian Medical Center in San Francisco, California, will be continued in 1968. It is expected that many inactive women physicians will be influenced to return to service as a result of this effort.

The different types of physician education needed to provide direct patient care at a predetermined level of health services for all American people will be programmed at the preliminary medical education process. The problem of what basic medical education requirements foreign-trained physicians should have completed is also of interest to this program. We shall draw upon the advice of the country's leading authorities in the field of medical education when developing recommendations for improvements.

An increase of seven positions is requested for this activity in 1968 to administer the growing program. These positions will be used to provide leadership for consultation with medical schools, medical societies, and other non-profit medical and educational research organizations, to develop and recommend improvements for a quality curricula from the high school level through medical school. In 1968, this work will begin to produce criteria and standards useful in the development of techniques and courses of instruction designed to improve the quality of medical education.

Educational facilities (Construction)

The Educational Facilities Branch administers the grant program for the construction of teaching facilities for students pursuing studies in the health professions, nursing, and allied professions. Grants are made to public or private non-profit schools of medicine, dentistry, nursing, osteopathy, pharmacy, optometry, podiatry, veterinary medicine, public health, and the allied health professions. The Branch provides technical assistance and consultation to professional health schools regarding such problems as the need for proposed construction; the relationship of the proposed construction to the program of the sponsoring agency; and the design and functional layout of facilities. It arranges for site visits of outside consultants to schools seeking Federal aid for the purpose of securing basic data and information which will enable the National Advisory Council on Education in the Health Professions and the Surgeon General to evaluate the validity of the project and its relative priority and urgency, and performs staff work essential to the presentation of such projects to the Council and the Surgeon General.

Guide materials pertaining to the design, construction, and equipping of professional and allied health schools are prepared by the Branch. The staff of professional and technical employees is constantly studying the changing requirements of teaching programs and is kept advised of changing teaching concepts by the Division responsible for the professional schools involved. The Branch also reviews and evaluates applications and determines conformance with statutory and policy requirements such as the relative effectiveness of the project in increasing first-year enrollment, availability of local finances, conformance of architectural plans and specifications to established requirements, and the need for constructing, expanding or rehabilitating the particular school involved. Regulations, procedures, and policies applicable to the problems and programs of the several types of eligible professional schools are under constant development or review.

An increase of ten positions is requested to provide for processing the expanded workloads stemming from the large increase in the construction of teaching facilities for the health professions, the accelerated activities in the construction of nursing facilities and the initiation of construction of teaching facilities under the recently enacted "Allied Health Professions Personnel Training Act of 1966."

Continuing education

Problems of continuing medical education for the Nation's physician manpower are the concern of this Branch. National leadership is provided through its intramural and extramural program operations to encourage and promote improvements in the quality of continuing medical education for physicians. New and current demonstration and research projects will carry out studies of educational approaches in the field of continuing medical education. During 1966 and 1967, in support of the recommendations made by the President's Commission on Heart Disease, Cancer, and Stroke, demonstration and research projects were begun, and are being conducted, to provide a high quality of continuing medical education. Special attention is now being given to the establishment of demonstration centers at medical schools where outstanding education resources are available. These centers conduct research, develop new educational approaches, evaluate the impact on medical practice, and train directors of continuing education. For example, we are now engaged in a project with the University of Washington School of Medicine to establish a demonstration center in continuing education for physicians in the Pacific Northwest. This center is determining the continuing education needs of physicians in this area and planning programs to satisfy them. Procedures involved in clinical communication systems are being evaluated by the center's staff in order to improve medical care of patients through modification of current procedures. Two continuing education programs being investigated at the center will ascertain why physicians do, or do not, participate in such programs of education.

Another project with the University of Southern California School of Medicine is examining four different types of continuing education programs conducted by this institution. The purpose of the study is to evaluate each of four programs (lecture-demonstration course, lecture-workshop course, correspondence course, and programmed correspondence course) in order to determine which is the most effective method of teaching with respect to learning content and the costs involved.

Five demonstration centers will be operating by the end of 1967 to provide support for continuing education, pilot studies and reesarch on improvement of continuing education, and training of persons who have responsibility for administering these programs.

Within the overall increase of $323,000 for direct operations, $255,000 is for 23 positions new in 1968 to carry out the expanded programs described above and a net of $68,000 is for annualization of increases authorized in 1967.

DENTAL SERVICES AND RESOURCES

Introduction

The goal of the Division of Dental Health is to achieve and maintain the highest possible standards of dental health for the entire nation. Toward this end, it works closely with state and local health agencies and all the leading health professional organizations.

The programs of the Division fall within four broad areas of activity—the development of an adequate supply of professional dental manpower resources and the more productive utilization of those resources; the development, through applied research, of practical methods for applying new knowledge of the prevention and control of disease; the securing of professional and public support for prevention and control measures, and the assurance of access to dental services for all people.

Basic to the Division's manpower development activities are ongoing analyses of the supply and distribution of dentists in relation to changing patterns of need and demand for service. Since the shortages these studies reveal are critical, the Division augments strong programs to increase the numbers of dentists in training with action to assure greater and more productive use of auxiliaries.

For example, under one of the projects supported by the Division's training grants program, 48 of the nation's 49 dental schools provide their dental students with training in the use of chairside assistants. These programs are already proving their worth; they need to be expanded and strengthened. At the same time, the Division is conducting a detailed study of auxiliary utilization to determine the optimum make-up of the dentist/auxiliary team and the duties the dentist should assign to the team members to achieve the most effective working relationship. This program, located at Louisville, Kentucky, offers a uniquely designed clinical setting for experiments in the practice of team dentistry. The project has already proven that the dentist's productivity can be increased 50% through the use of especially trained chairside assistants. Further experiments in team make-up hold the promise of more than doubling the number of patients that can be treated by the practitioner.

Through a program of fellowships the Division is supporting professional efforts to increase the number of dentists training for careers in applied research, and is working with component organizations of the dental profession to assure adequate supplies of personnel such as assistants, hygienists, and laboratory technicians.

To make certain that the American people benefit directly from the advance of scientific knowledge, the Division supports, through grants, a widening range of research directed to the improvement of methodology and technology and to their practical demonstration. Grant-supported extramural research includes experiments with a spray-on method of applying fluoride and a study of the durability of different filling materials. Division-conducted research, much of it housed in the Dental Health Center, embraces epidemiological studies of crippling conditions such as cleft lip and palate and malocclusion to develop methods for their prevention and control; tests of dental materials; and the development of instruction materials and automated teaching devices. The Division is also a pioneer in the design and distribution of up-to-date continuing education courses for practitioners to ensure the incorporation of the latest knowledge and techniques in actual practice. Grants authorized in 1967 enabled the Division for the first time to institute programs for extending the dentist's opportunity for training without serious loss of time from his practice. For the

first time the practitioner has an opportunity to update his knowledge at a facility in reasonable proximity to his practice.

The Division's efforts to promote use of fluoridation are increasingly successful—an outstanding example is the recent National Dental Health Assembly. In the past year fluoridation proposals were accepted in 60% of the referenda held. Fluoridation support will be further strengthened next year. In addition, the Division is gearing up for the launching of a national program for the prevention and control of periodontal disease, the leading destroyer of teeth among adults.

The Division provides professional and administrative support to the community action programs of the Office of Economic Opportunity. It is conducting research to analyze public attitudes toward dental health and dental care, and is using all the facts at its command in efforts to develop effective methods of educating the public in matters of health. In these, as in all the preceding programs, the public itself is the focus of the Division's concern and the ultimate beneficiary of all its activities.

Research grants

	1967 estimate		1968 estimate		Increase or decrease	
	Number	Amount	Number	Amount	Number	Amount
Noncompeting continuations	23	$529,000	26	$935,000	+3	+$406,000
New grants	18	584,000	17	498,000	−1	−86,000
Supplements	(3)	39,000	(2)	20,000	(−1)	−19,000
Total	41	1,152,000	43	1,453,000	+2	+301,000

A principal challenge before the Division is the development of applied dental research on: ways of increasing the productivity of dental manpower; more efficient movable dental equipment; better ways of teaching dental personnel; the clinical durability of fillings; and economic and social factors related to dental disorders. In each of these areas, research grants will be used to complement the intramural program effort.

At the present time, applied research studies supported by grants include the design of a mathematical model for dental insurance plans; a spray application of a fluoride solution to the teeth to reduce tooth decay; evaluation of a cleft palate surgical closure technic; the effect of community fluoridation on dental practice; studies on dental amalgam and gold foil filling in patients' teeth; a method to improve dental health education in the public schools; studies of people's attitudes toward dental health and dental care; and the development of a new instrument to record chewing motions as an aid in diagnosis.

Research projects and programs are planned in the epidemiological and socio-psychological aspects of cleft lip and palate, attitude change with regard to dental care and preventive measures, improved methods of recruitment and selection of dental students and auxiliaries, and other studies related to dental public health. The request for $1,453,000 will provide for 43 projects including continuation of current projects and 17 new grants.

Fellowships:

1967 estimate	$50,000
1968 estimate	100,000
Increase or decrease	+50,000

This program, now in its second year, supports candidates preparing for research careers in dental public health. As in other manpower-deficient areas of bio-medical research, it has been proven successful to assist qualified, promising students to meet tuition and living expenses while they are receiving specialized education and practical experience. In such fields as epidemiology, dental educational research, medical sociology, and community dentistry there is unusual demand for workers having these skills to seek the establishment of training programs through grants to institutions. However, in areas where the demand is more limited, where individual interests and qualifications do not match on-going training programs in a particular field, the most suitable mechanism for providing support is the research fellowship. Where dental health

workers have completed their formal training, but are in need of additional reasearch experience, some additional funds will be used in the form of research career development awards.

During 1967, funds are assisting three promising students to pursue studies in advanced research in such fields as dental epidemiology, dental educational research, dental economics and applied clinical research.

The $100,000 requested in 1968 will support three additional fellowships and one career development award for advanced postgraduate training of a selected student, for a total of seven awards in 1968.

Training grants

	1967 estimate	1968 estimate	Increase or decrease
Research training	$200,000	$300,000	+$100,000
Dental auxiliary utilization	2,649,000	3,000,000	+351,000
Continuing education	100,000	200,000	+100,000
Total	2,949,000	3,500,000	+551,000

Research training

	1967 estimate		1968 estimate		Increase or decrease	
	Number	Amount	Number	Amount	Number	Amount
Noncompeting continuations	2	$62,000	3	$183,000	+1	+$121,000
New grants	1	130,000	1	107,000	------	−23,000
Supplementals	(1)	8,000	(1)	10,000	------	+2,000
Total	3	200,000	4	300,000	+1	+100,000

The research training program of the Division enters its third year in 1968. There is a rapidly broadening interest in research in dental public health. Applied research activities made possible by the Division's extramural grant program have so increased the demand for research personnel that it can only be met through expansion of research training opportunities and a concerted effort to recruit talented people to the field.

In its first year of participation, the Division instituted research training programs in dental epidemiology and in dental education techniques. In 1967 and 1968 the program will be extended to include important training in research into the prevention and control of dental diseases and disorders, community dentistry, the behavioral sciences and public health administration.

The requested increase of $100,000 will permit the establishment of one new program in 1968, bringing the total number of programs to four.

Dental auxiliary utilization

One of the most practical ways of increasing the productivity of dentists is to increase their use of chairside dental assistants. Data from evaluation studies of the program show that dental students are far more productive in school during their training period in the use of chairside assistants than they are without assistants. Further, studies of dentists formerly under the program and now in practice show similar increased productivity. In view of the rising demands upon dentists for more dental services, all future graduates of dental schools should be thoroughly trained in using assistants for maximum productivity of the dental force.

In 48 of the 49 dental schools in the United States, senior dental students now average 100 hours of clinical instruction using chairside assistants. In 32 schools, about half of the junior students receive some basic experience. So successful has this program been that the Council on Dental Education of the American Dental Association now lists training of dental students to use dental assistants as a requisite for accreditation of all dental schools. The advisory committee to the program, however, has assessed the training now available as too limited and has recommended longer periods of clinical training for senior

students and more didactic and clinical training for lower grades. The increase will provide undergraduate dental students with more effective programs.

Continuing education

The obstacles faced by practicing dentists in keeping up-to-date on new scientific advances are many, and the solution to developing a sound continuing education system for all dentists will depend upon solving complex problems. In 1967, a start was made when two dental institutions received grants to extend their continuing education capabilities.

What is needed most is a practical nationwide system of providing practicing dentists with lifelong learning. Whenever possible, such education should be provided in the dentist's home town and where feasible, in the office, hospital, or clinic where he works. One drawback is that one-half of the States have no dental schools, and even in those that do, many dental practitioners must travel great distances and lose much time from their practices to participate in the continuing education programs offered.

The increase of $100,000 would support two additional grant programs, bringing the total to four in 1968, to improve teaching methodology and continue the development of appropriate systems of bringing continuing education to practicing dentists everywhere. In order to develop a comprehensive continuing education program which will have a statewide impact, each grant should average approximately $50,000.

Direct operations

	1967 estimate		1968 estimate		Increase or decrease	
	Positions	Amount	Positions	Amount	Positions	Amount
Personnel compensation and benefits	249	$2,608,000	273	$2,858,000	+24	+$250,000
Other expenses		1,665,400		1,872,400		+207,000
Total	249	4,273,400	273	4,730,400	+24	+457,000
SUMMARY OF PROGRAM						
General consultation and program support	45	720,400	45	719,300		−1,100
Regional offices	19	258,000	19	257,800		−200
Disease prevention and control	27	504,000	34	590,100	+7	+86,100
Dental care administration	14	230,000	14	229,600		−400
Manpower supply and utilization	71	1,227,000	76	1,322,500	+5	+95,500
Dental health center	63	1,130,000	70	1,322,200	+7	+192,200
Research and development in dental technology	10	204,000	15	288,900	+5	+84,900
Total	249	4,273,400	273	4,730,400	+24	+457,000

	1967 estimate		1968 estimate		Increase or decrease	
	Positions	Amount	Positions	Amount	Positions	Amount
General consultation and program support	45	$720,400	45	$719,300		−$1,100

The goal of the Division is to provide the leadership and support for programs that will achieve and maintain optimal dental health for every person in the United States. Toward that end, the Division conducts and supports programs that develop the Nation's dental resources, improve dental manpower productivity, increase the development of applied research and the application of dental technics, prevent and control dental diseases, advance the organization, delivery and financing of dental services, and extend the training and continuing education of dental personnel.

There are seven operating branches, an applied research laboratory in San Francisco, and a manpower research facility at Louisville.

The Division also provides public information services, conducts research and research training grants programs, a career development program, and program planning and administative activities—all of which are included in this activity.

The decrease of $1,100 is due to one less day's pay in 1968.

	1967 estimate		1968 estimate		Increase or decrease	
	Positions	Amount	Positions	Amount	Positions	Amount
Regional offices	19	$258,000	19	$257,800	.....	−$200

The Division has a professional staff in each of the nine regional offices to provide assistance to state, local and other health agencies in developing various dental programs.

The regional office staff serves as field liaison for all Division grants programs and for implementing the dental aspects of the Health Professions Educational Assistance Act.

The regional staff, working closely with program personnel, is developing new methods of evaluating state and local dental programs. In addition, they provide guidance and assistance to the Community Action Program's Head Start projects at the regional and local levels, as provided for under an agreement between the Public Health Service and the Office of Economic Opportunity.

This activity will remain at the same level in 1968. The decrease of $200 is due to one less day's pay in 1968.

	1967 estimate		1968 estimate		Increase or decrease	
	Positions	Amount	Positions	Amount	Positions	Amount
Disease prevention and control	27	$504,000	34	$590,100	+7	+$86,100

The "National Dental Health Assembly, Emphasis: Fluoridation" has been one of the forceful stimulants in the increased adoption of fluoridation throughout the Nation. About 47 percent of all people served by community water supplies now drink fluoridated water. Of these 70 million people, more than 88 percent are served by communities which have scientifically adjusted the fluoride level. This does not include the fluoridation of the water supplies of Detroit, Michigan—passed by referenda in November but not yet implemented.

An increase of five positions and $59,000 is requested to step-up the Division's support of state and local fluoridation efforts. Consultation, training, and workshop guidance will be provided to regions, states, communities and civic leaders. In addition, a major effort to disseminate educational material through all forms of national communications media is planned.

The second major activity of this program is the application of measures to prevent and control periodontal disease. Current developmental studies indicate that we can now effectively attack this problem. The requested increase of $28,000 and two positions would permit testing control measures such as better home care and routine professional care by communtiy based demonstrations in selected places.

The decrease of $900 provides for one less day's pay in 1968.

	1967 estimate		1968 estimate		Increase or decrease	
	Positions	Amount	Positions	Amount	Positions	Amount
Dental care administration	14	$230,000	14	$229,600	.....	−$400

Prepaid dental insurance

Recent reports from the Division's dental insurance clearinghouse show that more than two million people in the United States are now covered by some type of dental insurance. The programs and benefits vary widely, but the trend in the numbers of plans and the number of people covered is unmistakable; 1966 showed an increase of 110 plans and 1,019,086 persons covered over 1965.

The Division has assisted in the orderly development of dental insurance plans over the past 15 years, and in large part the basic information needed to develop and operate such plans has been provided by Division personnel and the clearinghouse. Yet in many sections of the Nation, dental insurance still is not available, and the Division plans to extend its technical services so that more modern methods of financing dental care can be made available to more people, and especially to more children. Additional studies on factors which affect cost of care and utilization of plans will be carried out.

State and local dental health services

The comprehensive inventory of state and local dental health programs is continuing, with the most recent product being the revised edition of the *Digest of State Dental Health Programs.* Currently underway are studies of dental care programs in hospitals. This will be followed by similar inventories of dental programs in schools, public assistance agencies, custodial institutions, nursing homes and voluntary agencies. The compendium of these inventories is designed to provide a comprehensive resource of information on state and local dental health services for use by the public health agencies and the health professions.

The decrease of $400 is due to one less day's pay in 1968.

	1967 estimate		1968 estimate		Increase or decrease	
	Positions	Amount	Positions	Amount	Positions	Amount
Manpower supply and utilization	71	$1,227,000	76	$1,322,500	+5	+$95,500

This activity serves as the focus for dental resources, manpower supply and utilization and the development of dental educational programs and facilities to meet national manpower needs. In cooperation with other programs of the Public Health Service, the Division administers the dental aspects of the Health Professions Educational Assistance Act.

Resources analysis

The Division conducts and supports studies to assess dental manpower and facilities and estimates future needs. Studies are now being conducted on the supply, distribution and effective use of dental assistants, hygienists and laboratory technicians. Special studies on the characteristics of dentists and their patterns of practice are being conducted in collaboration with the National Board of Dental Examiners. In cooperation with the American Association of Dental Schools, the Division plans to obtain annually and analyze data on dental school costs, staffing, enrollment, faculty composition, administration and other basic information related to dental manpower and education. The increase requested will support those studies and studies on regional needs for dental personnel, with particular attention to rural and low income areas, training needs and career patterns of auxiliary personnel and inventories of dental speciality groups.

An increase of three positions and $50,000 is requested to support these activities.

Dental productivity study

Studies on ways to increase dental productivity have been underway since 1964 at the Dental Clinic Development Center in Louisville, Kentucky. This experimental program is designed to measure how dentists' time can be saved by delegating additional duties and responsibilities to chairside dental assistants. During 1965 and 1966, all clinical procedures usually performed by a dentists were identified and standardized. The amount of time it takes a dentist working with a dental assistant to perform a clinical procedure was determined for baselines, and a quality assessment was devised to evaluate each procedure. During 1967, in Phase II the dental assistants who participated

in Phase I will be trained to perform additional duties comparable to the baselines for quality established earlier. Upon completion of training, the performance of the dental assistants will be evaluated under controlled clinical conditions. The Division plans to increase the number of auxiliary personnel until each of the four teams is composed of one dentist and five dental assistants. This phase of the study will determine the additional functions that can be delegated to auxiliaries, as well as the effect of equipment and operatory designs on dental productivity.

Additional funds ($165,000) and 13 positions to support Phase II were received in 1967.

Development of dental auxiliaries

The Division staff includes expert consultants who provide guidance and assistance to schools and professional groups planning new training programs for dental assistants and dental hygienists. In addition, the Division supports eight experimental training programs designed to improve teaching methodology and curriculum content of dental assistants' training programs. Comparative studies of these experimental programs are yielding information that is being used by other dental assistants' schools throughout the country.

The Division will begin studies to determine the nature and extent of additional functions which can be delegated to dental hygienists, dental assistants and laboratory technicians. Such studies will include new evaluation methods and criteria related to such training.

Education research

In support of the national program to improve teaching methodology and strengthen dental school curricula in general, the Division conducts and supports studies in education research. Included in this activity are studies to improve the recruitment of well-qualified students to dental careers and teachers for dental schools. Various mechanical and electronic devices are being used to develop new teaching media and improved teaching methods for dental educators. In addition, studies are being carried out on the development of students' career interest, the process of professionalization during the dental school years, and subsequent career choices. An increase of two positions and $40,000 is requested for this program. With this increase the education research program will expand its activities through intramural and extramural projects in 1968 to include experimental studies in teaching media and methodology, curricular flexibility in dental education, and faculty recruitment and development.

An increase of $32,000 for annualization of positions authorized in 1967 is partially offset by a decrease of $26,500 for non-recurring equipment costs and one less day's pay in 1968.

	1967 estimate		1968 estimate		Increase or decrease	
	Positions	Amount	Positions	Amount	Positions	Amount
Dental Health Center	63	$1,130,000	70	$1,322,200	+7	+$192,200

The Dental Health Center is a national laboratory for applied dental research focusing on the dental education process, communications, methodology, advanced training in dental public health, dental epidemiology and clinical technology. The applied research activities of the Center are operated in tandem with the communication of findings to the profession and to the public. The Center is concerned with training or supporting the training of educators in new educational methods. It develops and supplies educational materials and systems which carry its research findings of others to audiences where they may be utilized for improving the health of the Nation. The fundamental purpose of the Dental Health Center is to improve dental care and preventive services in the community. With the expansion of the physical facility scheduled for completion in 1969, the Center soon can deduct its epidemiological and clinical studies and develop, test and demonstrate new and more effective educational methods in a facility specially designed for these purposes. The modest expansion envisioned for the Center's programs in the interim focuses attention on the dental health problems which are most critical in terms of prevalence or severity.

Continuing education

The present tempo of research, which is producing a constantly growing body of information of all facets of dental science and practice, underscores the need for life-long study and learning on the part of practicing dentists, dental administrators, and all dental auxiliaries. Satisfying the need for life-long learning is complicated by the dental manpower shortage which places greater demands on the practitioners' time. Thus, it is imperative that new and more efficient ways be found for getting new information to the dentists in their local environments.

Funds are requested to expand the continuing education program to (1) study and test the effectiveness of teaching machine programs, television and videotape presentation, and other new education-communication techniques and devices in the delivery of educational programs and courses for dentist; (2) construct a basic series of programed instruction courses for dentists and demonstrate their use; and (3) disseminate courses already developed and in various stages of preparation.

Dental caries

Approximately 45 million Americans live in areas not served by central water supplies and are thus deprived of the benefits of community fluoridation. The Division has been seeking alternative methods to protect the teeth of children living in these areas. Two of these methods show considerable promise. The first of these, the fluoridation of school water supplies, has been studied in pilot projects in rural areas of Pennsylvania, Kentucky and the Virgin Islands. The second consists of the self-administration of fluoride solutions under the supervision of dental auxiliaries or school teachers. Additional studies will be conducted to determine optimal amounts of fluorides for school fluoridation and the use of new fluoride agents and technics.

Cleft lip and palate

At least 6,000 babies are born in the United States each year with this birth defect. The Division is determining the number and distribution of multidiscipline diagnostic and treatment teams available to treat these defects. The infant death rate and cause of deaths among babies with facial clefts occurring in 28 States and two cities over a four-year period is being obtained as a follow-up of data obtained from the National Cleft Lip and Palate Intelligence Service (NIS).

A comprehensive study of 300 sets of twins, one or both of whom has a cleft of the lip or palate, who were identified through the NIS, is now getting underway. This study should provide a better insight into the relative importance of genetic and environmental factors associated with the occurance of clefts. Epidemiological studies conducted at the Center have already provided much new and valuable information about these and other birth defects. However, much more research is needed to determine why and how these defects occur and what public health measures might prevent them. The social, psychological and economic impact of a cleft lip and palate defect on the individual, his family, and the community demands an immediate acceleration of the Center's research activities in order to hasten the development of programs for preventing these tragic birth defects and for ensuring the availability of treatment for those that do occur.

Periodontal disease

Epidemiological and supporting laboratory studies conducted by the Center have demonstrated a definite and consistent relationship between oral hygiene status and the health of the soft and hard tissues supporting the teeth. The potential effectiveness of proper oral hygiene in the prevention and control of periodontal disease is being demonstrated by a continuing study being conducted at Mountain View, California. Increases requested will permit the investigation of new methods of personal oral hygiene and ways of getting people to use them. Data from these studies are essential for the planning and development of a major national program for the prevention and control of periodontal disease which attacks virtually all adults in this country and is the major cause of tooth loss after age 35.

Malocclusion

Malocclusion results from the improper alignment or arrangement of the teeth and jaws. Degrees of malocclusion range from minor imperfections to major jutting or recession of the jaws and teeth. Extensive malocclusion is crippling and psychologically injurious. Only meager information is available

on the prevalence and developmental history of these conditions. The Division will initiate a study in 1968 to determine the prevalence and severity of malocclusion in population groups and assess the potential public health use of selected control measures.

Additional funds ($85,000) and five positions were received in 1967 to support on-going programs at the Center. In 1968, a requested increase of four positions and $80,000 will permit acceleration of the Center's research activities in cleft lip and palate, malocclusion and periodontal disease. An increase of three positions and $50,000 will permit the expansion of the continuing education activities.

The additional increase of $68,000 provides for annualization of positions authorized in 1967. This is partially offset by a decrease of $4,000 for non-recurring equipment costs and $1,800 due to one less day's pay in 1968.

	1967 estimate		1968 estimate		Increase or decrease	
	Positions	Amount	Positions	Amount	Positions	Amount
Research and development in dental technology	10	$204,000	15	$288,900	+5	+$84,900

The Division conducts applied clinical research aimed at evaluating and comparing new and conventional dental materials, dental procedures and dental devices which will lead to improved dental care for the public and reduce manpower requirements for delivery of high quality dental care. Although extensive laboratory testing and fundamental research are being conducted by research laboratories and manufacturers to establish basic information about the physical and chemical properties and the safety and durability of dental materials and devices, such research does not provide information about the characteristics and performance of dental materials as they are actually used in the clinical practice of dentistry and exposed to the rigorous stresses of chewing.

Long-range clinical studies of the actual performance of dental materials in the mouth are conducted to determine whether the laboratory properties which they exhibit are actually beneficial to the patient. Dental personnel in Public Health Service hospitals, Veterans' Administration hospitals, the Bureau of Prisons, the dental profession, and industry are cooperating in this program. The requested expansion in 1968 would permit cooperative efforts with State and local health departments, dental schools and other agencies which will provide a basis for comparison of the effects of various clinical techniques and procedures upon the service, performance and quality of the restorative materials being tested.

An increase of five positions and $85,000 is requested in 1968, which is partially offset by a decrease of $100 due to one less day's pay in 1968.

NURSING SERVICES AND RESOURCES

Introduction

The Division of Nursing is responsible for maintaining a continuing review of national needs for nursing services, in and out of hospital, including areas of special practice, and needs of nursing education for these services, and for the development and administration of programs to assure that these needs be met. The Division is the focal point in the Federal Government for nursing nationwide, and as such is the central source for information and direct assistance on manpower needs and resources: the recruitment, education, training and utilization of nursing personnel; the organization and delivery of nursing services; nursing research and the application of research findings.

The Division carries on consultation, studies and demonstrations, both in headquarters and field to improve nursing education, nursing practice, and the organization and delivery of nursing services. Functions also include analyses, research, and the development of methods related to the availability, distribution, preparation and use of professional and non-professional nursing personnel. The Division provides assistance by means of direct consultation, technical assistance and administration of grants for construction of education facilities; for student assistance; for the improvement of education, (basic, graduate, continuing and specialty); for improvement of nursing service; and for research and research training.

In both direct assistance and planning and coordination, the Division works directly with the national and local nursing organizations, other professional organizations, educational institutions, Federal, regional, State and local health departments, agencies and institutions, (official and voluntary), concerned with providing nursing services and nursing education.

Research grants

	1967 estimate		1968 estimate		Increase or decrease	
	Number	Amount	Number	Amount	Number	Amount
Noncompeting continuations	28	$1,151,000	44	$1,661,000	+16	+$510,000
New grants	23	866,000	23	900,000	.....	+34,000
Supplementals	(4)	70,000	(5)	94,000	(+1)	+24,000
Total	51	2,087,000	67	2,655,000	+16	+568,000

In the research program, support for project grants and for research training complement one another. The research projects investigate nursing education and nursing service, with focus on patient-centered care. Nurse investigators with depth of preparation in sociology and other disciplines are analyzing nursing problems and testing old assumptions of nursing practice. They are also investigating the dynamics of nursing as a career. Two of these projects with implications for the health manpower field are a longitudinal study of groups of high school students to determine why some attain career objectives in nursing and others do not, and a study of factors which influence the decision to reactivate a nursing career. Results from studies like these will help to improve recruitment, counseling, retention and prediction of future employment patterns.

As medical care of patients becomes increasingly scientific, systematic analysis must be made of the effect of nursing practice on the patient's progress toward recovery and health maintenance. Answers are needed to the related problems of nursing service administration, nursing education and recruitment. Nursing research projects are providing some of the answers. However, additional support is necessary to sustain the balanced development of quality projects and research personnel, and to permit an increase in projects which will insure higher quality of nursing care in the future.

The $568,000 increase requested for 1968 would support 16 additional research grants, for a total of 67 grants.

Fellowships:

1967 estimate	$462,000
1968 estimate	520,000
Increase	+58,000

The Special Fellowships in Nursing Research provide support to nurses for research training at the pre- and post-doctoral levels. This program is an essential adjunct to the research grant program as it prepares nurses to carry on the much needed research for fuller understanding and improvement of nursing care. There is a growing demand for nurse researchers to direct projects, to work as part of medical research teams, and to direct community health research. Approximately 9 additional fellowships will be supported with the requested increase of $58,000 making a total of 94 to be supported in 1968.

Nurse traineeships:

1967 estimate	$10,000,000
1968 estimate	10,000,000
Increase	----------

A total of $10,000,000 is requested for 1968 to carry on the program for advanced training of professional nurses for teaching, supervision, and administration, and clinical specialties. Nurses prepared for these leadership positions remain in critically short supply. It is estimated that an additional 150,000 nurses with baccalaureate preparation and an additional 87,000 with preparation at higher levels will be needed to meet the 1970 goals set by the Surgeon General's Consultant Group on Nursing.

Although the Professional Nurse Traineeship Program has increased the number of nurses prepared for positions as teachers, administrators, and supervisors, the demand for these specialists continues to grow. The need is critical in view of the initiation of new programs in nursing, the expansion of existing programs and the increasing complexity of clinical practice requiring more highly skilled nurse practitioners.

Lengthening of programs and rising costs of both tuition and stipends will permit support of an estimated 1,900 long-term trainees in 1968 compared to 2,000 in 1967.

The short-term courses continue to be successful and are in great demand. Since 1960, they have provided training for nurses who are not able to undertake full-time study to learn management skills and to update their clinical practice. Experience with the new techniques and curricula possible under short-term traineeships is being reflected in the number and quality of applications. As a result more imaginative and timely courses are offered.

Research training grants

	1967 estimate		1968 estimate		Increase or decrease	
	Number	Amount	Number	Amount	Number	Amount
Noncompeting continuations	4	$532,000	5	$580,000	+1	+$48,000
New grants	1	48,000			−1	−48,000
Total	5	580,000	5	580,000		

A limited number of nurses are receiving preparation in depth in the basic sciences through the nurse scientist training grants now supported in 22 departments in 5 universities. More nurses must be prepared if developments in fields such as anthropology, physiology, microbiology, and sociology are to be used in studies to improve nursing care. These grants provide for expansion of doctoral programs in university basic science departments and provide training stipends to nurses studying in the biological physical or behavioral sciences.

Projects for improvement of nurse training:

1967 estimate	$4,000,000
1968 estimate	4,000,000
Increase	

This provision of the Nurse Training Act is demonstrating that it has the great potential that was anticipated for improving the quality of nursing education in the shortest time. The projects now underway are making it possible for schools to expand the content of the programs of nursing education, to make the best use of master teachers, and to improve the quality of teaching in clinical settings where the welfare of patients is involved. Some of these projects are coordinating and improving the teaching of medical and surgical nursing; others are extending the experience of students in community nursing. One school is concentrating on student experience with geriatric patients, and many are using new audio-visual techniques and equipment.

Several schools have submitted a combined application in behalf of a number of other programs. As a result large numbers of students are affected by the project and the project is strengthened through joint efforts. One such project affects 17 schools whose combined enrollment is 2,500 students; another affects 12 schools with a total enrollment of 1,500 students. Teaching materials produced by these two projects and by others will be available for other nursing programs seeking to enrich their curricula in public health nursing, psychiatric and geriatric nursing. The success of these group projects is setting an example certain to be emulated. This is also a means by which non-accredited programs can benefit from this legislation by joining forces with programs of established quality.

The number and variety of applications submitted during the first two years of this program by collegiate, associate degree and diploma schools of nursing has shown the marked interest and need for this type of support. The program is gaining momentum as schools understand the possibilities for participating in this provision of the Act and as they have had more time in which to develop

sound project applications. The demand for these grants will increase at an accelerated pace as more schools of nursing become accredited or receive reasonable assurance of accreditation and are thus eligible to apply.

Because of increasing specialization and complexity of modern medical care new ways have to be found to train nursing students in shorter periods of time and to train a larger number of students with the same short supply of qualified teachers. Many of these new projects will be more costly since they require the use of expensive communications equipment for a large number of students. These systems conserve the time required for teaching students and make the most effective use of the short supply of well qualified teachers. The $4,000,000 requested for 1968 is the full amount authorized in the Act and is the same level as 1967. It will support approximately 90 projects.

Opportunity grants:	
1967 estimate	$750,000
1968 estimate	5,000,000
Increase	+4,250,000

The high cost of nursing education constitutes a major deterrent to young people who would otherwise plan for a career in professional nursing. Most of today's nursing students come from lower income families. One-third of all nursing students are from families which have less than $5,000 annual income. These students require financial help to pursue their professional education.

In order to attract an adequate number of people into the nursing profession, the number of qualified applicants for admission to our schools of nursing must be markedly increased. Based on a Division of Nursing Study, we estimate that one-third to one-half of all qualified applicants to schools of nursing will require financial assistance from sources outside their families.

In November 1966, the Congress authorized opportunity grants to be provided to schools of nursing, to support nursing education for qualified and financially needy high school graduates. This assistance supplements the nursing student loan program and is designed to increase the number of nurses by making nursing education possible for young people who could not otherwise afford to pursue a nursing career.

A full-time nursing student in need of financial assistance is eligible for a grant of $800 or one-half of the amount of other student financial aid he is receiving whichever is the lesser; a student finishing in the upper half of his class is eligible for an additional $200.

The $4,250,000 requested increase will provide for an estimated 6,750 educational opportunity grants to students who otherwise might not be able to attend nursing school.

Payments to diploma schools of nursing:	
1967 estimate	$5,000,000
1968 estimate	3,000,000
Decrease	−2,000,000

The Nurse Training Act of 1964 authorized formula payments to accredited diploma schools of nursing to defray a portion of the cost of training students. Schools report they are using these payments to add faculty, increase faculty salaries, increase library holdings and purchase new educational aids and equipment. Payments to accredited diploma schools of nursing are made according to the formula in the Nurse Training Act based upon the increase in enrollment and the number of students with Federal nursing loans.

The number of schools participating in the provisions of this Act increased from 190 in 1965 to 338 in 1966.

Indications are that the $5,000,000 available in 1967 will not be fully utilized. On this basis, a reduction of funds is reflected in 1968.

Direct operations

	1967 estimate		1968 estimate		Increase or decrease	
	Positions	Amount	Positions	Amount	Positions	Amount
Personnel compensation and benefits	173	$1,679,000	183	$1,887,000	+10	+$208,000
Other expenses		463,800		895,800		+432,000
Total	173	2,142,800	183	2,782,800	+10	+640,000
SUMMARY OF PROGRAM						
Administration of grants	15	155,000	15	188,000		+33,000
General consultation and program support	59	629,000	64	698,000	+5	+69,000
Organization and delivery of nursing services	28	345,000	28	371,000		+26,000
Nursing practices	11	141,000	11	148,000		+7,000
Nursing education and training	30	546,800	30	546,800		
Manpower resources	23	154,000	28	555,000	+5	+401,000
Communication of nursing health knowledge	7	172,000	7	176,000		+4,000
Recruitment contracts				100,000		+100,000
Total	173	2,142,800	183	2,782,800	+10	+640,000

	1967 estimate		1968 estimate		Increase	
	Positions	Amount	Positions	Amount	Positions	Amount
Administration of grants	15	$155,000	15	$188,000		+$33,000

The Division of Nursing administers the following grant programs—project grants for nursing research, fellowships, research training grants, professional nurse traineeships, nursing school improvement grants, construction of nursing education facilities, payments to diploma schools and nursing educational opportunity grants. In addition to the professional consultation, these grant programs require professional and technical review of applications, site visits, and support of the National Advisory Council on Nurse Training and its review panels, and the Nurse Scientist Graduate Training Committee, as well as the statistical and fiscal activities involved in efficient grants management.

An increase of $33,000 is requested for annualization of positions authorized in 1967.

	1967 estimate		1968 estimate		Increase or decrease	
	Positions	Amount	Positions	Amount	Positions	Amount
General consultation and program support	59	$629,000	64	$698,000	+5	+$69,000

Development of all phases of nursing throughout the Nation through consultative services and technical help to regional, State and community programs is a keystone of the program of the Division of Nursing. The regional nursing consultants, familiar with problems and needs of the area, serve as a link between the Division's headquarters specialists and the nursing education, service, research, and planning bodies in their respective regions. Demands of institutions and communities for nursing consultation have grown to such proportion it is imperative that the Division of Nursing enlarge and strengthen its institutional and community nursing consultation services. In 1966 institutional nursing consultants were assigned to three regional offices. In 1967 additional

nursing service experts were assigned to provide this intensive assistance to individual hospitals and other care institutions.

Analysis of 1966 study data on the availability of services for nursing care of the sick at home in relation to the location and preparation of nursing personnel is showing where consultation efforts must be directed to help with the establishment of new programs and the application of administrative practices to extend these services. Six regional workshops sponsored in 1965 and 1966 for local hospital nursing consultants, provided a much needed forum for the discussion of problems and guidelines according to the participants. Demands for health care make it imperative to extend nursing skills and effectively utilize nurse manpower.

Planning is the key to wise use of Federal funds for recruitment, training, and construction of facilities in which to prepare health manpower. We are continuing to provide assistance to individual States to conduct surveys and appraisals of nursing needs and resources. Methods developed for estimating and projecting national nursing manpower statistics for the Surgeon General's Consultant Group on Nursing were adapted and refined for application to State and regional planning. If hospitals and health agencies are to realize their full potential in the delivery of health care, additional consultants will be needed to effect changes in organizational and administrative practices and in methods of utilization of personnel.

The increase of $57,000 and 5 positions requested for 1968 will enable the Division to strengthen its efforts to support and encourage comprehensive State and area planning for facilities, personnel and programs.

An increase of $12,000 is requested for annualization of positions authorized in 1967.

	1967 estimate		1968 estimate		Increase or decrease	
	Positions	Amount	Positions	Amount	Positions	Amount
Organization and delivery of nursing services	28	$345,000	28	$371,000	----------	+$26,000

Health legislation passed by the 88th and 89th Congress greatly increased the already heavy demands for nursing services. The anticipated number of elderly patients being treated under these programs will be accommodated as inpatients in hospitals only during acute episodes of their illnesses. The chronic diseases such as cancer, stroke, and other disease conditions will require extended periods of nursing care in long term facilities and in the patients own homes. If the benefits of optimal health care are to be realized, patients cannot be allowed to regress at home or in extended care facilities because of the lack of skilled nursing care.

Sound nursing leadership must be provided in determining and maintaining optimal ratios of nursing personnel to patients, of professional to non-professional personnel in various kinds of settings and in the various methods of effectively organizing nursing services in and out of hospitals. Arriving at these determinations requires access to clinical settings in which ideas can be measured and modified and in "live situations" for testing and teaching. Institutions and agencies look to the Division of Nursing for this kind of leadership.

In 1966, replication of a study of staffing needs in nursing homes was made possible through the Division's program; and in 1967 the method of studying nursing activities in a hospital developed by Division staff was adapted for use in the nursing home setting. In 1968, results and experience from these studies will be applied to assist nursing homes throughout the country with staffing patterns required to provide adequate care for their increasing patient load.

An increase of $26,000 is requested for annualization of positions authorized in 1967.

	1967 estimate		1968 estimate		Increase or decrease	
	Positions	Amount	Positions	Amount	Positions	Amount
Nursing practices	11	$141,000	11	$148,000	.....	+$7,000

Studies done by the Division of Nursing show that refresher courses are a significant force in encouraging inactive nurses to return to the labor force. In 1966 and 1967, the Division worked intensively with institutions and agencies in developing curricula and evaluation methods which could be used for refresher courses nationwide.

As important as increasing numbers of nurses is the need for more effective practice by those who are already employed. This requires taking a fresh look at the nursing requirements of patients in order to determine the best use of nursing expertise. For example, one study conducted by the Division revealed that patients needed more understanding of their disease and of their care requirements and that there was a dearth of appropriate educational material. As a result, teaching guides for use by nurses were developed for class and individual use in hospitals and health agencies. In addition, the potential of closed-circuit television and monitoring devices must be explored in terms of extending professional skills without impersonalizing nursing care. In view of the chronically acute shortage of nurse manpower, it is imperative that programs for continuing education for all nurses be accelerated.

The Division is carrying on programs of research, consultation, and technical assistance to improve the effectiveness of the nurse in the care of patients. The method developed by the Division for documenting the needs and reporting the progress of patients under public health nursing care is now being used in more than 40 agencies in a dozen States, and is currently being tested to find what modifications might be incorporated into it for institutional use. It is also being used for instruction of students in public health nursing in a number of collegiate schools of nursing. By means of consultation, technical assistance, and short-term training courses, continuity of care is being promoted for patients in and out of hospitals and between the home and hospital. Division-sponsored research projects are studying various factors affecting patient care including testing the effect of increased nursing hours on character of care and patient recovery; and are developing criteria for selection of public health nursing field centers. Other projects are assessing the application of automation to nursing services and education. The Division's Nursing Research Field Center is developing and improving methods of patient teaching by nurses, particularly in clinics and outpatient departments where nurses give patients the information about their condition, and explain the treatments and medications which they will need when they are at home and on their own.

Institutions and agencies look to the Division for leadership in improving nursing practice. The Division is in a unique position to conduct studies testing such factors as the effect of increased nursing hours on patient recovery and on the assignment of staff in terms of objectively assessed nursing requirements. It must also investigate and demonstrate the use of management tools such as the "nursing diagnosis" (a care plan based on classification of patients according to degree of dependency and amount of nursing care needed) and the "nursing audit" (a measure of the extent to which the patients' needs were met) both of which are fundamental to improvement of nursing care in all settings.

An increase of $7,000 is requested for annualization of 1967 increases.

	1967 estimate		1968 estimate		Increase or decrease	
	Positions	Amount	Positions	Amount	Positions	Amount
Nursing education and training	30	$546,800	30	$546,800	.....	.....

The goals of the Division in this area are: to improve the quality of nursing education to ensure that nursing personnel can meet the demands of modern technological development in the health sciences; to chart the course for a program of continuing education for the nursing profession; to identify the content of nursing education programs which can be presented by new methods and techniques; to ensure the soundness of nursing education development by basic planning; to increase the supply of qualified applicants to all types of nursing programs. The provisions of the Nurse Training Act of 1964 are the principal means of accomplishment of these goals. The progress and improvement to date made possible by this legislation are impressive, particularly the imaginative ways in which nursing schools are using the funds to strengthen and expand their programs and improve nursing education nationwide.

Evaluation of the Nurse Training Act of 1964 is required under terms of the law. The Division is developing data, evaluative criteria and indices, in order to assess the extent to which the Nurse Training Act of 1964 is meeting its objectives. Recommendations of the Statutory Program Review Committee will profoundly affect the direction of nursing education for nursing services.

	1967 estimate		1968 estimate		Increase or decrease	
	Positions	Amount	Positions	Amount	Positions	Amount
Manpower resources	23	$154,000	28	$555,000	+5	+$401,000

Nursing is a complex subject for manpower analysis because of the sheer numbers involved, the three types of educational programs preparing nurses, the variety of institutions and agencies in which nurses are employed, and the mobility patterns of a predominantly female professional group. Through its manpower activities, the Division maintains a perspective on nursing nationwide—the adequacy, quality, distribution, training and utilization of personnel. Studies and surveys conducted by the Division provide the facts and figures which are the basis of this continuing overview as a basis for future projections.

One sizeable group about whom little is known is the estimated 500,000 nursing personnel (nurses' aides, nursing assistants, orderlies, attendants, home health aides, etc.) working with professional and practical nurses. In some settings these individuals give a substantial proportion of direct care to patients yet the extent of their training and their supervision is known to vary widely. It is imperative that information about this amorphous group be collected and analyzed in order to develop guidelines for their training and utilization. This information will also supplement the Division's ongoing inventories of professional and practical nurses and provide information to assist the profession in its examination of educational preparation for nurse practitioners and assistants to nurses.

Inextricably related to nursing manpower considerations are the factors of low salary scales and poor working conditions. As a part of its manpower responsibility, the Division must develop information about the economic factors which influence recruitment, employment, retention and reentry into the profession after periods of inactivity.

Nursing manpower is a national resource and nursing is the key component of all types of health care programs. Needs for nursing personnel and facilities to educate nurses vary widely from one section of the country to the other; therefore, it is imperative that resources be identified at local, State, and regional levels. The Division is developing tools for the assessment of nursing needs and resources and is furnishing consultation to groups engaged in this kind of planning.

The requested increase of 5 positions and $401,000, including contracts, will provide for new and expanded studies and the development of new and improved techniques for determining and projecting manpower requirements.

	1967 estimate		1968 estimate		Increase or decrease	
	Positions	Amount	Positions	Amount	Positions	Amount
Communication of nursing health knowledge	7	$172,000	7	$176,000	----------	+$4,000

The consultation and technical services of the Division are vastly extended through the publication of self study methodologies, reports of intra and extramural projects, studies, proceedings of conferences, and other materials of vital significance to the profession. This service is staffed by a small group of experts skilled in modern communication techniques and methods such as the use of teaching machines, closed-circuit television, and other newer educational tools. Their assistance is available to Division staff as well as to the directors of extramural projects.

One example of a new educational tool is the "project recording" which provides the raw material from which a variety of communications tools can later be constructed. This method uses camera and tape recorder to get the "living" story of significant projects while they are in progress, and opens the way for preparation of closed-circuit television shows, how-to-do-it films, programs for teaching machines, slides and charts to illustrate lectures, exhibits, filmstrips and many other audio-visual aids, augmenting the more conventional output through journals, monographs and books.

In 1967, the Division sponsored the preparation of film cartridges for use in training nurses in the principles of electro-cardiography. Plans include the development of a multi-media instructional system with films, teaching manuals and testing materials appropriate for each type of nursing education program, both basic and graduate, as well as for programs in the nursing specialties. These specialized materials will also be adapted to the needs of practicing nurses whose knowledge and skills must constantly be updated to keep abreast of the increasing complexities of medical practice.

An increase of $4,000 is requested for annualization of 1967 increases.

	1967 estimate		1968 estimate		Increase	
	Positions	Amount	Positions	Amount	Positions	Amount
Recruitment contracts	----------	----------	----------	$100,000	----------	+$100,000

Adequate and accurate information regarding nursing as a career is not reaching potential recruits in schools throughout the country. Guidance counselors and school officials are generally unaware of the opportunities for students in the nursing profession or of assistance that is available to them in various types of nursing programs and of federal funds which are available for this kind of support.

In November 1966, Congress authorized $100,000 per year for contracts with State and local educational agencies and other public or non-profit organizations to aid recruitment in nursing by identifying qualified youths and encouraging them to undertake training in nursing and by publicizing existing forms of financial aid.

ALLIED HEALTH PROFESSIONS MANPOWER

Introduction

Of all the potential deterrents to the national goal of providing the delivery of the best in health care to the American people and the assurance of an environment free from significant threats to health, none is so great as an inability to provide the numbers of trained personnel to deliver the services which a greatly improved technology makes possible. The very technology which is adding to the effectiveness of health care greatly complicates the problem of man-

power. The delivery of health services is now a team effort which requires the recruitment and training of a vast number and variety of professional and technical specialists to support the physician, operate hospitals, clinics and research laboratories, staff public health agencies, maintain environmental surveillance and control, etc. Exclusive of physicians, dentists, nurses and engineers, health personnel work in some eighty-five distinct occupational areas, and number nearly one million persons.

Training required for the various allied health occupations ranges from on-the-job training to baccalaureate, graduate and post-graduate study and varies in subject matter from podiatry to nuclear technology. A concentrated national effort is needed, not only to provide the numbers of auxiliary health workers required now and in the future, but to assure that training is efficient, adequate, and able to keep pace with changing technology.

In 1967, the Public Health Service is initiating a program to meet these responsibilities through the establishment of the Division of Allied Health Manpower within the new Bureau of Health Manpower. This Division is responsible for a nationwide program of studies, demonstrations, and grants to increase the number, improve distribution, enhance training opportunities and develop new and improved training methods and techniques for the allied health occupations.

Direct operations

	1967 estimate		1968 estimate		Increase	
	Positions	Amount	Positions	Amount	Positions	Amount
Personnel compensation and benefits	46	$371,400	59	$562,400	+13	+$191,000
Other expenses		496,000		542,000		+46,000
Total	46	867,400	59	1,104,400	+13	+237,000

Allied health manpower resources

There has been a rapid increase in the numbers of allied health workers. Between 1950 and 1960, for example, the number in the allied health professions increased by about 40 percent, from 220,000 to 300,000, while junior college and other technical and vocational graduates increased by more than 100 percent. During this same period, the total population of the United States increased by only 18 percent.

Current knowledge, however, of the numbers, distribution, utilization, and needs for personnel in the allied health occupations is incomplete and requires a coordinated effort to draw together what is now known and not known, what needs actually exist and what will be needed in the future.

Results of studies which are available, some of which were reported in the hearings on the Allied Health Professions Personnel Training Act of 1966, indicate that shortages in the allied health occupations are great. Studies in six of the allied health occupations—dental hygiene, medical record library science, medical technology, occupational therapy, physical therapy and X-ray technology—indicate needs that are more than double the supply. In medical technology, for example, the American Society of Clinical Pathology reported 32,000 active medical technologists registered with that organization, and a demand for 70,000 to 100,000 not including the number required in research, public health agencies, international projects and other facilities. Similarly, the American Occupational Therapy Association reported that in 1965 there were 15,600 unfilled positions for occupational therapists, and total current needs are estimated to be 50,000. There are currently approximately 7,200 active occupational therapists. Various state studies also show a great disparity in the geographic distribution of allied health workers.

Shortages such as these in the total allied health field cause inefficiency or complete lack of certain kinds of health services. They also intensify the heavy burden placed on the highly trained professional, particularly the physician, by requiring that he perform tasks which are more appropriately carried out by supporting personnel.

A current project which illustrates one method by which these shortages can be alleviated is being carried out under contract with the National Committee

for Careers in Medical Technology. The purpose of this project is to develop guidelines and desirable content for the design and operation of a nationwide program to retrain and employ an estimated 5,000–10,000 medical technologists who are inactive but interested in returning to work now or in the future. Another current project is concerned with "medical assistants"—persons who provide the physician in his office with general assistance in laboratory work, patient care, records, and office procedures. The project is designed to find out what medical assistants are doing and can do efficiently, how they are trained, and how many are now being trained. It will provide the kind of information that is required in order to determine the size and nature of the problem of technical work in physicians' offices and to discover potential solutions.

Our knowledge of health manpower supply and demand has been secured primarily from restricted crash studies dealing with only segments of the whole fabric of health occupations and lacking in coordination or provisions for continuity. New and coordinated studies as a part of a total and continued planning effort need to be initiated to draw together current knowledge of allied health manpower resources.

For example, much attention is being directed toward encouraging inactive health workers to return to work. In many allied health fields, a substantial percentage of trained persons is unemployed but not permanently retired, as shown by "single-time" surveys. However, the rate at which persons leave and return to employment, the duration of their unemployment, and the reasons for it are not generally known. Without this information, obtainable only through continuous surveys of a sample of workers, it is impossible to calculate expected benefits from "back-to-work" programs or even to design such programs to be efficient.

Long-range savings of time and money can result if we take advantage of the many opportunities to collect health manpower data with a minimum of effort and often in the course of other business, rather than conduct special surveys only when the need is acute.

These and concurrent investigations must also be inter-related to better define the total problem and provide baseline information from which remedial programs can be undertaken.

Educational program development

Improvement in the allied health manpower situation requires more than increasing the numbers of persons in the field. The existing facilities, staffing and enrollment capacities of post secondary, baccalaureate, graduate and professional institutions are inadequate to prepare the additional numbers needed. Innovations are required in organization, staffing and curricula as well as development of new specialty areas in order to keep pace with advancing technology.

One example of an effort to increase efficiency and better utilize teaching staff is the establishment by nine institutions around the country of an organizational grouping of a number of health curricula in a college or school within a university medical center, combining teaching staff, administration, and providing an interaction between specialties which will later be working together. Under such a system, duplications in such areas as administration, faculty, and facilities can be kept to a minimum.

New contract and staff studies and demonstrations need to be undertaken to assess needs for new or modified programs, curricula, categories, facilities and teaching methodology. For example, a series of job analyses are needed in a number of health occupations to determine what functions, duties, and responsibilities can be assigned from professionally-trained persons to semi-professional or technician-level personnel. Such actions maximize the professionals' skills, provide additional employment for lesser-trained people, and permit better health service for greater numbers of people. Studies should also be made of the potential of basic, core curricula in which specific courses and subject matter could serve as common background for a constellation of different-but-related health occupations. This possibility reduces the need for teachers, permits maximum use of plant and equipment, and allows students to switch occupational goals with a minimum loss of time, funds, and course credits.

Activities such as these must be accompanied by continuous consultation and cooperation with the institutions throughout the country in which such training is undertaken, as well as with the professional groups affected, and accrediting and licensing bodies and employers of allied health workers.

Program assistance

Three new grant programs have been authorized under the Allied Health Professions Personnel Training Act of 1966: Basic and special improvement grants to increase the output and the quality of training for allied health occupations; traineeships for allied health personnel to prepare them to serve as teachers in supervisory, administrative positions or in fields requiring specialized training; and new methods grants designed for development, demonstration or evaluation of curricula for the training of new types of allied health personnel. These programs, coupled with the already existing Public Health Traineeships program, Grants to Schools of Public Health and Project Grants for Graduate Public Health Training, improve the potential range of support for programs to assist in overcoming the tremendous deficiencies with which the Nation is faced in providing trained manpower in the allied health and public health fields. Programming and professional supervision of these programs is the responsibility of the Division of Allied Health Manpower.

An important key to the success of a national manpower program in the allied health occupations lies in the ability of the Public Health Service to provide expert support, technical advice and program guidance to the educational institution, the trainee and the agencies that utilize manpower in these fields.

The Service must be able to provide effective programming, technical coordination, analysis, evaluation, and professional supervision of these grant programs. To meet the heavy demand that has been created, staff support is essential to give the representatives of universities, colleges, junior colleges and professional organizations the intensive consultation required in a new and dynamic program of this magnitude. The addition of the new allied health grant programs alone will increase by as many as 1,000 the number of institutions from which we can expect requests for consultation and technical advice in 1968.

Thirteen new positions and $136,000 are requested in 1968 for expansion of these programs for allied health and public health manpower. This increase will be used to improve our capability to determine shortages and needs in allied health manpower, develop studies and demonstrations to improve educational techniques and curricula, provide for meetings of two National Councils to advise the programs and review grant applications, and for needed consultation and technical assistance to educational institutions, professional groups and employers of allied health and public health workers. A net increase of $101,000 is also requested for built-in items.

HEALTH MANPOWER EDUCATIONAL SERVICES

Introduction

Initiation of new and expansion of existing health programs taxes the critically short supply of trained health manpower, both in quantity and quality. The programs of the Division of Health Manpower Educational Services are designed to alleviate these shortages through grant and loan support to institutions and students. Under a recent reorganization of the Public Health Service, the Division was established to provide the consultative, evaluative, informational, procedural and related services essential for support of public health manpower grant and loan programs.

Training grants

	1967 estimate	1968 estimate	Increase or decrease
Public health traineeships	$8,000,000	$8,000,000	
Grants to schools of public health	3,750,000	3,500,000	−$250,000
Project grants for graduate public health training	5,000,000	4,500,000	−500,000
Educational improvement (health professions)	30,000,000	57,500,000	+27,500,000
Allied health manpower:			
Allied health traineeships	750,000	1,500,000	+750,000
Educational improvement (allied health)	2,785,000	9,750,000	+6,965,000
New methods	200,000	1,000,000	+800,000
Total, training grants	50,485,000	85,750,000	+35,265,000

Public health traineeships

The public health traineeship program is designed to improve the health of the American people by increasing the number of professional health personnel

who are adequately trained in public health, and also to recruit new personnel into the field of public health.

In 1967, we estimate that more than 12,800 traineeships will be funded from the $8,000,000 available for the program. This program will continue at the same level in 1968.

The traineeship program is divided into four major types of training, each of which is described below. The following table summarizes the programs for 1967:

	Estimated number of grants	Estimated number of institutions	Estimated number of people trained
Residencies	25	25	70
Apprenticeships	50	50	400
Short-term training	200	150	11,000
Long-term training	208	160	1,350

Residencies in preventive medicine, preventive dentistry, and other public health related areas (long-term)

This program is designed to alleviate the shortage of physicians and dentists needed to plan, conduct and participate effectively in community health programs and to teach in schools of public health and departments of preventive medicine and dentistry, and to serve as leaders in State and local public health settings. Since the inception of this program two years ago, the Public Health Service is supporting as many such residencies as were previously supported by all other sources.

In 1967, fifty-five physicians and fifteen dentists are being supported under these grants which are provided through twenty-five institutions throughout the United States. Thirty-five of these physicians are participating in residency programs in Preventive Medicine-Public Health offered by six State health departments, one medical school, and one city health department. The other twenty physicians are specializing in General Preventive Medicine (with subspecialties such as Chronic Diseases, Maternal and Child Health, and Public Health Administration) in five programs, three offered by schools of public health and two by medical schools. The dentists are enrolled in seven different dental public health residency programs, five of which are offered by State health departments, one by a school of public health, and one by a local health department. The first sixteen residents will be completing their programs this year an entering key positions in health departments and academic institutions. This program has provided revitalization of existing programs, stimulated establishment of new programs, and provided individual planning in the field of public health.

Apprenticeship training for medical and other professional students (short-term)

This program provides medical and dental students with the opportunity to work in the field of public health for six to twelve week periods. This activity has two principal objectives: (a) to better prepare these students to understand the community in which they work, how to mobilize community resources, and to participate in public health programs as private practitioners; and (b) to influence the students to choose a career in public health.

Under preceptor-guidance and supervision of competent, full-time preventive public health personnel, medical and dental students receive an orientation to community health problems and to basic principles and concepts of public health practice. They participate in projects dealing with problems of concern to organized health programs. Examples of student projets include epidemiological investigations of communicable and chronic diseases, evaluations of maternal and child health clinics, surveys of nursing homes and extended care facilities, and assessments of health services in rural areas.

Short-term public health training (including clinical training)

Training supported by this program enables professional health personnel to update their knowledge and skills relating to the public health programs in which they work, and decreases the time lag between the development and use of new knowledge and skills in improving the health of the people.

Professional health personnel are supported in a wide variety of continuing education programs needed to keep abreast of their rapidly expanding responsibilities in public health. These include seminars in the administration of comprehensive community health services, courses on medical care and nursing home administration, clinical training in new skills and techniques for the management of chronically ill patients, workshops in epidemiology, courses on principles of prepaid dental care, and training in new and improved techniques in environmental sciences.

Long-term traineeship grants

These grants are designed to enable those individuals with basic professional training in a health discipline to obtain advanced or specialized public health training. Support is provided through long-term traineeship grants to institutions providing graduate or specialized training in public health, and through awards directly to individuals pursuing such training.

In 1967, more than 1,300 individuals will receive traineeships under the various long-term traineeship grants. These individuals will be trained in a broad spectrum of vital importance to complex public health programs, including public health administration, infectious and chronic disease epidemiology, public health nursing, environmental health engineering, gerontology, public health nutrition, biometry, and a variety of other disciplines.

Grants to schools of public health

The program of grants to schools of public health is designed, through direct financial assistance, to enable the thirteen schools of public health to continue to fulfill their roles as national training centers for public health personnel and to improve the quality of teaching programs. In 1967, the estimate for this program is $3,750,000. The majority of the funds are used by the institutions for faculty and supporting staff in the wide range of teaching disciplines required in modern public health academic programs, including epidemiology, environmental health science, the social sciences, biostatistics, medical economics, and many others. $3,500,000 is requested for this program in 1968.

Grants to schools of public health

Schools of public health	1966 actual	1967 estimate	1968 estimate
California (Berkeley)	$375,400	$386,900	$361,100
California (Los Angeles)	222,700	280,100	261,500
Columbia	191,900	209,200	195,200
Harvard	242,100	257,600	240,500
Hawaii	94,400	102,700	95,800
Johns Hopkins	296,700	308,900	288,200
Michigan	483,200	526,600	491,500
Minnesota	389,100	387,900	362,000
North Carolina	404,100	439,900	410,600
Pittsburgh	235,300	250,200	233,500
Puerto Rico	202,200	197,700	184,500
Tulane	195,900	205,900	192,200
Yale	167,000	196,400	183,300
Total	3,500,000	3,750,000	3,500,000

Project grants for graduate public health training

This program is designed to strengthen and expand graduate or specialized training in public health offered by schools of public health as well as other public or non-profit private institutions including schools of medicine and dentistry. The grants assist these institutions to make changes in their curricula to meet the needs of evolving and ever-changing public health programs; to improve programs of basic training in public health administration; to develop and demonstrate improved public health training methods and procedures; and to enlarge faculties and supporting staff to provide for increased enrollments.

In 1966, 115 grants were awarded to 85 schools of public health, nursing, engineering, medicine, and dentistry. We will support about 145 projects in 1967 and 115 projects in 1968. Among the projects currently supported by this program is the introduction of public health sciences, including social sciences, into the curriculum of the UCLA School of Dentistry. Currently

53 of the projects are to medical and dental schools to develop and strengthen the teaching of epidemiology, biostatistics, public health and community medicine. This teaching is essential to the development of community-minded practitioners and professional schools. A grant awarded to Northwestern University will aid in the establishment of a new department of preventive medicine. Another project being supported at the University of Kentucky Medical Center is designed to establish a field professor in the Kentucky mountains to supervise the field training of medical students in community health. The estimate for this program in 1968 is $4,500,000.

Educational improvement grants (health professions)

An increase of $27,500,000 over 1967 available funds of $30,000,000 is requested for basic and special improvement grants in 1968 most of which will be used to make special improvement grants to medical schools. These grants will be made to schools of medicine, dentistry, osteopathy, optometry, and podiatry to improve the quality of such schools as authorized by Section 2(a) of the Health Professions Educational Assistance Amendment of 1965.

In 1968, as required by the Act, the statutory formula for basic improvement grants would first be met and the special improvement grants program would be initiated with the remaining funds.

Basic improvement: In 1968, about $32,500,000 of the $57,500,000 requested will be needed to make basic improvement grants averaging about $190,000 each to approximately 172 schools of medicine, dentistry, osteopathy, optometry, and podiatry. The amount of the grant to each school will be determined by the prescribed formula; $25,000 plus $500 times the number of full time students.

In 1966, a total of 159 of the 163 eligible schools participated in the basic improvement grants program. These grants were made to schools of medicine (91), schools of dentistry (49), schools of optometry (9), schools of podiatry (5), and schools of osteopathy (5). (Because the amount appropriated represented only 70 percent of the amount required to make grants in accordance with the statutory formula, the grant to each school was reduced accordingly.) In 1967 and 1968, it is estimated that all eligible schools will receive basic improvement grants. The $30,000,000 available for improvement grants in 1967 represents about 95 percent of the amount needed to satisfy the statutory formula for basic improvement grants for the 170 eligible schools. Of the funds requested in 1967, approximately 61% will support teaching staff, 11% for other staff for technical and clerical support, 16% for equipment, 8% for alterations and renovations and 4% for other expenses.

Basic improvement grant funds in 1968 will be used by recipient institutions to alleviate the most critical weaknesses in their educational programs. Specifically, the funds will support additional teachers, provide badly needed teaching and scientific equipment and permit minor alterations of space. The following table gives numbers of schools participating and funds requested by discipline.

Health professions basic educational improvement grants

[To nearest thousand]

Type of school	1966 actual		1967 estimate		1968 estimate	
	Number	Amount	Number	Amount	Number	Amount
Medicine	91	$6,566,000	98	$18,774,000	100	$20,293,000
Dentistry	49	2,975,000	52	8,439,000	52	9,187,000
Optometry	9	398,000	10	1,241,000	10	1,413,000
Osteopathy	5	356,000	5	982,000	5	1,052,000
Podiatry	5	187,000	5	564,000	5	637,000
Total	159	10,482,000	170	30,000,000	172	32,582,000

Special improvement: It is estimated that about $25,000,000 of the increase in 1968 will be used to make special improvement grants to schools of medicine, dentistry, osteopathy, podiatry, and optometry. Special improvement grants will be made only to those schools whose applications are recommended by the National Advisory Council on Medical, Dental, Optometric, and Podiatric Edu-

cation. Schools which receive these grants will be assisted in strengthening additional areas of weakness and improving their instructional programs in ways which cannot be achieved from the basic improvement grant or from other resources. The additional support given to the poorer schools will permit them to raise their educational standards toward those of the Nation's outstanding institutions. It is expected that the major portion of funds available for special improvement grants will be awarded to schools of medicine.

A number of financially weaker schools, because of their critical need for funds may have jeopardized their accreditation status by accepting the additional students required to participate in the basic improvement grant program. Many others have serious weaknesses in their educational programs, such as high student-teacher ratios, lack of technical staff and inadequate scientific equipment. It is imperative that such situations be corrected. Other schools need to be enabled to experiment with innovations in professional health education to find ways to improve the training of physicians and other health professionals. For example, programmed instruction in the basic sciences might be broadened.

The objectives of the authorizing legislation are to improve the availability and quality of medical care. Both basic and special improvement grant funds are needed in the full amount requested if health professional schools are to provide significantly improved training to an increased number of students.

Grants for training of allied health professions personnel

The Allied Health Professions Personnel Training Act of 1966 authorized a new program of grant support for the education of a wide range of professional and technical personnel in the allied health occupations. The purpose of this program is to initiate a national effort to meet growing and increasingly urgent needs for a vast number of trained personnel in a variety of professional and technical specialties to support the physician, operate hospitals, clinics and research laboratories, staff health agencies and maintain environmental surveillance and control.

Included in this program, in addition to construction of teaching facilities which is budgeted elsewhere, are three basic components:

(1) Traineeships to encourage and assist individuals to undertake advanced training in allied health fields to prepare them for teaching, supervisory, administrative, and other specialized duties;

(2) Basic educational improvement grants to improve the quality of training centers, and special improvement grants to contribute toward provision, maintenance or improvement of specialized functions of training centers;

(3) Project grants to develop, demonstrate, or evaluate new methods and new curricula for the allied health occupations.

1. Traineeships for advanced training of allied health professions personnel

The Allied Health Professions Personnel Training Act of 1966 authorizes traineeships for the basic training of specialized allied health professions personnel or training of such personnel to teach in the allied health occupations. These traineeships also provide for the training of personnel who serve in administrative or supervisory capacities in these fields or in specialties which require advanced training. The traineeships will be administered through grants to public or non-profit training centers for allied health occupations.

Basic to a national effort to increase the numbers and improve the training opportunities for the allied health occupations is support for training of teachers, administrative and supervisory personnel, and highly trained specialists. The traineeships provided in this part are an essential element to provide incentive and impetus to such training. $1,500,000 is requested for 1968. This is an increase of $750,000 over the amount available for 1967. The funds requested will provide training for approximately 330 students.

2. Educational improvement grants for allied health professions

$2,785,000 will be used in 1967 to provide basic educational improvement grants to junior colleges, colleges, and universities for the purpose of increasing the output and improving the quality of educational programs for allied health personnel through development of *improved curriculum*, expansion of training provided and support of *additional faculty*.

The basic improvement grant is based on a formula which provides a grant equal to $5,000 for each of the specialized curricula in which training is pro-

vided, plus $500 times the number of full-time students receiving training in such curricula. Since the program is just now getting underway, it is not now known how many institutions will qualify for support. However, 2,300 potentially eligible institutions have been provided with information, material and applications for the basic improvement entitlements.

Special improvement grants are also authorized under this program for use by institutions receiving basic improvement grants, to contribute toward provision, maintenance or improvement of specialized functions which the training center provides. These grants would provide an impetus for increasing curricula within single institutions. A maximum grant of $100,000 may be awarded to any single institution. Since special improvement grants are made from funds remaining after the allocation of basic entitlements, it is not expected that any such awards will be possible in 1967 and 1968.

Our current expectations are that we will receive approximately 350–500 applications for basic improvement grants in 1967. The amount authorized will fund approximately 185 grants at $15,000. Since many institutions have more than one of the eligible curriculums, the average application under this grant is expected to be substantially more than the $15,000 minimum entitlement.

$9,750,000 is requested for 1968. This increase would make it possible to support a minimum grant of $15,000 for 650 institutions. Since we estimate that more than 1,000 institutions will apply for the basic improvement grant in 1968, no support for special improvement grants is expected.

3. Grants for the development of new methods

Advancing technology in the health field requires that a continuing effort be undertaken to assure that there is development of curricula to meet the changing need for health occupations. Projects will be undertaken to develop, demonstrate and evaluate curricula for the training of new types of health personnel that will provide expert assistance to solutions of health problems faced by the Nation. The organization and technology of health care will continue in its rapid change. Specifically, trained bioengineering technologists will make possible both development and use of radically new diagnostic and therapeutic equipment. Other examples of the kinds of health technologists needed to work with physicians in and out of hospital settings are specially trained nurse-midwives, food service supervisors, pediatrics assistants, clinical chemists, etc. Before this kind of manpower can be developed, utilization and training requirements must be explored which includes the establishment of curricula acceptable to training centers. $1,000,000 is requested for this purpose in 1968. The increase of $800,000 will provide support for approximately 20 new projects in this area.

Student loans

	1967 estimate	1968 estimate	Increase or decrease
Health professions	$25,325,000	$15,000,000	−$10,325,000
Nursing	16,900,000	16,000,000	−900,000
Proposed supplemental (for establishment of revolving funds):			
Health professions	10,000,000		−10,000,000
Nursing	2,000,000		−2,000,000
Total	54,225,000	31,000,000	−23,225,000

The Health Professions Educational Assistance Act of 1963 and the Nurse Training Act of 1964 authorized the establishment of two separate loan programs. These student loan programs were authorized in order to help provide an adequate supply of health manpower and to assure that the needed supply of health profession and nursing manpower was drawn from the most capable individuals regardless of their economic status. Under both programs, loans are made to students, with the Federal government providing 90 percent of the necessary funds and the health professions, including nursing schools, providing the remaining 10 percent.

The Allied Health Professions Personnel Training Act of 1966 extended the student loan programs by establishing separate student loan revolving funds for health professions education and nurse training. In addition to the program of direct federal capital support, the Act authorizes the Federal government to make loans from the revolving funds to health professions and nursing

schools for loans to students and authorized appropriations for the establishment of these revolving funds in 1967 totaling $12,000,000, of which $10,000,000 is for health professions and $2,000,000 for nursing. Student loan funds otherwise appropriated can also be placed in the revolving funds. Funds loaned from the revolving funds would be recovered through sale of participation certificates in the promissory notes of the schools by the Federal National Mortgage Association to private sources and would be redeposited in the revolving funds.

The 1968 request of $31,000,000, when combined with funds anticipated to be available from the revolving funds should provide support in 1968 to enable loans to be made to approximately 41,000 students as follows: 21,000 students under the health professions student loan program and 20,000 under the nursing student loan program. This is an increase of about 3,000 students over those covered in 1967.

A contractual study by the Office of the Secretary will soon be made of all the Department's student loan programs. The study will determine the best methods of minimizing direct Federal loans and maximizing the use of private loan sources assisted by Federal credit such as guarantees and subsidized interest rates. Cost to the student will be maintained at a low level and access to loan assistance will not be impaired by the new method of financing to be developed. The study will also examine problems related to the Federal, State, and local administration of student loan programs such as collection procedures, operational simplicity, and inter-relationships with other forms of student financial aid.

Scholarship grants:	
1967 estimate	$4,030,000
1968 estimate	8,200,000
Increase or decrease	+4,170,000

An increase of $4,170,000 is requested to provide scholarship grants to students at schools of medicine, dentistry, osteopathy, podiatry, pharmacy, and optometry. These funds will support approximately 4,000 students—2,000 new first year students and continued support to approximately 2,000 students entering their second academic year.

The amount of each annual scholarship is determined by the school, but may not exceed $2,500 for any year. Awards are made to students from low-income families who in the judgment of the school are unable to pursue the course of study without this financial assistance. In 1967, grants were made to 227 schools for providing scholarships to students. Four additional schools, 1 school of medicine and 3 schools of pharmacy, were eligible but did not apply. It is estimated that scholarships were awarded by the schools to over 2,000 students at 88 schools of medicine, 49 schools of dentistry, 10 schools of optometry, 5 schools of osteopathy, 70 schools of pharmacy, and 5 schools of podiatry.

This program serves purposes which cannot be achieved through student loans and has become a valuable supplement to that important program. Student loans are of inestimable value to students who have some, although limited, resources to enter the health professions. Student loans, however, which must be repaid with interest, do not and cannot be expected to attract students from lower-income groups to enter these long, arduous and expensive programs of study when non-repayable support is readily available for other educational pursuits through private scholarships and public support as in the fields of engineering and teaching.

The funds requested for the scholarship program will increase the quality and quantity of medical care available to the people by enabling talented needy students who could not otherwise do so to pursue careers in the health professions listed above, and by enabling the schools which train these health profes-

sionals to begin to compete with other non-health types of schools for outstanding students.

Direct operations

	1967 estimate		1968 estimate		Increase or decrease	
	Positions	Amount	Positions	Amount	Positions	Amount
Personnel compensation and benefits	79	$642,000	81	$770,400	+2	+$128,400
Other expenses		292,000		332,000		+40,000
Total	79	934,000	81	1,102,400	+2	+168,400

Grants and loan administration and services

The need for effective program operations in the Bureau of Health Manpower resulted in the designing of a common educational grant services system in the Division of Health Manpower Educational Services. This arrangement of organizational units was planned to result in rapid services to assist health manpower educational institutions. At the same time competent stewardship of federal funds had to be maintained. To this end the following functions have been undertaken:

(1) The compilation of information by a national clearinghouse on the content and availability of health manpower education and training programs and the availability of fiscal aid to students in such programs. The data derived from this program provide the baseline for planning and measuring improvements and expansion in both technical and professional health education in America.

(2) The effective administration of student loan and scholarship funds and assisting health educational institutions in the receipt and management of these funds. The funds are most effective when awarded under standard policies and procedures in accordance with each grant program. This holds for all grant and loan programs in health manpower.

(3) The central administration of procedural and management aspects of health manpower grants from receipt of applications to award of grant and from assistance in preparing proposals to their termination. This enables every applicant to consult with the appropriate program operation and each application to be considered by the appropriate professional program and review committee or council of the Bureau and to seek guidance and assistance in overall health manpower grants management from a single point.

(4) The coordinative planning, development, promulgation and interpretation of grants management policies and procedures relating to the Bureau's health manpower programs. This enables academic institutions and training centers to apply for vitally needed assistance with the assurance of rapid and consistent review. Also the administration of funds by health educational organizations can be better coordinated consistent with rules and regulations.

(5) The provision of fiscal services to insure the proper use of public monies.

In 1968, these expanding programs will require an increase of services, particularly in the student loan program. For example, in 1967, there were a total of 810 schools participating in the health professions and nursing student loan programs. This was an increase of 106 new schools above the 1966 level of participation. This additional volume was handled with no increase in the number of authorized positions. In 1968, we estimate 925 schools will participate in the programs, for an increase of 221 over 1966. With continuing growth of the loan programs there is need for additional personnel to consult with and discuss the programs with the schools as well as provide for more detailed program analysis.

An increase of 2 positions and $37,000 is requested to meet increased workload resulting from the rapid expansion of the Health Professions and Nursing Student Loan Programs. The remaining $131,400 requested is required to meet mandatory increases for new positions authorized in 1967.

PROGRAM DIRECTION AND MANAGEMENT SERVICES

Introduction

The office of the Director of the newly established Bureau of Health Manpower is charged with furnishing leadership and overall direction to the various programs of the Bureau concerned with the education and utilization of health manpower; providing a coordinating point with other bureaus in the Public Health Service and nationally with State and local governments; and providing necessary management services to insure the efficient operation of these Bureau programs. It also provides for operational consistency throughout the divisions of the Bureau in the quest of maximum operational efficiency.

Direct operations

	1967 estimate		1968 estimate		Increase or decrease	
	Positions	Amount	Positions	Amount	Positions	Amount
Personnel compensation and benefits	89	$1,012,000	89	$1,012,000	----------	----------
Other expenses	----------	242,000	----------	242,000	----------	----------
Total	89	1,254,000	89	1,254,000	----------	----------

Office of program planning and evaluation

As health manpower requirements change in response to new medical and technological discoveries and altered social and environmental conditions, there must be a continuous evaluation of the adequacy of programs to meet these requirements. The Office of Program Planning and Evaluation will provide a focus for such evaluation. It will coordinate and review planning and programs of the various Divisions of the Bureau of Health Manpower. It will work with other units of the Public Health Service, other government agencies, and representatives of the professions, interested organizations, and institutions in identifying new and changing needs and requirements for health manpower. It will conduct special studies of needs for and supply and utilization of health manpower and it will provide guidance in planning programs for meeting health manpower needs and utilizing health manpower resources.

Information office

This office furnishes leadership, coordination and technical assistance to the information, public relations and graphics activities of the five divisions. It originates written materials such as press releases, radio and television scripts, publications, and speeches dealing with the health manpower activities of the Bureau, and performs editorial and clearance functions for materials originating in the divisions, totaling several hundred items annually. It serves as the primary point of contact for response to inquiries from the press, other media, and the public related to health manpower programs.

Office of administrative management

This office develops and implements policies and procedures in the administrative management area in order to utilize the most economic means of operation in the Bureau. It is responsible for security and committee management. It provides many centralized administrative management services through the following staffs:

Management planning and appraisal.—Implementing the programs of the new Bureau of Health Manpower will require imaginative planning in assigning functions among and within divisions and staff offices particularly with respect to activities needing increased visability and development such as the design of continuing education programs for the various health occupations, the development and promotion of utilization concepts, and the improvement of techniques for appraising the quality of on-going educational activities. Division directors and other Bureau officials also will need consultation and assistance in resolving the various management problems that can be expected with a new program and in developing systems to handle the administrative routines that are so essential to the effective operations of an organization. The Bureau's management planning and appraisal staff has designed its work plan around providing these

management planning and consultation services to the Bureau as Divisions and Staff Offices will not staff for this type of specialized management. Additionally, this Staff will (1) represent the Bureau in the management analysis area with the Office of the Surgeon General, (2) promote the use of new and improved management practices throughout the Bureau and (3) conduct special reviews and appraisals for the Bureau Director and his immediate staff.

Data systems.—The data systems staff develops and administers policies and procedures, and promotes improved management practices to achieve an effective ADP program in support of authority and responsibility assigned to the Bureau, and coordinates and evaluates all Bureau ADP activities. It is of paramount importance to the Bureau to develop a short and long-range plan which will identify the types of data systems required to make available management information in all health and allied health professions categories. The initial effort of the staff in developing the management plan will be to study what systems are currently in use within the Federal government, State governments and private industries; and to develop costs and timetables for each sub-phase for implementing and placing into operation a Manpower Intelligence Communication System. In 1968, the principal objective will be to develop detailed design specifications relating to input and output requirements which the Manpower Intelligence Communication System must be capable of producing. The detailed specifications will describe the relationship between State health agencies, professional associations, educational institutions, organizational elements of the U.S. Public Health Service, etc. pertaining to source of information, reliability, form of presentation, as well as end use.

Financial management.—This activity directs and coordinates the financial management activities of the Bureau. It provides financial management, advice and service to the Office of the Director. It advises, guides and participates in the budget formulation of the 5 Bureau divisions, reviews budget estimates and prepares in final form budgets for presentation to the Surgeon General, Department, Bureau of the Budget and Congress; and develops and installs budget execution and control procedures including periodic financial reporting.

Personnel.—The personnel activity is currently engaged in providing assistance in the staffing of the three new divisions of the Bureau as well as providing personnel services to the Divisions of Dental Health and Nursing. Assistance to the new divisions involves recruiting and selecting personnel and the development of positions descriptions for entirely new programs. The newly established functions will require employing personnel with new types and varieties of experience including practically all categories of health professions personnel, educators, automatic data processing planners, statisticians, as well as those with experience primarily oriented to public health. Continued efforts will be made to expand the use of standard position descriptions and to provide assistance in the newly emerging career development programs of the Department which include both Commissioned Corps and Civil Service employees.

Regulations and legislation.—The regulations and legislation activity interprets all public laws concerning the Bureau's activities and also all policies and regulations of the Bureau, the Public Health Service, and the Department and maintains Department manuals and other legislative and reference materials.

Contract.—This activity provides negotiated contractual services on a Bureau-wide basis for research, development and technical services required in furtherance of program objectives. The workload of this office projected for 1968 is 113 contracts amounting to $3,237,500.

General services.—The general services activity provides office services to the Office of the Bureau Director and leadership, coordination, guidance and specialized assistance to the Divisions of the Bureau in property procurement and management. It operates forms control and paperwork management programs; conducts space operations and provides for mail and messenger service.

	Grade	Annual salary
Physician manpower:		
Public health program specialist (4)	GS–14	$60,424
Architect (2)	GS–14	25,746
Public health program specialist (3)	GS–13	38,619
Architect	GS–12	10,927
Public health program specialist (3)	GS–12	32,781
Public health program specialist (4)	GS–11	36,884
Do	GS–7	6,451
Clerical assistant (3)	GS–5	15,993
Commissioned officers: Director grade (2)		28,178
Subtotal, new positions (23)		256,003
Dental services and resources:		
Public health program specialist	GS–13	12,873
Statistician (2)	GS–13	25,746
Public health program specialist (4)	GS–12	43,708
Do	GS–11	9,221
Statistician (2)	GS–11	18,442
Administrative staff assistant (2)	GS–9	15,392
Do	GS–7	6,451
Public health program specialist	GS–7	6,451
Clerical assistant (6)	GS–4	28,656
Commissioned officers:		
Senior grade (2)		25,648
Full grade (2)		18,670
Subtotal, new positions (24)		211,258
Nursing services and resources:		
Nurses (5)	GS–14	75,530
Public health program specialist	GS–14	15,106
Statistician	GS–14	15,106
Do	GS–11	9,221
Clerical assistant (2)	GS–5	10,662
Subtotal (10)		125,625
Allied health professions manpower:		
Information specialist	GS–14	15,106
Public health program specialist	GS–14	15,106
Public health program specialist (2)	GS–13	25,746
Statistican	GS–12	10,927
Do	GS–11	9,221
Public health program specialist (2)	GS–9	15,392
Public health program specialist (2)	GS–7	12,902
Clerical assistant (3)	GS–5	15,993
Subtotal (13)		120,393
Health manpower educational services:		
Public health program specialist	GS–13	12,873
Clerical assistant	GS–6	5,867
Subtotal (2)		18,740
Total new positions, all activities (72)		732,019

Health Professions Education Fund

Nurse Training Fund

The Allied Health Professions Personnel Training Act of 1966 (P. L. 89-751, dated November 3, 1966) established two revolving funds for providing loans to students in the health professions and for nurses. Authorizations of funds amounting to $10,000,000 for health professions student loans and $2,000,000 for nursing student loans are included in the law and are in addition to appropriations already provided for student loans under other authorities. Student loan funds under these other authorities can be placed in the revolving funds and in FY 1967, $3,500,000 of current nursing student loan funds will be placed in the nurse training fund (revolving fund). Those funds will be available in 1968, together with the $12,000,000 for loans to students for the academic year 1967–1968. It is proposed that funds loaned to the schools from the revolving funds will be recovered through sale of participation certifi-

cates by the Federal National Mortgage Association to private sources and would be redeposited in the revolving funds. ($15,000,000 is included in the language as the maximum authorized amount of participation certificates which can be sold.)

Operation of the Funds

Institutions which borrow funds from the health professions education or nurse training funds to provide loans to their students will execute a note payable for the amount of the loan. This note will bear an interest rate determined by the Secretary to be adequate to cover (1) the cost of the funds to the Treasury, and (2) probable losses.

At specified times during the year, these notes will be placed in a trust fund against which certificates of participation are issued and sold by the Federal National Mortgage Association. Funds derived from the proceeds of these certificates will be deposited in the revolving funds. The Secretary will pay the institution (1) 90% of its losses from defaults, (2) the amount by which the interest payable by the school on such sums exceeds the interest received by the institutions on student loans made from such sums, (3) collection costs, and (4) amount of loans cancelled.

Principal and interest collected by the institution on student loans made from borrowed capital will be given to the Secretary for deposit in the revolving funds.

TUESDAY, APRIL 4, 1967.

CONSTRUCTION OF HEALTH EDUCATIONAL FACILITIES

WITNESSES

DR. LEONARD D. FENNINGER, DIRECTOR, BUREAU OF HEALTH MANPOWER

DR. JOSEPH A. GALLAGHER, DEPUTY DIRECTOR, BUREAU OF HEALTH MANPOWER

MISS JESSIE SCOTT, DIRECTOR, DIVISION OF NURSING

JOHN W. HAMBLETON, FINANCIAL MANAGEMENT OFFICER, BUREAU OF HEALTH MANPOWER

DR. WILLIAM H. STEWART, SURGEON GENERAL

G. R. CLAGUE, ACTING CHIEF FINANCE OFFICER

JAMES B. CARDWELL, DEPUTY ASSISTANT SECRETARY, BUDGET

Program and financing

[In thousands of dollars]

		1966 actual	1967 estimate	1968 estimate
	Program by activities:			
	Grants for construction of teaching facilities:			
	(a) Medical, dental, and other health personnel	68,800	157,992	175,000
	(b) Nurses	7,411	32,589	25,000
	(c) Allied health professions personnel			3,000
10	Total program costs, funded—obligations (objects class 41.0)	76,211	190,581	203,000
	Financing:			
16	Comparative transfers to other accounts	553	722	
21	Unobligated balance available, start of year	−16,792	−30,581	
24	Unobligated balance available, end of year	30,581		
25	Unobligated balance lapsing	46	5	
40	New obligational authority (appropriation)	90,599	160,727	203,000
10	Total obligations	76,211	190,581	203,000
70	Receipts and other offsets (items 11-17)	553	722	
71	Obligations affecting expenditures	76,764	191,303	203,000
72	Obligated balance, start of year	83,438	155,100	301,403
74	Obligated balance, end of year	−155,100	−301,403	−409,403
77	Adjustments in expired accounts	−2		
90	Expenditures	5,099	45,000	95,000

Mr. FLOOD. We still have with us Dr. Fenninger, Director of the Bureau of Health Manpower. As we begin this morning, we have "Health education facilities."

Doctor, I see you have a statement prepared for this.

GENERAL STATEMENT

Dr. FENNINGER. I would like to discuss those portions of the Health Professions Educational Assistance Act, the Nurse Training Act, and the Allied Health Professions Personnel Training Act which authorize appropriation of funds for construction of teaching facilities for students in these health disciplines.

This legislation provides Federal funds for grants to assist public and other nonprofit schools to construct facilities for the various disciplines. Each application is evaluated on its merits by a group of outside consultants representing the professional area for which the application is made. The application is assigned a priority rating and is then reviewed by the appropriate National Advisory Council which makes recommendations concerning each application to the Surgeon General. Schools that increase first-year student enrollment and schools that require replacement or rehabilitation of teaching facilities to prevent curtailment of enrollment or deterioration in the quality of teaching are eligible for assistance.

This request in the amount of $203 million provides $175 million for grants to schools of medicine, osteopathy, dentistry, pharmacy, optometry, podiatry, veterinary medicine, and public health; $25 million is requested for grants to assist in the construction of new and the replacement or rehabilitation of existing teaching facilities for nurses; $3 million is for grants to assist in the construction of teaching facilities for the allied health professions.

HEALTH PROFESSIONS EDUCATIONAL ASSISTANCE CONSTRUCTION PROGRAM

People prepared to give health services of high quality are scarce. This shortage will increase as more and more people require medical care. As new knowledge and techniques develop more people with greater skills will be needed to use this knowledge and these techniques in serving the needs of all members of our society who expect good health care as a right.

The growing need for the many people possessing different skills in all fields related to health was recognized by the Congress in enacting the Health Professions Educational Assistance Act of 1963, which provided financial assistance for the construction of new facilities and the expansion and renovation of facilities of existing institutions which planned to increase their enrollment.

An estimate made before passage of the act of annual medical school graduates in the United States in 1972 was 8,360. This estimate has been revised since programs made possible by the act were initiated. The best current estimate is that 9,250 students will graduate from medical schools in the United States in 1972.

The Health Professions Educational Assistance Act Amendments of 1965 extended the construction program for medical, dental, and other health professions schools through 1969, with a total authoriza-

tion of $480 million of which not more than $320 million could be available through 1968.

As of January 16, 1967, and during the 30 months that funds have been available under the Health Professions Educational Assistance Act, 149 applications have been received and 103 have been approved and funded. The 103 projects represent total eligible construction costs of $453,560,540. Federal participation in these projects amounts to $248,963.230.

Through this program, schools with curriculums in nursing have been able to provide 786 additional first-year places, and the other health professions have increased 2,452 first-year places distributed as follows: Medicine, 1,252; dentistry, 541; public health, 352; optometry, 77; pharmacy, 225; osteopathy, 5.

Upon completion of construction these projects will provide nine new medical schools, two new schools of dentistry, and one new school of public health. The Veterinary Medical Education Act of 1966 makes schools of veterinary medicine eligible for Federal assistance, under the Health Professions Educational Assistance Act. As of this date no applications have been received from schools of veterinary medicine.

The demand for these funds far exceeds the availability. Twenty-eight applications requesting $100 million in Federal assistance have been approved and are ready for funding. We estimate 26 additional projects requiring nearly $100 million in Federal funds will be approved and ready for funding by June 30, 1967.

In recent months we have received 116 expressions of intent to apply for Federal assistance under this program indicating that many more projects are in the active planning stage. These expressions of intent would require an estimated $434 million in Federal participation.

NURSE TRAINING CONSTRUCTION PROGRAM

The Nurse Training Act of 1964, Public Law 88-851, authorizes grants totaling $90 million over a 4-year period for the construction of new teaching facilities and the expansion, replacement, or rehabilitation of those which now exist. The $25 million authorized for 1968 is requested of which $10 million is for construction of collegiate schools of nursing, and $15 million is for construction of associate degree and diploma schools of nursing. The act provides that the Federal share for construction of new teaching facilities may be up to 66⅔ percent of the total eligible cost and up to 50 percent of the total eligible cost for expansion or rehabilitation of existing facilities.

It is estimated that 621,000 nurses in the nation are practicing their profession. At least 125,000 more active nurses are presently required. Each year the need increases. An extension of a study by the Surgeon General's Consultant Group on Nursing indicates that the nation will require 1 million nurses in active practice by 1975.

As of January 31, 1967, and during the 18 months that funds have been available under the Nurse Training Act of 1964, 99 applications have been received and 48 have been approved and funded. These 48 projects represent eligible construction costs of 41,600,000 and Federal participation totaling $23,600,000. Upon completion of con-

struction the projects will provide 1,932 additional first-year places. Five new schools of nursing will have been built and many more expanded. The demand for these funds far exceeds the availability. Twelve additional projects costing $16,300,000 and requesting over $9,200,000 in Federal funds have been approved but not yet funded. Thirty-six other projects costing $33,300,000 and requesting Federal funds of $18,900,000 are awaiting Council action. Letters-of-intent show that many more projects are in the active planning stage. These projects would cost $95 million with Federal participation amounting to $56 million.

The full authorization for 1968 of $25 million is requested to increase the number of students of nursing and to reduce the critical shortage.

CONSTRUCTION OF TEACHING FACILITIES FOR THE ALLIED HEALTH PROFESSIONS

The Allied Health Professions Personnel Training Act, Public Law 89–751, authorizes, among other things, project grants to assist schools in the construction of new, and the replacement or rehabilitation of existing, training facilities for the allied health occupations. These grants are essential in the national effort to increase the number, improve the quality, and enlarge the training opportunities for these extremely important members of the health team. Up to 66⅔ percent of the eligible cost of new construction or major expansion, and up to 50 percent of the eligible costs of other construction, may be provided by the Federal Government on a project basis to public and nonprofit private training centers for the allied health professions. The $3 million requested will make it possible to initiate this program by providing construction grants to six or seven institutions in 1968.

Mr. Chairman, I shall be glad to answer any questions you may have concerning these programs.

SUMMARY OF APPROPRIATIONS REQUEST

Mr. FLOOD. The adjusted appropriation for 1967 is $160 million. The request for 1968 is $203 million. That is an increase of $43 million, of which $40 million is under the heading "Medical, dental, and other health personnel." There is a big increase in this category, but there is no increase for the nurses.

I realize that is up to the authorization for nurses but, even so, is this in balance between these two categories? Do you know what I mean?

Dr. FENNINGER. I think I understand, Mr. Flood. There is no question of the tremendous need for construction of schools of medicine, dentistry, podiatry, optometry, osteopathy, and the other schools which are covered under this particular Act. I think this is indicated by the information that we have about school plans, and also the applications which have been approved but not funded. The need is very great in both these categories of construction.

I think this represents a balanced program between the two, based on the capacities of the schools to plan, build, and expand, and based on the information we have from them.

Mr. FLOOD. You pretty well anticipated what I was going to ask you about the two categories. Your statement is pretty clear on this.

BASIC INFORMATION ABOUT PROGRAMS

Suppose you set forth some detail on, first, the eligibility requirements. Second, the procedure for approval of applications. The matching required. You might develop that a bit further. And the authorization for 1968 compared with the request. Then I think you need some statistics to establish and indicate the need. You can do that for the record.

(The requested information follows:)

A. HEALTH PROFESSIONS EDUCATIONAL ASSISTANCE PROGRAM (P. L. 88-129, P. L. 89-290, P. L. 89-709)

1. Number of schools eligible for Federal grants

Discipline	*Number*
Medicine	90
Dentistry	49
Osteopathy	5
Pharmacy	75
Optometry	10
Podiatry	5
Veterinary Medicine	18
Public Health	13
Total	265

2. Eligibility requirements

Public or other nonprofit schools of medicine, dentistry, osteopathy, pharmacy, optometry, podiatry, veterinary medicine or graduate public health are eligible to apply for construction grants. Public or other nonprofit teaching hospitals owned by or affiliated with a school of medicine or osteopathy may also apply.

The school must be accredited by a body approved for such purposes by the Commissioner of Education, U.S. Department of Health, Education, and Welfare. A new school may be deemed accredited for purposes of this Act if the Commissioner finds, after consultation with the appropriate accreditation body, that there is reasonable assurance that it will meet accreditation standards upon completion of the facility and upon or prior to the graduation of its first class.

Assurance is required in all applications based upon a large increase in enrollment that the increase will not adversely affect the quality of training and, hence, accreditation. Schools requesting support for such expansion should secure from their National accreditation group a statement indicating its awareness of the proposed plans and noting whether such plans would affect accreditation.

3. Matching requirement

As in most Federal aid programs, the applicant must provide the necessary matching funds. The level of Federal participation varies with the type of construction. For example, a Federal grant may be made to cover up to 75 percent of the cost of building a school of public health. For other disciplines, new schools can receive up to 66⅔ percent of the total construction cost and schools for which major expansion is planned can receive up to 66⅔ percent of the eligible costs attributable to expansion. Major expansion is defined to mean an increase in first-year enrollment of at least 20 percent or 20 students, whichever is greater. All other projects may receive Federal aid up to 50 percent of the eligible cost.

4. Procedures for approving grants

The application is first reviewed by the PHS for completeness and to verify that all eligibility requirements are met. Arrangements are then made for a site-visit by a team of non-Federal consultants to review in detail the proposed project. The report of the site-visit team, as well as all other available mate-

rial, is then presented to an appropriate review committee. The committee recommendations are considered by a national advisory council on education for health professions, which in turn makes recommendations to the Surgeon General for final decisions.

If the council recommends approval, the project is considered for a grant award. Many factors influence the decision to award grants; these include the number and priority rating of other approved applications, and the amount and availability of Federal funds.

Each applicant having an approved and funded project, receives a notice of award indicating the amount of the grant.

5. Comparison of 1968 authorization with request

A total of $480,000,000 was authorized for the three fiscal years beginning July 1, 1966 and ending June 30, 1969, with not more than $160,000,000 available before July 1, 1967 and not more than $320,000,000 available before July 1, 1968.

In fiscal year 1967 $135,000,000 was appropriated, and for fiscal year 1968 $175,000,000 is requested.

6. Data to indicate need

Applications submitted to date will require $140,000,000 of fiscal year 1968 funds.

Letters of intent to apply from 119 institutions reflect a need for $447,800,000 Federal share (including six projects for schools of veterinary medicine amounting to $11,900,000). These projects will be submitted within the next five years.

B. Allied Health Professions Personnel Training Program (P.L. 89–751)

1. Number of schools eligible for Federal grants

The study to determine the number of eligible schools has not been completed.

2. Eligibility requirements

An applicant for a construction grant under this program must be a public or nonprofit private training center for allied health professions. A training center for allied health professions may be a public or other nonprofit junior college, college, or university providing programs of education in allied health occupations leading to an associate, baccalaureate, or higher degree for not less than 20 students. The Act specifies curriculums in medical technology, optometric technology, and dental hygiene and permits additional curriculums as spelled out by regulations.

Subsequent regulations developed for P.L. 89–751 list as eligible curriculum programs preparing the following types of allied health personnel: (1) technologists (medical, optometric, and radiologic); (2) technicians (dental, laboratory, inhalation therapy, and x-ray); (3) assistants (dental, ophthalmic and occupational therapy); (4) dental hygienist; (5) therapists (occupational and physical); (6) medical records librarian; and (7) dietitian and food service assistant.

The center must also include or be affiliated with a teaching hospital and be accredited by a recognized body or bodies approved for that purpose by the Commissioner of Education, or if a junior college, by the regional accrediting agency.

3. Matching requirements

The regulations prescribing matching requirements for this program have not yet been promulgated; however, the requirements will be similar to those listed under A. 3 above.

4. Procedures for approving grants

Procedures for approving grants are the same as those listed under A. 4 above.

5. Comparison of 1968 authorization with request

A total of $9,000,000 was authorized for the fiscal year ending June 30, 1968; $3,000,000 is requested.

6. Data to indicate need

No comprehensive listing of letters of intent to apply has been compiled.

C. Nurse Training Program (P.L. 88-581)

1. Number of schools eligible for Federal grants

Type	Number
Collegiate	173
Associate degree	96
Diploma	577
Total	846

2. Eligibility requirements

An applicant for a construction grant under this program must be a public or other nonprofit school of nursing offering accredited programs leading to a baccalaureate or graduate degree in nursing, an associate degree, or a diploma. Existing programs must be accredited and new programs must have reasonable assurance of accreditation.

3. Matching requirements

Matching requirements in this program are the same as those listed under A. 3 above.

4. Procedures for approving grants

Procedures for approving grants are the same as those listed under A. 4 above.

5. Comparison of 1968 authorization with request

Program	Authorization	Request
Baccalaureate and higher degree	$10,000,000	$10,000,000
Associate degree and diploma	15,000,000	15,000,000
Total	25,000,000	25,000,000

6. Data to indicate need

Applications submitted to date or anticipated in fiscal year 1968 will require $49,000,000 of fiscal year 1968 funds.

Letters of intent to apply from 49 programs reflect a need for $50,000,000 Federal share of funds in fiscal year 1969 or later.

Mr. Flood. You are requesting $3 million to start the construction program for teaching facilities for the allied health professions. As you know, new programs are going to be looked at rather carefully this year. Why can we not postpone it?

Dr. Fenninger. Mr. Flood, I believe firmly this cannot be postponed. The whole fabric of health care has become very complicated, in which a wide variety of people with many different skills are required. For the effective use of any one of these skills, all of the other skills are necessary in some balance and proportion in the operation of health services.

The allied health professions have been rather late to emerge as compared with the more traditional professions of medicine, dentistry, and nursing. With the increasing technology in medicine and the other health professions and health fields, there is increasing need to have highly prepared, highly skilled, technically trained people to augment the services to patients, and particularly in the field of environmental control and the prevention of illness.

This is one of the most important programs that we have. It is nationally rather late in starting, and I think further deferment would simply increase the problems of the delivery of medical service and health services in general.

Mr. Flood. Mr. Michel?

EFFICIENT USE OF HEALTH MANPOWER

Mr. MICHEL. In your statement you note that much effort has been devoted to defining various functions of people working in dentistry, and you point out some studies that are being made. How do you plan to fill the knowledge gap in the health manpower function, or is there a knowledge gap?

Dr. FENNINGER. There is a knowledge gap. If by this you mean our knowledge of the kinds of functions that people perform and the ways in which their skills are used, there is a considerable knowledge gap.

This is particularly true in the allied health professions, in part because they are newer to the scene and their general roles are not so well defined as the roles of the doctor.

I might also say that all of the people in the field of health are changing, partly because of the extraordinary developments which have occurred in medical knowledge and technology, partly because there has been a great increase in the expectation of the American public for health care and health services, and partly because we have generated programs and resources both in the Federal Government and in State governments and through private enterprise to pay for the cost of services. Therefore, it becomes of extreme importance to understand the best ways in which people's skills can be used.

There have been studies done of medicine and the allied health professions to try to define something about numbers, something about the kinds of work they do, and something about the kinds of skill they should possess, but these have been done in a rather piecemeal fashion, often not relating one kind of health occupation to another and not really preparing a sound basis to decide where the emphases should be in the development of new programs.

So, the first step is to define what kinds of functions these people perform in rendering care and in the general control of the environment; secondly, to look at the kinds of programs which now exist to prepare them for the particular job; and thirdly, to stimulate on the part of the institutions which do the teaching, reexamination of their teaching programs, and to stimulate investigation and research as well as planning and operation which will test out different forms of education and different ways of using the health personnel.

Dentistry and nursing were singled out in my opening comments because I think they have been among the most forward-looking groups in seeing how the particular skills the dentists and nurses possess could be augmented by other kinds of people whose training might require less time.

SPECAL IMPROVEMENT GRANTS

Mr. MICHEL. Is there any money in the 1968 budget for curriculum improvement in the field of medicine?

Dr. FENNINGER. Yes, sir; there is.

Mr. MICHEL. Could you single that out in dollars and cents, roughly?

Dr. FENNINGER. The largest single section which is related to improvement of curriculum is for basic and special improvement grants for the health professions for which we are requesting $57,500,000.

Mr. MICHEL. How would that compare with 1967?

Dr. FENNINGER. That is an increase of $27,500,000. We have $30 million available in 1967 for this particular function.

Mr. MICHEL. Your request last year was for how much?

Dr. FENNINGER. $30 million.

Mr. MICHEL. We gave you the full $30 million. This year you are asking what, again?

Dr. FENNINGER. $57,500,000.

Mr. MICHEL. What is the total authorization?

Dr. FENNINGER. The total authorization is $60 million for 1968.

MEDICAL SCHOOL GRADUATES

Mr. MICHEL. Yesterday I asked Dr. Stewart how many medical school graduates we were getting a year.

Dr. FENNINGER. 7,600 this past year, roughly.

Mr. MICHEL. I suspect there has not been much improvement over the past 5 years in that level of graduates, has there?

Dr. FENNINGER. We have the figures on that. The number of graduates in 1960 was 7,081.

Mr. MICHEL. And this past year?

Dr. FENNINGER. The number of graduates in 1966–67 is estimated at 7615.

Mr. MICHEL. You hope 5 years hence, in 1972, to have roughly how many?

Dr. FENNINGER. 9,100, approximately.

Mr. MICHEL. Can you do better than that?

Dr. FENNINGER. I do not know whether we can do better than that or not. This depends, of course, on the rate at which faculties can be assembled for new schools, the rate of which faculties can be increased in the existing schools, and the rate at which plans can be made and construction completed.

This represents a major effort on the part of American medical education to increase to this number.

Mr. MICHEL. This is not one of those areas where you can turn the spigot on and off?

Dr. FENNINGER. No, sir.

HEALTH PROFESSIONS SCHOLARSHIPS

Mr. MICHEL. How many scholarships are involved in this program?

Dr. FENNINGER. The total number for the health professions?

Mr. MICHEL. Yes.

Dr. FENNINGER. Our estimate in the budget is 4,000.

Mr. MICHEL. When we speak of scholarships, to what extent are we talking about full-funding or partial scholarships?

Dr. FENNINGER. The limit is $2,500 awarded to any individual in any given year.

Mr. HAMBLETON. We estimated there would be 4,000 at an average of $2,000 each.

RESEARCH GRANT FUNDS

Mr. MICHEL. Do we have a breakdown of the research and development dollar?

Mr. HAMBLETON. We have research grant funds in 1967 of $3,900,000. We have a much smaller amount for direct operations of our staff of about $2 million primarily in the dental program.

Mr. MICHEL. Was that 1967?

Mr. HAMBLETON. That was 1967.

In 1968, the research grants increased to a total of $4,871,000, which is an increase of $971,000 over 1967.

DIRECT OPERATIONS INCREASES

Mr. MICHEL. Near the end of your statement you list five items showing where your requested increases would go. Can you break down this listing into direct operations?

Mr. HAMBLETON. Yes, the direct operations in each category are: In Physician manpower, in 1968 we have $2,918,000; in dental services, $4,730,000 or do you just want the increases, Mr. Michel?

Mr. MICHEL. Yes. Go ahead.

Mr. HAMBLETON. I was giving the total: $2,918,000 in physician manpower, an increase of $323,000 over 1967; in dental, $4,730,000, an increase of $457,000; in nursing, $2,782,000, an increase of $640,000; in allied health professions, $1,104,000, an increase of $237,000; in the health manpower educational services division, the amount in 1968 is $1,102,000, an increase of $168,400.

Mr. MICHEL. What would happen if we did not allow these increases, if we held all categories at last year's level?

Dr. FENNINGER. There would be a considerable delay, I think, in launching new programs, and there would be less opportunity to develop and strengthen the teaching programs for all categories of the health professions. We would not be developing new knowledge. We would not be exchanging information. We would not be helping the schools to develop their construction programs and their basic and special improvement programs.

Mr. MICHEL. Would it be unfair on our part to say that all we are really doing is delaying for another year what we would like to do? Or is it one of these things that compounds itself, if we do delay, with additional cost?

Dr. FENNINGER. I think there is no question that the cost will rise with delay, but I think even more important than the cost is the fact that we will not be producing the new people and developing the new skills that will be needed, which really are needed today, and will be more needed tomorrow, and will be even more needed 10 years hence.

There is an inevitable lag time between the availability of funds and the development of plans for teaching and the development of plans for facilities in which to teach. Every year's delay is indeed compounding and costs go up, but particularly because of the length of time required to prepare and educate people in the health professions.

DIFFERENCE BETWEEN OBLIGATION BUDGET AND EXPENDITURE BUDGET

Mr. MICHEL. May I have the difference spelled out here between the new obligation authority budget and the expenditure budget? Would you put that in the record.

(The requested information follows:)

In 1968, expenditures related to "Health Manpower Education and Utilization" programs will total aproximately $128,184,000 compared with a requested appropriation of $170,413,000. These expenditures include $56,243,000 reflected in other appropriations which transferred activities under the reorganization to "Health Manpower Education and Utilization."

The apropriation "Construction of Health Educational Facilities" estimates expenditures in 1968 of $95,000,000 compared with a requested appropriation of $203,000,000. It is inherent in a construction program that funds must be obligated, hence available, prior to the construction of a project. Following the award of a grant, the applicant in this program is given one year to arrange a construction contract. Once construction is started, he is paid proportionately when the project is 25%, 50%, 75%, 95%, and 100% completed. The average project takes about two years to complete. Consequently, funds which have been earmarked for a specific project may not be completely expended for a period of almost three years on the average. By our request for $203,000,000 in 1968, we are seeking to make funds available to be obligated for an increasing number of future construction projects.

MANPOWER RESEARCH GRANTS

Mr. MICHEL. Have the four new manpower research grants been selected? How far along are you in the process of making the selection?

Dr. GALLAGHER. We have some applications in, but to date we have not selected them. They are given on the basis of excellence. We have several applications pending.

Mr. MICHEL. How many applications do you have up to this point?

Dr. GALLAGHER. We have seven or eight.

Mr. MICHEL. How many would you anticipate or how many would you like to have to choose from?

Dr. GALLAGHER. We would like to have as many as possible. This gives us a better choice of excellence. It has been rather a new program, and we have not had as many applications as we would like to have.

Mr. MICHEL. Do you think that is due to the fact that it has not been publicized to the extent that it might?

Dr. GALLAGHER. In part; and another part is that the applicant institutions are not aware of the opportunity to apply.

Mr. MICHEL. There would be no reason to suspect on our part that it was purposely inhibited to keep down the number of applicants?

Dr. GALLAGHER. No, sir; not at all.

NATIONAL PHYSICIANS' MANPOWER DATA REFERRAL SYSTEM

Mr. MICHEL. How much will be paid to the six new positions proposed for establishing a national physicians' manpower data referral system?

Mr. HAMBLETON. The six jobs will cost $38,000.

Mr. MICHEL. That breaks down to what? A little over $6,000 per year per position?

Mr. HAMBLETON. One of the six positions is a medical director, two are public health advisers, one is a statistician, one an education specialist, and one is a program management officer.

Mr. MICHEL. How about the advisers? Would those be on a part-time basis or contractual basis?

Dr. GALLAGHER. They would be full time.

PHYSICIAN EDUCATION

Mr. MICHEL. What grade and salaries are you proposing for seven positions under physician education?

Dr. GALLAGHER. We are proposing seven positions for 1968—a physician, director grade, a statistician at grade 14, a specialist in education at grade 12, a public health adviser, grade 13, an administrative assistant at grade 11, a public health analyst at grade 11, and a clerk-steno at grade 5.

EDUCATIONAL FACILITIES CONSTRUCTION

Mr. MICHEL. How about the 10 positions under educational facilities construction?

Mr. HAMBLETON. These are an engineer, grade 14; an economist, grade 14; two architects at grade 13; a public health adviser, grade 13; architect, grade 12; two analysts, grades 11 and 7; and two clerks, grade 5.

NATIONAL NURSE SHORTAGE

Mr. MICHEL. What is the extent of our nurse shortage in the country?

Dr. FENNINGER. The extent of the nurse shortage is not easily defined, but I think Miss Scott can describe the basis of the numbers that we have, and also can tell you what the numbers are.

Miss SCOTT. The shortage of nurses in this country is about 125,000 currently.

Mr. MICHEL. How does that compare with 5 years ago? Are we making any dent?

Miss SCOTT. Yes. Each year we have more nurses in relation to the population, and we continue to have more nurses in practice.

One of the difficulties facing us is the number of nurses now working part time. An actual count of people does not really describe the numbers of nurses who are in fact working full time. The part-time nurse population continues to grow while the full-time nurse population has increased at a much slower rate. Although we have more nurses in practice, the amount of nursing service has not changed markedly.

Mr. MICHEL. I do not recall a witness from the other side of the table in this general field ever saying other than that we do have a shortage here and there. If we provided all the resources and funds you could use, do you suppose 10 years from now there would still be a shortage of nurses?

Miss SCOTT. It is difficult to say. One of the things we are concerned about is the way in which nursing skills are being used. Not only is there a shortage of people, but there is a shortage in the way skills are being used. It is one thing to talk about how many more people you need, but if you do not use these people in the correct fashion, you will not improve the situation.

The amount of time nurses spend on activities not really requiring their skill and judgment is one of our most difficult problems.

There are questions. One is the use made of nursing skills, and the other is the actual number of people.

Mr. MICHEL. Are young women today less inclined to go into the nursing profession than 5 or 10 years ago?

Miss SCOTT. The percentage of high school graduates going into nursing remains at 4½ or 5 percent. The number entering the profession is greater, but the percentage of high school graduates entering nursing is about the same.

Mr. MICHEL. Nurses are paid fairly well, are they not?

Miss SCOTT. I think in some sections of the country their salaries are improving, but in general, nationally, nurses' salaries have not kept pace with other salaries.

Mr. MICHEL. Why is that?

Miss SCOTT. I am not exactly certain why that is. I think part of it is because of the organized system of care in which nurses work that is, in the hospital system, and the way in which nurses' salaries are derived and scheduled. They are not in a competitive market.

Mr. FLOOD. Mr. Natcher.

OPERATION OF CONSTRUCTION PROGRAM IN THE DISTRICT OF COLUMBIA AND PUERTO RICO

Mr. NATCHER. Dr. Fenninger, I think this is one of the most important programs that we have in HEW today. I believe I understand how it works in the States.

What system do you use here in the District of Columbia and in Puerto Rico, for instance, concerning approval of grant applications and construction projects under this particular program?

Dr. FENNINGER. Dr. Gallagher has been very intimately involved in this program and has had a great deal of experience. May I ask him to reply?

Mr. NATCHER. You certainly may. I will be glad to hear from you, Doctor.

Dr. GALLAGHER. Wherever we have an application for the construction of any teaching beds, we immediately contact the Hill-Burton agency, the planning agency within that area, that has available to it the plan for that area as to how many beds are needed, as to use, and also in what localities beds are needed. If the Hill-Burton agency has funds available, it will participate to some extent. If it does not, it gives us an indication of what the need is and gives us approval to go ahead and participate.

In this way we are able in general to determine bed needs so we will not disrupt bed activity.

Mr. NATCHER. What system generally are you using here in the District of Columbia where you have a large general hospital and where you have other medical facilities connected with different universities? What system generally are you using now from the standpoint of approval of applications for construction?

Dr. GALLAGHER. On the applications we have had in the District of Columbia, we have checked with the health department to see if they have any comment or reservation as to the number of beds, if it would disrupt patient care patterns, and so forth. Also, our site review committee and our site visit teams look into this, asking the various people concerned as to the patterns of care and how they relate to the over-all picture of bed need.

Mr. NATCHER. Have you any applications or any program in Puerto Rico under this program?

Dr. GALLAGHER. We do have, yes, sir.

Mr. NATCHER. For instance, what have you underway now in Puerto Rico?

Dr. GALLAGHER. We have already funded a medical school, a school of public health, and a dental school in Puerto Rico.

Mr. NATCHER. Assuming an application is filed for a grant under your construction program and your survey shows that certain changes should be made from the standpoint of better use of the money, what do you do about it? For instance, if it were the District of Columbia General Hospital or Georgetown or any place else here in the District of Columbia, do you make suggestions to them and show them how it should be changed, or do you just let them make mistakes? That is what I am interested in.

Dr. GALLAGHER. We have a site visit team made up of professional consultants from outside of the Government who are peers within the profession. They site visit and make recommendations as they see fit. Those recommendations are brought in and reviewed by a committee of consultants. This committee is involved totally on the professional side of the operation and the construction related to carrying out the professional side of the application.

If they believe that there could be improvements, then they refer their advice back to the school. If it goes through the council, the council sometimes makes a site visit itself, advising the school of new and different ways of approach to see what the school will consider.

Mr. NATCHER. Thank you very much, doctor.

Thank you, Mr. Chairman.

Mr. FLOOD. Mr. Shriver.

APPLICATIONS FROM VETERINARY SCHOOLS

Mr. SHRIVER. I notice in your statement you say no applications have been made for the construction of veterinary schools. I wonder why that is.

Dr. GALLAGHER. To date, we have had no applications. However, schools of veterinary medicine are certainly eligible to apply. Starting July 1, 1967 we will be able to fund applications from schools of veterinary medicine on a priority basis competing with applications in other disciplines.

Mr. SHRIVER. There are some 18 or 19 schools of veterinary medicine in the country. We have a very fine one at Kansas State College. They need help badly.

Dr. GALLAGHER. I had a meeting with the deans of the schools of veterinary medicine two weeks ago, which was the first time they have been together at a session on our entire program and how it operates. I am sure we will have some applications in the near future.

Mr. FLOOD. How many schools of veterinary medicine do we have?

Dr. GALLAGHER. Eighteen.

Mr. FLOOD. Pretty well distributed geographically?

Dr. GALLAGHER. Yes, sir, they are.

LOCATION OF NEW MEDICAL SCHOOLS

Mr. SHRIVER. Where is the construction that you mentioned in your statement where you say;

Upon completion of construction, these projects will provide 9 new medical schools, 2 new schools of dentistry, and 1 new school of public health.

Where are they located?

Dr. GALLAGHER. The new schools of medicine are: The University of New Mexico in Albuquerque. The first 2 years of that has been completed. The University of Texas in San Antonio, Tex.

Mr. SHRIVER. On what page is that?

Dr. GALLAGHER. You do not have that. This is a book I have for reference.

The University of California at San Diego. Rutgers University, New Brunswick, N.J. Brown University, Providence, R.I. The University of Hawaii, Honolulu, Hawaii. The University of Arizona in Tucson, Ariz. Pennsylvania State University at Hershey, Pa. The University of Connecticut, Farmington, Conn.

There are three new dental schools: The University of California, Los Angeles, Calif. The University of Connecticut, at Farmington, Conn., and the Dental School of the Medical College of South Carolina, Charleston, S.C.

The new School of Public Health is the University of Hawaii, Honolulu, Hawaii.

Mr. LAIRD. Why do you not put in the record at this point a list of all of those that have been funded, where they are, the amount of the grant, and the amount that will be matched.

Mr. FLOOD. On veterinary?

Mr. LAIRD. No; medical and dental schools.

(The requested information follows:)

New school construction supported by Bureau of Health Manpower programs

Name and location	Discipline	Federal share	Matching funds	Increased 1st year enrollment
1. Health professions educational assistance program:				
University of New Mexico, Albuquerque, N. Mex.	Medicine	$1,705,336	$852,669	48
University of Texas, San Antonio, Tex	do	12,633,190	7,816,322	100
University of California, San Diego, Calif	do	8,035,247	4,017,563	96
Rutgers University, New Brunswick, N.J	do	4,337,519	2,168,727	64
Brown University, Providence, R.I	do	2,147,141	1,073,555	25
University of Hawaii, Honolulu, Hawaii	do	2,090,677	1,045,323	48
University of Arizona, Tucson, Ariz	do	16,990,937	9,247,382	48
Pennsylvania State University, Hershey, Pa	do	19,000,000	14,410,623	64
University of Connecticut, Farmington, Conn.	Medicine	5,836,851	2,917,988	48
	Dentistry	5,296,815	2,648,011	48
University of California, Los Angeles, Calif	Dentistry	1,232,127	677,608	96
Medical College of South Carolina, Charleston, S.C.	do	4,731,015	2,365,154	48
University of Hawaii, Honolulu, Hawaii	Public health	735,000	245,000	35
Murray State College, Murray, Ky	Nursing	576,748	288,370	45
Ball State University, Muncie, Ind	do	804,671	402,329	89

New school construction supported by Bureau of Health Manpower programs—Con.

Name and location	Degree	Federal share	Matching funds	Increased 1st year enrollment
2. Nurse training program (Public Law 88-581):				
Augustana College, Sioux Falls, S. Dak	Baccalaureate and graduate degree.	$129,333	$64,667	43
Northeastern University, Boston, Mass	Associate degree.	450,947	225,471	160
Westbrook Seminary and Junior College, Portland, Maine.	do	134,917	67,458	48
Mississippi Valley State College, Itta Bena, Miss.	do	227,751	113,874	30
College of the Desert, Palm Desert, Calif	do	438,260	219,098	60

OVERSEAS HEALTH FACILITIES

Mr. SHRIVER. My only other question relates to the discussion you had with Mr. Natcher. There are other agencies of Government, such as the Agency for International Development, which build hospitals, nursing schools, and health facilities. Is the Public Health Service involved in anyway, consultative or otherwise, in connection with plans and specifications for such institutions built overseas?

Dr. GALLAGHER. At their request, we provide consultation.

Mr. SHRIVER. For instance, this country is now providing funds to build a large medical hospital or complex at the American University in Beirut, Lebanon. Is the Public Health Service involved in any way in the planning of that project, involving some $23 million?

Dr. GALLAGHER. I cannot answer the question because a different part of the Public Health Service is involved in that. We are working with the educational phase.

Mr. SHRIVER. I understand that, but I thought you might know. That is all, Mr. Chairman.

Mr. FLOOD. Mr. Hull?

Mr. HULL. No questions at this time, Mr. Chairman.

Mr. FLOOD. Mr. Laird?

PROJECTED CONSTRUCTION REQUIREMENTS

Mr. LAIRD. I would be interested in finding out the full amount of firm applications which you have. I understand you sent out a memorandum to all of the schools of medicine, schools of dentistry, and public health schools, asking them what their anticipated needs would be over the period of the next few years. I attended a meeting with some of the deans, and it seems to me that they just sort of put in a ball park estimate rather than any firm estimate of what they have ready to go.

I would like it to be divided between the amount that actually has firm planning and the amount that is just an estimate. I would like it related to your statement, which it would seem to me is taken from the estimates they have sent in without any firm planning.

Dr. FENNINGER. I think Dr. Gallagher can give you in each of the categories where the plans are, how far along they are.

Mr. LAIRD. I think this makes some difference in discussing the budget request, because the figures are somewhat different, as I understand it.

Dr. GALLAGHER. Right at this time, Mr. Laird, we have $100,672,459 as the Federal share of projects approved. They are approved but not funded as yet.

Mr. LAIRD. They have been approved by the council?

Dr. GALLAGHER. Yes, sir.

In addition to that, we have $5.8 million provisionally approved because of one or more items on which the council required additional information.

Mr. LAIRD. How many firm applications are pending before the council?

Dr. GALLAGHER. I do not have the figure for June coming up, but as of the March council, we had $24.7 million pending.

Mr. LAIRD. What is the estimate you got when you asked for the projected construction need?

Dr. GALLAGHER. The total projected construction need was 113 projects.

Mr. LAIRD. Totaling?

Dr. GALLAGHER. For a total Federal share of $435.9 million.

Mr. LAIRD. When would those projects be ready to go, according to the estimate? Do you give them 5 years, 3 years, 2 years, 1 year?

Dr. GALLAGHER. It would be within the next 5–10 years.

Mr. LAIRD. Within the next 5–10 years, there would be 113 projects?

Dr. GALLAGHER. For a total of $435 million.

We do not know exactly from the records here how close any of them are.

Mr. LAIRD. Does this include nursing facilities?

Dr. GALLAGHER. No, sir; it does not.

Mr. LAIRD. This is just medical?

Dr. GALLAGHER. Medical, dental, pharmacy, optometry, podiatry, osteopathic, and public health.

Mr. LAIRD. What are the figures as far as nursing is concerned? I would like it projected on the same basis—pending, provisionally approved, approved, and the projection.

Miss SCOTT. As of March 1, 1967, projects approved and funded are 46 in number. The Federal share is $22,664,343.

Projects approved but not funded are 14 in number, for $10,136,479.

Projects pending presentation to the council are 17 for $11,750,795.

Mr. LAIRD. Do you have a projection?

Miss SCOTT. We anticipate 99 applications for construction grants. Eight of these did not give us any indication of how much money they needed. The remaining 91 schools indicated they would need $55,643,860.

FUNDING NURSES' DORMITORIES

Mr. LAIRD. You have no dormitory requests in these applications?

Miss SCOTT. No, sir; we do not.

Mr. LAIRD. The dormitory requests all go over to the Department of Housing and Urban Development. Have you any idea of the total pending in HUD for nurses' dormitories?

Miss SCOTT. No, sir; I do not.

Mr. LAIRD. HUD will finance nurses' dormitories that are not at degree-granting schools?

Miss SCOTT. Yes, sir. The Hill-Burton program also funds dormitories for diploma schools.

Mr. LAIRD. HUD will do that for diploma schools, too; will it not?

Miss SCOTT. I think it will.

Mr. LAIRD. It is really a better arrangement for them to use HUD rather than to use the Hill-Burton money. The Hill-Burton money is rather tight right now, and the HUD money has just been loosened up. I would hope that you would be encouraging them to use that route at this time, rather than take hospital bed construction funds for nurses' dormitories. Is that not what you are doing?

Miss SCOTT. Yes, sir.

Mr. LAIRD. These dormitory and nurse facilities requests, whether under Hill-Burton or under HUD, require State board of health approval first?

Miss SCOTT. The school of nursing, to be eligible for funds, must meet the accreditation standards in relation to the nursing school program. The applications must meet all building construction requirements, the same as all applications do, for the kind of teaching facility and whether or not the space will accommodate the teaching program which is contemplated.

NURSE FACILITIES FUNDING FOR DIPLOMA AND DEGREE PROGRAMS

Mr. LAIRD. I have been having some difficulty. I have a diploma school in my district. It is tied in with the university extension center.

The first 2 years they go to the university center, which is located in the same town, and then they move up to the hospital for the next period of training. When I try to help them get funds, I get pushed around from pillar to post because they seem to be giving higher priority to the degree-granting program than to the diploma program.

Miss SCOTT. In Wisconsin?

Mr. LAIRD. You are giving a higher priority to degree-granting facilities than you are to the diploma schools. It seems to me if we want more nurses, we should be pushing these diploma schools a little bit.

Miss SCOTT. The diploma schools and the baccalaureate degree programs are not in competition with each other.

Mr. LAIRD. In the facilities program?

Miss SCOTT. Yes, sir.

Mr. LAIRD. How do you have that divided? Where is the justification sheet which divides that?

Mr. HAMBLETON. The distribution of all of the funds starts on page 88.

Mr. LAIRD. Where is the division between the diploma and degree schools in nursing?

Mr. HARRIS. The second paragraph on page 97.

Mr. LAIRD. What is the division as far as the requests are concerned? You have given me a lump sum projection. Let us separate that. There must be some reason for this. You must have a greater demand in one area than the other.

Miss SCOTT. We have 18 projects approved and funded for baccalaureate and higher degree programs, 25 diploma programs, and three for junior colleges, totaling 46.

Mr. LAIRD. The three from junior colleges would be where you are using a university center which offers only 2 years of college work? They would qualify for the junior college program?

Dr. FENNINGER. This is an associate degree program of 2 years, including experience in patient care.

Mr. LAIRD. This is a 4-year program, though, that I am talking about.

Dr. FENNINGER. Yes. The associate degree program is a 2-year program. The baccalaureate program is a 4-year program. In the situations where 2 of the years are spent at a college campus and the other 2 years in a hospital setting affiliated with the college, this would lead to a baccalaureate degree.

Mr. LAIRD. Is this a junior college?

Dr. FENNINGER. No.

Mr. MICHEL. Where are those three junior colleges?

Miss SCOTT. Northeastern University in Boston has a 2-year associate degree program, Westbrooke Seminary and Junior College in Portland, Maine, and the third one is the Mississippi Valley State College in Itta Bena, Miss.

ESTIMATED FUNDING COMPARED TO REQUESTS

Mr. LAIRD. You are requesting $10 million for grants for the baccalaureate degree program, and you are requesting $15 million for the associate degree and diploma schools of nursing. What are the requests in those two areas? What would you need if you were to fully fund all applications in these two programs?

Miss SCOTT. Projects approved but not funded, $6.3 million in the baccalaureate program, $3.3 million in diploma schools, and about half a million dollars in junior colleges.

Pending presentations to the council we have 10 from diploma programs for $7 million, four from junior college programs for $954,000, and baccalaureate programs totaling $3,675,000.

Of the anticipated projects, we have 34 anticipated from baccalaureate degree programs, 35 from associate, and 30 from diploma.

Mr. LAIRD. I am interested in the money involved. I am not getting a very good picture.

Miss SCOTT. The estimated Federal share for diploma programs anticipated is $11 million; for the associate degree, $19 million; and for baccalaureate and higher degree programs, $24,600,000.

Mr. LAIRD. So, you anticipate that you will be able to fund less than half of your applications?

Miss SCOTT. In general, yes; I would say that.

Mr. LAIRD. In the other section, dental and medical school programs, what is your anticipated funding as compared with requests?

Dr. GALLAGHER. Our anticipated funding after we spend all the money we have this year, with the applications that are in and approved and those we anticipate coming in in June, will be about $140 million.

Mr. LAIRD. How many applications has the council turned down?

Dr. GALLAGHER. They have disapproved 7 in total, and some of those have come back in.

TRANFER OF FUNDS BETWEEN PROGRAM CATEGORIES

Dr. FENNINGER. If I might go back to the question related to nursing construction and the distribution of funds, $10 million for baccalaureate and $15 million for diploma and associate degree programs were in the original authorization. Last year the law was amended so that funds could be transferred from one category to the other, according to need as determined by the Surgeon General. There is more flexibility in the provision now, depending upon what kinds of schools come in with good projects which need funding.

Mr. LAIRD. This priority is, then, established by you now, rather than the Congress. I got an answer a little while ago that this was set up by the Congress. It seems to me that, if the Surgeon General so desires, he can use these funds either for the baccalaureate program or the associate degree or diploma school programs.

Dr. FENNINGER. That is correct.

Mr. LAIRD. He would not even have to come to this committee.

Dr. GALLAGHER. That is toward the end of the fiscal year. If there is an excess of requests in one category, baccalaureate, or diploma, and associate, and there are not enough approved applications to utilize all of the funds in the other category, then a transfer of funds can be made between the categories in accordance with the law.

Mr. LAIRD. Only at the end of the year?

Dr. GALLAGHER. Toward the end of the year.

Mr. LAIRD. You have not been doing much transferring between these categories, judging by the requests you have here. In effect, you do not have any shortage.

Dr. GALLAGHER. Yes, sir; we do, according to the amendment to the law ——

Mr. LAIRD. I do not see how you can do anything in 1968. Say we appropriated $25 million and it was divided $10 million and $15 million. On the basis of the testimony we have had here this morning, how could you transfer any of it?

Dr. GALLAGHER. According to the law, the amendment to the law, anything that it looks like will be left unspent toward the end of the year can be transferred over to the other category.

Mr. LAIRD. Do you anticipate any unspent funds in this $10 million or $15 million item that make up the $25 million?

Dr. GALLAGHER. We have no idea, sir. That is why the law was changed.

Mr. LAIRD. You ought to be able to give us an idea whether you are going to have any or not, based on your applications.

Dr. FENNINGER. I think the information we have at hand at the moment, Mr. Laird, would indicate that we will probably not have funds to transfer, but this will not be certain until council action has taken place and recommendations have been made to the Surgeon General.

The provision, as I understand it, simply permits the transfer of funds if, on the basis of experience, not all of the funds in any of the categories has been fully used for that particular type of school.

Mr. FLOOD. Mr. Casey.

Mr. CASEY. No questions.

Mr. FLOOD. Mr. Hull.

Mr. HULL. No questions.

PROPOSED POWERPLANT AT GEORGETOWN UNIVERSITY

Mr. FLOOD. Dr. Gallagher, I have this communication that I mentioned to you earlier, from James Garner Deane, which deals, as you know, with a situation which exists immediately adjoining the Glover-Archbold Park, which is part of the National Park System.

This concerns a question as to whether or not the construction of a central heating plant there would adversely affect the nearby residential area. I propose to insert this letter at this point in the record, but I think you are so conversant with the situation you might wish to comment briefly at this point.

(The letter follows:)

WASHINGTON, D.C., *April 3, 1967.*

Hon. DANIEL J. FLOOD,
Chairman, Subcommittee on Labor and Health, Education, and Welfare, Committee on Appropriations,
House of Representatives.

DEAR CONGRESSMAN: During your consideration of the appropriation requests for the Public Health Service your subcommittee may wish to give attention to the circumstances of a project pending here in Washington under several PHS-administered grant programs.

The project in question is a proposed central heating and air-condition plant to serve the medical-dental center, and the campus generally, at Georgetown University. I am informed that this plant is estimated to cost approximately $2,448,000, of which a large share is intended to be charged to the federal government.

There are several reasons for concern about this project.

First, the chosen site is immediately adjoining Glover-Archbold Park, part of the National Park System and a valuable community recreational asset that would be seriously downgraded by the presence of a factory-like utility.

Second, the plant would adversely affect a nearby residential neighborhood.

Third, the chosen location is not in conformity with the university's own master plan, as filed with official agencies in accordance with District of Columbia regulations. That plan shows ample alternative site possibilities, some of which the university itself preferred until quite recently.

Fourth, the project has not been subjected to an environmental review by PHS, despite the agency's statutory concern with such environmental detriments as noise and air pollution which are associated with such facilities, and which are especially critical at the chosen location. Nor has this kind of review been made by local agencies.

Fifth, the university itself has declared the chosen site uneconomic. We are informed that more than $200,000 will be required merely for site preparation.

Sixth, the plan presents obvious conflicts between established federal programs.

Finally, there is a serious inconsistency between the plans submitted to PHS and those submitted to local agencies. The federal government has been given final equipment plans and final preliminary structural plans for a facility more than 115 feet high, located 50 feet from the park boundary and with partly exposed smoke stacks and cooling-tower stacks. Local agencies have been given plans showing a structure 88.5 feet high, located 60 instead of 50 feet from the park, and with completely screened stacks. The latter plans also lack a truck backaground area a few steps from the park which is shown in PHS submittals.

At a hearing before the District of Columbia Board of Zoning Adjustment on March 22 a university official said the smaller structure is intended to be built, rather than the facility shown in the plans now in the hands of PHS. Yet I understand that the university already has opened bids on the mechanical equipment on the basis of the PHS submittals, and that it is about to award the equipment contracts on the same basis.

As it stands, this project seems likely to cause serious embarrassment to both the university and PHS, both with respect to expeditious completion of a plant and with respect to the public relations of the university expansion and PHS grants programs.

A number of organizations, including the National Parks Association, National Wildlife Federation, Wilderness Society, Audubon Naturalist Society of the

Central Atlantic States and Washington civic groups, are on record in opposition to locating a campus utility installation near the park.

Enclosed are reproductions of tracings from portions of the conflicting sets of plans, together with a reproduction of a sketch of the smaller of the contrasting structures as submitted to the Board of Zoning Adjustment. I hope this information will be useful to your committee.

Sincerely yours,

JAMES G. DEANE.

Dr. GALLAGHER. Thank you, Mr. Chairman.

Georgetown University was given a grant approximately 1 year ago for the construction of a medical school and a dental school, and recently the location of the powerplant was brought into question. The people bringing it into question stated it would be noisy, that it had the potential of polluting the air with smoke, and it would be detrimental to the beech trees in the park.

They had a meeting on March 22 with the District of Columbia Board of Zoning Adjustment, and I just received a letter this morning from Father Collins of Georgetown University indicating as far as he could see, the problem was being solved. He will provide further details at a later date. He simply said that it looks as though it was being solved.

Mr. FLOOD. Thank you very much.

JUSTIFICATION MATERIAL

Construction of Health Educational Facilities

Amounts available for obligation

	1967	1968
Appropriation	$160,727,000	$203,000,000
Comparative transfer to "Health manpower education and utilization"	−722,000	
Unobligated balance lapsing	−5,000	
Total	160,000,000	203,000,000

Obligations by activity [1]

	1967 estimate	1968 estimate	Increase or decrease
Grants for construction of teaching facilities:			
Medical, dental, and other health personnel	$135,000,000	$175,000,000	+$40,000,000
Nurses	25,000,000	25,000,000	
Allied health professions personnel		3,000,000	+3,000,000
Total obligations	160,000,000	203,000,000	+43,000,000

[1] Construction grants are on an allocation basis.

Obligations by objects

	1967 estimate	1968 estimate	Increase or decrease
41 Grants, subsidies, and contributions (total obligations)	[1]$190,581,040	$203,000,000	+$12,418,960

[1] Includes funds carried forward from prior years.

Summary of changes

1967 enacted appropriation	$160,727,000
Comparative transfer to "Health manpower education and utilization"	−722,000
Unobligated balance lapsing	−5,000
1967 total estimated obligations	160,000,000
1968 estimated obligations	203,000,000
Total change	+43,000,000

Increases	Base	Changes from base
A. Program:		
1. Increase in construction of teaching facilities for medical, dental, and other health personnel	$135,000,000	+$40,000,000
2. Initiation of construction of teaching facilities for the allied health professions		+3,000,000
Total net changes requested		+43,000,000

EXPLANATION OF CHANGES

Grants for construction of teaching facilities for medical, dental, and other health personnel

The increase of $40,000,000 requested for this purpose will provide a total of $175,000,000 in Federal funds for the construction of teaching facilities for medical, dental, and other health personnel. As of January 16, 1967, a total of 149 applications have been received requesting Federal funds in excess of $398,000,000.

Grants for construction of teaching facilities for the allied health professions

To assist in the construction of new facilities for training centers for allied health professions, a total of $3,000,000 is requested. This amount will increase opportunities for training of medical and x-ray technologists, occupational and physical therapists, dental hygienists, and personnel in other allied health disciplines.

AUTHORIZING LEGISLATION

CONSTRUCTION PROGRAM FOR MEDICAL, DENTAL, AND OTHER HEALTH PROFESSION SCHOOLS

"SEC. 720. There are hereby authorized to be appropriated $480,000,000 for the three fiscal years in the period beginning July 1, 1966, and ending June 30, 1969, of which not more than $160,000,000 may be available for grants before July 1, 1967, and not more than $320,000,000 may be available for grants before July 1, 1968, for—

"(1) grants to assist in the construction of new teaching facilities for the training of of physicians, pharmacists, optometrists, podiatrists, or professional public health personnel;

"(2) grants to assist in the construction of new teaching facilities for the training of dentists; and

"(3) grants to assist in the replacement or rehabilitation of existing teaching facilities for the training of physicians, pharmacists, optometrists, podiatrists, professional public health personnel, or dentists.

Sums so appropriated shall remain available until expended."

GRANTS FOR VETERINARY MEDICINE TEACHING FACILITIES

"SEC. 2. (a) Section 720 of the Public Health Service Act (42 U.S.C. 293) is amended by inserting 'veterinarians,' after 'podiatrists,' each place where it appears."

GRANTS FOR CONSTRUCTION OF TEACHING FACILITIES FOR ALLIED HEALTH PROFESSIONS PERSONNEL

"SEC. 791. (a) (1) There are authorized to be appropriated for grants to assist in the construction of new facilities for training centers for allied health professions, or replacement or rehabilitation of existing facilities for such centers, $3,000,000 for the fiscal year ending June 30, 1967; $9,000,000 for the fiscal year ending June 30, 1968; and $13,500,000 for the fiscal year ending June 30, 1969."

GRANTS FOR EXPANSION AND IMPROVEMENT OF NURSE TRAINING

"SEC. 801. (a) There are authorized to be appropriated—

"(1) for grants to assist in the construction of new facilities for collegiate schools of nursing, or replacement or rehabilitation of existing facilities for such schools, $5,000,000 for the fiscal year ending June 30, 1966, and $10,000,000 for each of the next three fiscal years;

"(2) for grants to assist in the construction of new facilities for associate degree or diploma schools of nursing, or replacement or rehabilitation of existing facilities for such schools, $10,000,000 for the fiscal year ending June 30, 1966, and $15,000,000 for each of the next three fiscal years.

There are also authorized to be appropriated for each of such fiscal years ending after June 30, 1966, for grants specified in clause (1) or (2) of the preceding sentence, the amount by which the total of the sums authorized to be appropriated under such clause for previous years exceeds the aggregate of the appropriations thereunder for such years."

TRANSFERABILITY OF CONSTRUCTION GRANTS

"SEC. 8. (a) Section 801 of the Public Health Service Act is amended by adding at the end thereof the following new sentence: 'Not withstanding any other provision of this title, whenever the Surgeon General determines that any part of any amount appropriated, for any fiscal year to carry out the purposes of either paragraph (1) or paragraph (2) of subsection (a) will not likely be utilized for such purposes during such year, he shall transfer such part to the amounts which are appropriated to carry out the purposes of the other such paragraph, if he has reason to believe that such part can be used for such purposes.'"

Explanation of transfers

	1967 estimate	Purpose
Comparative transfer to "Health manpower education and utilization."	$722,000	To transfer the grant administration function to the new appropriation, "Health manpower education and utilization," consistent with the reorganization of the Public Health Service.

CONSTRUCTION OF HEALTH EDUCATIONAL FACILITIES

INTRODUCTION

Funds are requested for project grants to assist public or other non-profit schools of medicine, dentistry, nursing, osteopathy, pharmacy, optometry, podiatry, veterinary medicine, public health, and other allied health disciplines, such as medical technologists, medical librarians, dental hygienists and occupational therapists in the construction of new, or the expansion and rehabilitation of existing teaching facilities. These funds will increase the teaching capacity of professional and allied health facilities by providing additional teaching facilities, and will prevent the curtailment of enrollment or deterioration in the quality of training provided in existing schools by rehabilitating or replacing them.

A request in the amount of $203,000,000 is submitted for 1968. This amount provides $175,000,000 for grants under the Health Professions Educational Assistance Amendments of 1965 to assist in the construction and rehabilitation of teaching facilities for schools of medicine, osteopathy, dentistry, pharmacy, optometry, podiatry, veterinary medicine, or public health; $25,000,000 for construction of teaching facilities for training professional nursing personnel under the provisions of the Nurse Training Act of 1964; and $3,000,000 for construction of training centers for allied health professions under the provisions of the Allied Health Professions Personnel Training Act of 1966.

	1967 estimate	1968 estimate	Increase or decrease
Construction of teaching facilities for medical, dental, and other health personnel	$135,000,000	$175,000,000	+$40,000,000
Construction of teaching facilities for nurses	25,000,000	25,000,000	
Construction of teaching facilities for allied health professions personnel		3,000,000	+3,000,000
Total	160,000,000	203,000,000	+43,000,000

Grants for construction of teaching facilities for medical, dental, and other health personnel

1967 estimate	$135,000,000
1968 estimate	175,000,000
Increase or decrease	+40,000,000

The Health Professions Educational Assistance Act Amendments (Public Law 89-290 approved October 22, 1965) extended the construction program for medical, dental, and other health profession schools for three years through 1969

with a total authorization of $480,000,000 of which not more than $320,000,000 may be available through 1968. The Veterinary Medical Education Act of 1966 (Public Law 89–709 approved November 2, 1966) authorized a program of construction of teaching facilities for schools of veterinary medicine under the Health Professions Educational Assistance authorization of the Public Health Service Act. A total of $135,000,000 was appropriated by Congress for 1967, and $175,000,000 is requested for 1968.

The construction grant funds recommended for these teaching facilities in the amount of $175,000,000 will provide for construction of new and expansion, replacement, or rehabilitation of existing health professional schools other than schools of nursing.

The amount requested provides for the continuation of an extremely important effort to increase the supply of physicians, dentists, veterinarians, and other health profession personnel. New medical and dental schools must be constructed and a substantial number of existing schools must be expanded to facilitate maintaining present levels of supply of physicians and dentists in relation to population. Further, a large scale remodeling and replacement program must be undertaken to avoid curtailment of enrollment or deterioration in the quality of training in existing schools. Schools providing for education of other types of health personnel must also be constructed as new health disciplines are identified as essential members of the health team in providing optimum health care to all of our people.

From the beginning of the program in 1964 to January 16, 1967, a total of 149 applications had been received requesting Federal funds in excess of $398,000,000. Of these, 103 have been approved and funded requiring $248,963,230 in Federal funds. Twenty-eight other applications have been approved but not funded. A breakdown of the 103 projects approved and funded as of January 16, 1967, follows:

Type	Total	New	Expansion or rehabilitation	Total 1st year student places provided
Medical	48	9	39	1,252
Dental	22	2	20	541
Public health	6	1	5	352
Optometry	3		3	77
Pharmacy	7		7	225
Osteopathy	1		1	5
Nursing [1]	16	2	14	786
Total	103	17	86	3,286

[1] Funded prior to the passage of Nurse Training Act of 1964.

By June 30, 1967, an estimated 26 additional projects, which have not yet been evaluated and acted upon by the Council, and requiring about $100,000,000 in Federal funds, will be approved and ready for funding.

The following table indicates a number of additional schools from which expressions-of-intent have been received and who will probably apply for construction assistance under this program:

Expressions of intent for which no applications have been received as of Jan. 16, 1967

Type of professional school	Number of projects	Total estimated Federal share
Medical	50	$279,800,000
Optometric	2	1,400,000
Pharmaceutical	27	17,000,000
Podiatric	3	3,300,000
Public health	1	1,300,000
Osteopathic	3	53,400,000
Total	86	356,200,000
Dental	30	77,800,000
Grand total	116	434,000,000

Grants for construction of teaching facilities for nurses

1967 estimate	$25,000,000
1968 estimate	25,000,000
Increase or decrease	

The Nurse Training Act of 1964, Public Law 88-581, includes provision for a four-year program of construction grants, and authorizes appropriations totaling $90,000,000 for the construction of new and the expansion, replacement, or rehabilitation of existing teaching facilities. The total amount of $25,000,000 authorized for 1968 is requested.

These funds will provide $10,000,000 for grants to assist in the construction, expansion, replacement, and rehabilitation of facilities for collegiate schools of nursing, and $15,000,000 for grants to assist in the construction, expansion, replacement, and rehabilitation of facilities for associate degree and diploma schools of nursing.

Grant funds are essential if schools of nursing are to carry out the construction necessary to expand and improve their teaching facilities and increase their enrollments to meet the national needs for nurses. The Nation needs many more nurses than the present nursing schools can produce with their existing facilities. Current estimates indicate a need for 73,700 additional new first-year places by 1972 of which about 5,000 will be provided under P.L. 88-129, the Health Professions Educational Assistance Act of 1963 and P.L. 88-581, the Nurse Training Act of 1964 if we are to reach the estimated need of 1 million nurses in active practice by 1975.

As of December 31, 1966, a total of 97 construction grant applications have been received requesting Federal funds in excess of $50,000,000 under the Nurse Training Act. Of these, 46 grants to 18 collegiate, 3 associate degree and 25 diploma programs have been approved and funded. The Federal share of these 46 projects totaled $22,600,000 and provided 1,848 new first-year places. Estimates based upon 102 letters of intent, for which applications have not yet been received, indicate an additional $100,000,000 will be requested by schools of nursing in the near future.

Grants for construction of teaching facilities for the allied health professions

1967 estimate	
1968 estimate	$3,000,000
Increase or decrease	+3,000,000

The Allied Health Professions Personnel Training Act of 1966 authorized appropriations totaling $25,500,000 for construction of teaching facilities over a three-year period, 1967-1969.

The $3,000,000 requested for 1968 will initiate a program of support for the construction, replacement, or rehabilitation of training centers for allied health occupations.

Authorization for grants to assist in construction of training facilities in the allied health occupations was provided as an integral and essential part of the Allied Health Professions Personnel Training Act of 1966. With ever expanding demands for health services and the growing complexity in the delivery of these services, greatly increasing numbers of allied health workers are required. These demands will continue to increase for the foreseeable future.

The facilities and enrollment capacities of institutions providing training for the allied health occupations are markedly inadequate even to meet present needs. An indication of the necessity to construct new and expand our existing training facilities if they are to meet future needs can be shown in estimates of required output by 1975 of several selected allied health occupations. In medical technology, an increase of nearly 100%, or 6,000 annual graduates, will be required to meet 1975 needs. In 1965 only 3,250 were graduated. By 1975 more than 8,000 annual graduates in occupational therapy will be needed—500 were graduated in 1965. In physical therapy, the need will be 8,000 annually compared to the 900 graduates in 1965. The need for additional personnel is true of all the allied health disciplines. While manpower requirements, analyses are not cur-

rently available for all the allied health occupations, the following table of seven selected categories provides an indication of the extent of total deficiencies:

Profession	Supply	Estimated needs	Annual graduates	
			1965	Required to meet needs, 1975
Total, 7 professions	159,200	365,000	10,400	37,000
Dental hygiene [1]	15,000	42,000	1,470	5,500
Medical record library service	10,000	16,000	130	1,500
Medical technology [1]	32,000	70,000	3,250	6,000
Occupational therapy	7,200	54,000	500	8,000
Physical therapy	12,000	54,000	900	8,000
Speech pathology and audiology	13,000	29,000	1,100	2,000
X-ray technology [1]	70,000	100,000	3,050	6,000

[1] Includes associate degree and certificate programs.

Assistance in the construction of new allied health teaching facilities, and the replacement or rehabilitation of existing facilities is essential to an overall national program to meet national health manpower requirements. The funds requested will make it possible to initiate this essential activity.

TUESDAY, APRIL 4, 1967.

DISEASE PREVENTION AND ENVIRONMENTAL CONTROL

WITNESSES

DR. RICHARD A. PRINDLE, DIRECTOR, BUREAU OF DISEASE PREVENTION AND ENVIRONMENTAL CONTROL
VERNON G. MacKENZIE, DEPUTY DIRECTOR, BUREAU OF DISEASE PREVENTION AND ENVIRONMENTAL CONTROL
LYMAN MOORE, EXECUTIVE OFFICER, BUREAU OF DISEASE PREVENTION AND ENVIRONMENTAL CONTROL
PETER J. BERSANO, FINANCIAL MANAGEMENT OFFICER FOR DISEASE PREVENTION AND ENVIRONMENTAL CONTROL PROGRAMS
DR. WILLIAM H. STEWART, SURGEON GENERAL
G. R. CLAGUE, ACTING CHIEF FINANCE OFFICER
JAMES B. CARDWELL, DEPUTY ASSISTANT SECRETARY, BUDGET

Mr. FLOOD. Now we have the Bureau of Disease Prevention and Environmental Control. We have before us Dr. Richard A. Prindle.

BIOGRAPHICAL SKETCH OF PRINCIPAL WITNESS

We have a biographical sketch of Dr. Prindle which we shall insert at this point in the record.

(Sketch follows:)

Name: Richard A. Prindle, M.D.
Position: Director, Bureau of Disease Prevention and Environmental Control.
Birthplace and date: Mansfield, Ohio, December 28, 1925.
Education:
M.D. Harvard University, 1948
M.P.H. (cum laude), Harvard University, 1954
Diplomate of the National Board of Medical Examiners, 1950

Certified, American Board of Preventive Medicine and Public Health, 1956
Fellow, American College of Preventive Medicine
Experience:
1967, Director, Bureau of Disease Prevention and Environmental Control
1966, Chief, Bureau of State Services
1963–66, Chief, Division of Public Health Methods
1960–63, Deputy Chief, Division of Air Pollution
1957–60, Chief, Air Pollution Medical Program
1954–57, Assistant Chief, Health and Sanitation Division, USOM/Haiti
1951–54, Assistant Chief, Poliomyelitis Investigations Section, Communicable Disease Center; and Medical Officer-in-Charge, Phoenix, Polio-Fly Control Unit
1951 Epidemic Intelligence Service Officer, USPHS
Association memberships:
American Association for the Advancement of Science
American Medical Association
American Public Health Association
American College of Preventive Medicine
American Association of Public Health Physicians
Delta Omega (Public Health)
Association of Military Surgeons of the United States
Sigma Pi Sigma (Physics)
Commissioned Officers Association of the Public Health Service
Association of Teachers of Preventive Medicine
Special awards, citations, or publications:
Meritorious Service Medal, PHS, 1963
Numerous publications

Mr. FLOOD. I see you have a statement, doctor. I suppose you would like to proceed?

GENERAL STATEMENT

Dr. PRINDLE. Yes, sir.

I am Dr. Richard A. Prindle, Director of the Bureau of Disease Prevention and Environmental Control. As you know, this bureau is one of five created in the recent reorganization of the Public Health Service. Our bureau consists of five operating units designated as national centers, each of which is dedicated to protecting the public against one or more health hazards of major importance. The centers are: National Center for Chronic Disease Control, National Communicable Disease Center, National Center for Air Pollution Control, National Center for Urban and Industrial Health, National Center for Radiological Health.

The directors of the centers will provide the details of their particular operating programs, progress being made, and their future objectives. I would like to present an overview of our general responsibilities, problems and goals.

MISSION OF THE BUREAU

The mission of this bureau is simple to state—health protection. Accomplishing that mission involves extremely complex problems. Our job is to provide, to the maximum degree possible, protection for the American people against preventable disease, injury, disability and death. We classify the threats to human life, health and safety with which we are concerned in three categories:

First is an ancient enemy comprised of the living agents of communicable disease—the bacteria, viruses and parasites which cause illness such as diphtheria, smallpox, syphilis, tuberculosis and polio.

Second is a more modern enemy comprised of non-living substances and forces permeating the environment in which we must live—the chemicals, pollutants, radiation sources, traffic and occupational hazards, noises and overcrowding produced by our industrial and urban society. A unique feature of certain chemical and radiation hazards is that they are a threat not only to the living but to all future generations as well.

Third are the chronic diseases which may be caused either by living or non-living agents or by a combination of these. Here, we are concerned both with prevention and protection against further progress of existing illness.

The basic weapons in protection against all three of these areas are (a) *Surveillance systems* which can quickly detect excess occurrence of a particular disease in a particular population group, (b) *Epidemiological systems* which can furnish evidence that a particular agent is causing the disease or injury and (c) *Control systems* which can either eradicate the agent, immunize the population against it or interrupt the cycle by which man is exposed.

COMMUNICABLE DISEASE CONTROL

In the fight against communicable disease, research scientists, medical practitioners and public heath agencies have steadily improved their methods for many decades. In particular, they have been brought to a high degree of perfection and applied with remarkable vigor at the Communicable Disease Center in Atlanta. As a consequence of national, State and local work by health agencies and private medicine such dread diseases as malaria, smallpox, and yellow fever have been eradicated in this country. Control of these diseases has materially contributed to the more than 20 years added to the average life expectancy of the U.S. population since 1900. Within the past decade similar progress in control has become possible, and is well under way with other communicable diseases such as diphtheria, poliomyelitis and measles. With vigilance and effort we can bring other infectious diseases under better control and prevent the reappearance in epidemic form in this country of the dangerous diseases which are now under good control.

EFFORT TO PROVIDE A HEALTHY ENVIRONMENT

In the effort to provide a healthy environment, we are not so advanced. Because of the many and beneficial advances of science and technology and the rapid population growth of recent history, there has come also an alarming proliferation in possible health hazards that is continuing at an increasing rate. There are wide gaps in our knowledge of the health consequences to millions of people receiving chronic exposure to small amounts of chemicals and radioactive substances in the air they breathe, and water and food they consume. We know enough, however, to believe that severe results may occur among millions of people as time goes on, so that we cannot afford to take chances. The same technological and economic genius which created those environmental pollutants can and must bring them under control. To fail in this is to court health disasters greater by far than any of the great epidemics of the past.

All five of our National Centers are interested in the most important of the health hazards in the present environment and three are concentrating on them—the Centers for Air Pollution, for Radiological Health and for Urban and Industrial Health. Unsafe water and food supplies, accidents, occupational hazards and the special problems of modern living and working in extremely cold climates are other examples of our environmental interest. The National Center for Urban and Industrial Health was created to focus our attention on these and other problems of cities and industries.

The National Center for Air Pollution will administer the provisions of one of the most recent and far-reaching pieces of legislation ever passed to improve man's environment—the Clean Air Act.

The importance to the public health of the air pollution problem is indicated by the episode that occurred last fall in New York City. On Thanksgiving Day a stagnant air mass settled over the city and pollution from two, and possibly three States, collected rapidly. In spite of the fact that city officials warned persons with respiratory ailments to stay off the streets, an estimated 80 persons died in excess of the normal death rate and hundreds more became ill before rain washed the air clean a few days later.

In addition to the threats of today, we are also concerned with anticipating and guarding against new hazards that will accompany further developments in industry and technology, and further growth of our cities.

As a secondary objective we constantly remind ourselves that every forward step in making the environment safer and healthier also enhances the enjoyment of living in our cities, suburbs and rural areas. We also remember that disease and injury extract an enormous economic tribute from society. Money and resources spent to prevent or reduce the incidence of disease, injury and premature death is our most profitable social investment.

CHRONIC DISEASES

As progress has increased the life expectancy of the American people, it has also increased the number of people living long enough to fall victim to the diseases most prevalent in the middle and older years—the so called chronic diseases. There is strong evidence, too, that prolonged exposure to environmental pollutants and the tensions of urban living are major factors in the constantly increasing occurrence of many of these diseases.

A few figures will indicate the magnitude of this problem. About 87 million Americans suffer from one or more chronic diseases. The worst chronic diseases are heart and circulatory disorders, cancer, and kidney diseases which together kill more than 1,300,000 annually. More than 16 million are affected by blindness, deafness, and other neuro-sensory disorders; 13 million have some form of arthritis or rheumatism and about two million are known diabetics. Although the other four of our Centers are concerned with some aspects of the causation and prevention of these diseases, the Center for Chronic Disease Control serves as the focal point not only for our Bureau but for the entire Public Health Service for protective programs in this area.

CENTER FOR CHRONIC DISEASE CONTROL

The Center for Chronic Disease Control engages in extensive research and development, surveillance, and training activity. It provides technical assistance and in other ways assists State and community health agencies, hospitals, and practicing physicians in improving their programs for preventing and controlling chronic disease. The Center is particularly charged with expediting the application of new medical knowledge and more effective and widespread methods for early detection and treatment. The effort to reduce deaths from uterine cancer is a good example of how this Center works to promote more extensive use of known methods. This form of cancer now kills about 14,000 women in this country each year. With more intensive application of existing methods for early detection and treatment of this disease, mortality could virtually be eliminated. As one example, through grants to hospitals and other institutions the Center has launched a program to insure that by 1973 the Papanicolau uterine cancer test will be given routinely to the more than 8 million women over age 25 who are admitted to hospitals each year.

APPLICATION OF RESEARCH KNOWLEDGE

As an example of how research and development conducted within one of our Centers may influence rapid transfer of new research knowledge to daily application, let me cite some work in progress within our National Center for Radiological Health. Experts in radiation biology are in agreement that all unnecessary radiation to the human reproductive cells during the reproductive years should be avoided in order to reduce the chance of genetic damage in future generations. In a nationwide study of diagnostic X-ray dosages to various parts of the body being received by the U.S. population, we learned that a significant but reduceable overdose to reproductive tissues was being received by young men in the 15 to 29 year age group. The study also identified improvements in equipment and procedures which would permit a 50 percent reduction in this exposure without affecting the medical value of the X-ray diagnosis. Now the Center staff has designed equipment which automatically achieves the desired exposure reduction. Now we plan to encourage the X-ray equipment industry to manufacture this device, and to persuade physicians and hospitals throughout the country to use it.

There are a number of scientific as well as administrative reasons why health protection programs directed against such seemingly diverse problems as chronic diseases, environmental hazards and communicable disease were combined in our Bureau. A most significant fact thus recognized is that causes, effects, and control mechanisms involved in diseases and injury prevention are closely interrelated.

In regrouping the health protection activities of the Public Health Service we were guided considerably by the highly successful experience of the Communicable Disease Center. CDC has developed very effective working relationships with the State and local health departments and the medical practitioners out on the front lines of the battle for better health.

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For the first time, the Public Health Service has brought together protective health programs to focus realistically on the problems of our increasingly mobile, urbanized and industrialized society. Our mission of health protection is the fundamental purpose of public health today as it has been in the past and will be in the future, and we believe that our reorganization will bring efficiency to its maximum potential.

I will be happy to answer any questions you may have.

Mr. FLOOD. Thank you for a very fine overall statement on the Bureau of Disease Prevention and Environmental Control, Doctor.

We will now move along to consider separately the budget for each of the appropriation items in your Bureau.

TUESDAY, APRIL 4, 1967.

CHRONIC DISEASES

WITNESSES

DR. DONALD R. CHADWICK, DIRECTOR, NATIONAL CENTER FOR CHRONIC DISEASE CONTROL
DONALD G. RIEDESEL, EXECUTIVE OFFICER, NATIONAL CENTER FOR CHRONIC DISEASE CONTROL
DR. RICHARD A. PRINDLE, DIRECTOR, BUREAU OF DISEASE PREVENTION AND ENVIRONMENTAL CONTROL
VERNON G. MacKENZIE, DEPUTY DIRECTOR, BUREAU OF DISEASE PREVENTION AND ENVIRONMENTAL CONTROL
PETER J. BERSANO, FINANCIAL MANAGEMENT OFFICER FOR DISEASE PREVENTION AND ENVIRONMENTAL CONTROL PROGRAMS
DR. WILLIAM H. STEWART, SURGEON GENERAL
G. R. CLAGUE, ACTING CHIEF FINANCE OFFICER
JAMES B. CARDWELL, DEPUTY ASSISTANT SECRETARY, BUDGET

Object classification

[In thousands of dollars]

		1966 actual	1967 estimate	1968 estimate
	Personnel compensation:			
11.1	Permanent positions	6,251	7,466	7,746
11.3	Positions other than permanent	265	452	452
11.5	Other personnel compensation	25	25	25
	Total personnel compensation	6,541	7,943	8,223
12.0	Personnel benefits	809	1,001	1,021
21.0	Travel and transportation of persons	1,016	1,129	1,129
22.0	Transportation of things	132	154	154
23.0	Rent, communications, and utilities	169	236	265
24.0	Printing and reproduction	118	149	149
25.1	Other services	487	587	587
	Project contracts	5,229	8,886	11,023
25.2	Services of other agencies	419	423	356
25.3	Payments to:			
	"Public Health Service management fund"	59	103	128
	"National Institutes of Health management fund"	22	22	22
26.0	Supplies and materials	215	228	228
31.0	Equipment	192	167	145
41.0	Grants, subsidies, and contributions	2,976	4,074	4,512
99.0	Total obligations	18,384	25,102	27,942

Personnel summary

	1966 actual	1967 estimate	1968 estimate
Total number of permanent positions	891	983	974
Full-time equivalent of other positions	39	67	74
Average number of all employees	725	842	870
Average GS grade	8.0	8.1	8.2
Average GS salary	$8,181	$8,619	$8,756

Program and financing

[In thousands of dollars]

		1966, actual	1967, estimated	1968, estimated
	Program by activities:			
	1. Grants:			
	(a) Research	2,776	3,774	4,212
	(b) Training	200	300	300
	2. Direct operations	9,892	21,028	23,430
	Total program costs, funded [1]	12,868	25,102	27,942
	Change in selected resources [2]	5,516		
10	Total obligations	18,384	25,102	27,942
	Financing:			
16	Comparative transfers to other accounts	57,683	67,013	
21	Unobligated balance available, start of year		−630	
24	Unobligated balance available, end of year	630		
25	Unobligated balance lapsing	6,373	106	
	New obligational authority	83,070	91,591	27,942
	New obligational authority:			
40	Appropriation	83,088	91,614	27,942
41	Transferred to—			
	"Office of the Surgeon General, salaries and expences" (42 U.S.C. 226)	−15		
	"Operating expenses, Public Buildings Service," General Services Administration (79 Stat. 531 and 80 Stat. 674)	−3	−23	
43	Appropriation (adjusted)	83,070	91,591	27,942
	Relation of obligations to expenditures:			
10	Total obligations	18,384	25,102	27,942
70	Receipts and other offsets (items 11-17)	57,683	67,013	
71	Obligations affecting expenditures	76,067	92,115	27,942
72	Obligated balance, start of year	19,948	41,577	54,481
74	Obligated balance, end of year	−41,577	−54,481	−35,679
77	Adjustments in expired accounts	−494		
90	Expenditures	53,943	79,211	46,744

[1] Includes capital outlay as follows: 1966, $93,000; 1967, $167,000; 1968, $154,000.
[2] Selected resources as of June 30 are as follows: Unpaid undelivered orders, 1965, $3,047,000 (1966 adjustments, −$494,000); 1966, $8,069,000; 1967, $8,069,000; 1968, $8,069,000.

Mr. FLOOD. Dr. Chadwick, are you ready to proceed?

Dr. CHADWICK. Yes, sir.

BIOGRAPHICAL SKETCH OF PRINCIPAL WITNESS

Mr. FLOOD. Dr. Donald Chadwick is the Director of the National Center for Chronic Disease Control.

Do we have a biographical sketch of you?

Dr. CHADWICK. I believe so, Mr. Chairman.

Mr. FLOOD. We shall insert that at this point in the record.

(Sketch follows:)

BIOGRAPHICAL SKETCH

Name: Donald R. Chadwick, M.D.
Position: Director, National Center for Chronic Disease Control.
Birthplace and Date: Boston, Massachusetts, August 16, 1925.
Education: Undergraduate—Harvard College; Graduate—Harvard Medical School, Reed College, Oregon, and Oak Ridge National Laboratories (special training in radiological health).
Experience:
1967—Director, National Center for Chronic Disease Control.
1961—Chief, Division of Radiological Health.
1959—Secretary, Federal Radiation Council.
1958—Chief, Program Operations Branch, Division of Radiological Health.
1957—Liaison Officer for Radiation, Office of the Surgeon General.
1954—Several assignments in radiological health.
1953—Commissioned Officer in the Public Health Service.
1951—Local health officer in North Carolina.
Association Memberships:
Member of the National Council on Radiation Protection, 1963 Advisor to the U.S. Representative on the United Nations Scientific Committee on the Effects of Atomic Radiation.
American Medical Association.
American Public Health Association.
Health Physics Society.
Commissioned Officers' Association.
World Health Organization's Expert Advisory Panel on Radiation.
Special Awards, Citations, or Publications: Arthur S. Fleming Award, 1963; Meritorious Service Medal, USPHS, 1966.

Mr. FLOOD. Please proceed, Doctor.

GENERAL STATEMENT

Dr. CHADWICK. Thank you, sir.

MISSION OF THE CENTER

The mission of the Center is to advance the Nation's health by preventing and controlling chronic diseases such as cardiovascular diseases, chronic respiratory disease, cancer, diabetes, arthritis, chronic kidney diseases, and neurological and sensory disorders. These disease problems include 7 of the 10 leading causes of death and 12 of the leading causes of disability.

Our mission will be accomplished through (1) applied research to develop new and improved approaches to the prevention and control of chronic diseases, (2) technological development to translate or adapt basic research findings in the various chronic diseases into new and improved processes or procedures to permit application in communities, (3) training of professional and technical personnel in specialized categorical activities, and (4) operation of programs for primary prevention and early detection of chronic disease. An important part of our mission is the establishment of standards and guidelines for the operation of programs and provision of services for the prevention and management of chronic diseases.

Our total budget request for 1968 is $27,942,000 an increase of $2,840,000 over 1967.

The "Comprehensive Health Planning and Services" appropriation provides grant support in our program areas through formula and project grants.

Before discussing this budget request further, I should like to consider with you some general aspects of the chronic disease problem.

SIZE OF THE PROBLEM

To give some idea of the dimensions of the problem facing us, eight out of ten Americans will die from one of the chronic diseases. Cardiovascular diseases take 995,000 lives each year. Cancer adds another 290,000 deaths. Approximately 25,000 Americans die annually from kidney disease. Of all the deaths in the United States an estimated 300,000 are associated with cigarette smoking.

In terms of disability caused, nearly 15 million people are suffering from definite heart disease and 13 million more have suspected heart disease. Thirteen million suffer from arthritis and rheumatic diseases. There are 2 million known diabetics. Another 2 million have diabetes undiagnosed and not being treated. Neurological and sensory diseases, such as epilepsy, glaucoma, speech and hearing disorders, have disabled more than 16 million. According to Social Security records, payments to persons disabled by emphysema rose from $60,000,000 to $90,000,000 in the last 3 years.

Mr. FLOOD. Are those cases diagnosed as emphysema?

Dr. CHADWICK. Yes, totally disabled from emphysema.

Mr. FLOOD. They are so classified and diagnosed as emphysema and not various degrees of asthma?

Dr. CHADWICK. No, these are presumably emphysema. There are some 15,000 persons in that category.

PROGRESS ITEMS

Since assuming my present position on January 1, 1967, I have had occasion to review our total effort in chronic disease and I was gratified to note the substantial progress being made with promise of even greater future returns. I am pleased to share some of the highlights of this review with you.

In heart disease, the leading cause of death today, special coronary intensive care units, in hospitals supported by this program, are proving their life saving potential. Experience has indicated that treatment of acute coronary patients in these units may reduce mortality rates by one-third compared with conventional hospital care. It has been estimated that as many as 45,000 coronary patients may be saved each year when coronary care units are established in hospitals throughout the United States. With increased funds provided last year, we are establishing the technical training capacity for meeting a part of the national need for people to operate these units.

Our laboratory at George Washington University has successfully developed computer techniques for the interpretation of electrocardiograms. Widespread use of this procedure promises to save many hours of physician time and make possible full utilization of this invaluable tool.

People are quite concerned these days about the cost of medical care. Here is a process which can cut the cost of the EKG by over one-half. It is quite a significant improvement.

The death rate from cervical cancer has decreased 25 percent within the last 10 to 15 years, saving of an average of 2,500 lives per year. A national program of cervical cancer screening holds promise of further, more dramatic gains against this killer. We have established special cervical cancer detection units in over 150 hospitals during the last 2 years. We are supporting the training of the majority of cytotechnicians being trained at the present time. We are working with the Academy of General Practice to encourage private physicians to include cervical detection procedures as a routine in their practice.

CANCER OF THE COLON

In cancer of the colon, we are developing a flexible proctosigmoidoscope utilizing the fiber optics principle which we feel will greatly facilitate early discovery of cancer.

I thought you might be interested to look at this instrument. This is the conventional proctosigmoidoscope, which you can see is not a very pleasant instrument. Any of you who have had this procedure done knows that it is somewhat uncomfortable. This has been a barrier to successfully using this technique for detecting colon cancer. This is the instrument we have developed which illustrates several things. First, it is very much longer than the conventional instrument. With the conventional instrument you can visualize 60 to 65 percent of the colon cancers. With this instrument we have developed you can perhaps go up to 80 to 85 percent.

Far more significant is the fact that it is an instrument a good deal easier on the patient. As you can see, it is very flexible. You see, the controls———

Mr. FLOOD. Is there a light of some sort on it?

Dr. CHADWICK. Yes. There is the fiber optic system, a system which can bend light around corners. The light is connected here, and then it shines down through this orifice down here at the end and illuminates the area which you are looking at, and these other connections are for water——

This is a cast which was taken of a human sigmoid. This is the rectum area. You can see that trying to pass this rigid instrument involves quite a bit of trauma to the patient, whereas this flexible instrument is much easier to pass.

This particular instrument is one of a number we have developed, and actually another one of these is quite a bit more flexible than this one.

Mr. LAIRD. Who makes this?

Dr. CHADWICK. Two companies in Illinois are developing models. They are not production items as yet. They are EDER and IITRI Instrument Co., both in Chicago. This instrument happens to be the EDER instrument.

Mr. FLOOD. Are they in general usage?

Dr. CHADWICK. No; this rigid model is the instrument in common usage. As a matter of fact, one of the problems is that these things are not being used widely enough and there are lots of early cases of colon cancer which could be detected if this examination were made. We hope that this instrument will increase the usage of proctosigmoidoscopy; 44,000 people will die next year from colon cancer many of whom could be saved with this new instrument.

To facilitate early detection of glaucoma, a leading cause of blindness, a low-cost disposable plastic tonometer has been developed.

In arthritis, one of our worst cripplers, recently completed studies of the problem and available methods of treatment show that a modest investment in program can achieve long-term benefits to arthritis sufferers in terms of helping them live normal lives and maintain a wage-earning capability which is far in excess of the estimated program costs.

CHRONIC RESPIRATORY DISEASES

In chronic respiratory diseases, we are investigating a number of promising approaches to controlling disability from emphysema. We have assisted in demonstrating early detection instrumentation which can discover 90 to 95 percent of cases at their earliest stages. At the same time, we are studying the benefits of intensive rehabilitation procedures for the acutely disabled, the early results of which indicate that more than 50 percent of the victims of the disease can be rehabilitated to self-help and employment.

Mr. FLOOD. What is the difference between asthma and emphysema?

Dr. CHADWICK. Asthma, of course, is a constriction of the bronchide which makes it difficult to exhale. In other words, it blocks the air from going out.

Emphysema is a breakdown of the air sacs in the lung. They become thickened and leathery and this has several effects:

First of all, there is a large volume of air which stays in the lung and does not go in and out with respiration and therefore cuts down the efficiency of the lung.

Secondly, this fibrous thickened air sac does not transmit the oxygen into the blood and the carbon dioxide back out, which again reduces the efficiency of the lung.

Mr. FLOOD. They are separate and distinct?

Dr. CHADWICK. Yes; they are, sir.

In smoking and health, the fact that our surveys show a substantial decrease in cigarette smoking among the medical profession from more than 60 percent before 1954 to less than 30 percent at the present time suggests that with adequate knowledge of the facts many people in the general public may wish to stop smoking will be capable of doing so. We are currently supporting two community laboratories which are trying new approaches to help adults who wish to stop smoking and to keep younger people from starting.

KIDNEY DISEASE

One of our center's most promising and dramatic programs has recently begun to tackle the problem of needless loss of life from kidney diseases and to promote long-range programs to help develop effective methods of prevention, early detection and treatment. In 1966, the program supported the development of 10 new artificial kidney centers and established the groundwork for long-range developmental programs. The artificial kidney would save an estimated 5,000 persons annually and restore them to productive life.

Mr. FLOOD. What are the costs?

Dr. CHADWICK. Present estimates of the costs of putting a person on the artificial kidney are not very well based, and, indeed, as I will

be describing a little bit later, one of the major purposes of our program is to try to find out what it really does cost to keep a person on. Estimates range from about $10,000 to $30,000. You can see that is quite a range of uncertainty. These are the first year costs of putting the person on.

Then the subsequent year costs depend upon whether the person is going in to get his dialysis in a hospital or whether he has been trained to do it in his home.

As I will indicate later, it is hoped that moving the patient into the home can greatly reduce the costs, because obviously you are not having to maintain hospital beds to accommodate all the people who need this treatment.

In 1967, we are helping to establish 12 home dialysis training programs. Medically suitable patients suffering from terminal kidney disease will be trained in the use of artificial kidney systems and then, with their own equipment and the help of a trained family member, they will use this system within the setting of their own homes. An increase of $2,137,000 is requested in 1968 to continue and expand our development and testing of this extremely promising method of artificial kidney therapy. The hypothesis that we plan to develop and test is that home dialysis will substantially reduce cost in money and medical resources without sacrificing quality of care.

We fully expect that during the initial development of these training and support centers for home artificial kidney patients, hundreds of patients' lives will be saved and, if this technique proves as successful and widely applicable as we expect, it could be extended to many thousands of patients each year.

MULTIPHASIC SCREENING PROGRAM FOR PREVENTIVE HEALTH SERVICES

The preventive services program through a research grant to the Kaiser Permanente Foundation, has supported the development of an automated multiphasic screening program which provides test data for preventive health examinations on about 50,000 persons a year. This entirely new concept of applying the systems technique to the provision of health services has resulted in improved health care for a large group of persons, and in substantial savings in money and professional time.

The present estimated cost of running a patient through this Kaiser Permanente examination, including a physical examination, is about $40. Comparable cost in routine type of medical care, depending on where it was, would be anywhere from $150 to perhaps $350. It is a tremendous saving to have this degree of automation and systems approach developed with our grant support. This system is the prototype of several similar systems currently under development, and the basis for the "preventicare" bill recently introduced into Congress.

By combining a battery of automated test procedures with computer analysis and read-out of results, the multi-test laboratory completes in about 2 hours a test and medical history procedure that would require nearly 2 days by conventional methods. Thoroughness, speed, accuracy, economy, and follow-up by physician consultation are emphasized features of this approach.

An increase of $438,000 is requested to support six additional research grant continuations.

I will be happy to answer any questions you or the committee may have.

SUMMARY OF BUDGET REQUEST

Mr. FLOOD. The adjusted appropriation for 1967 is $25,208,000. The request for 1968 is $27,942,000. That is an increase of $2,734,000.

EXPANSION OF KIDNEY DISEASE PROGRAM

Most of this is for the expansion of your kidney disease program from $3,783,000 in 1967 to $5,945,000 in 1968. Tell us what is being done now, and how you plan to expand the program in 1968? You touched upon it in your statement, but this subcommittee has been rather close to this problem, as you know.

Dr. CHADWICK. That is right.

Mr. FLOOD. To what extent are the artificial kidney centers supported by State funds and local government funds and private funds? What are you doing and what about the funding?

Dr. CHADWICK. If I may start with the funding because that is a rather important question. What we have done this year with the increase which was provided by Congress last year is to establish 12 home dialysis training centers.

As I indicated a little earlier, there are a large number of uncertainties about how this artificial kidney program works. Some are methodological and medical and others are administrative and financial. We are trying to get information on both of these subjects in the program we are carrying out.

On the matter of the degree of local versus Federal funding, in our contracts——

Mr. FLOOD. Local, State, and private, the whole area?

Dr. CHADWICK. Well, in the contracts we are making with these medical institutions to develop home dialysis training centers we are asking them to use every bit of ingenuity they can to find and utilize local sources of support, either local government or volunteer organizations. We are trying to find out, in addition to the cost of keeping a patient on dialysis, putting him on and then keeping him maintained, we would like to find out the extent to which local resources can be mobilized to carry the cost of this.

As you may know, the program in Seattle has been extremely successful in this regard. They have the Seattle Artificial Kidney Center which is entirely locally sponsored. We supported it in the early stages of its development, but at the present time it is entirely locally supported. They have fund raising campaigns of various sorts and the funds are raised locally. Of course, when patients come in they try to utilize every available source of funds for the individual patients, but those that cannot be covered are handled to the extent possible by the funds raised by the Seattle Artificial Kidney Center.

At the present time most of this artificial kidney effort is federally supported. The numbers of centers, as I recall——

Mr. LAIRD. You have not financed the 12 centers?

Dr. CHADWICK. These are going to be financed this year. We are in the process of negotiating these contracts at the present time.

We have 13 artificial kidney centers that we are presently funding under project grants. Then there will be the 12 we established this year and then there are 17 that are in VA hospitals.

Then there are about 20 other locations, we estimate, around the country, where some artificial kidney work is being done, but most of the fully developed centers are these federally supported programs, because it is a very expensive process.

However, I would hope that one of the offshoots of our effort will be a reduction in the cost. If we can begin to find out ways in which the cost of keeping patients on the artificial kidney can be reduced then it will become a more economically feasible program for the widespread application which really is needed by the numbers of patients dying each year.

COST OF DIALYSIS TO INDIVIDUAL PATIENT

Mr. LAIRD. It might be well, if you do not mind the interruption, if he would put in the record at this point what the cost to an individual patient would be without these federally financed centers.

Mr. FLOOD. Can you supply such a figure?

Dr. CHADWICK. I can give you estimates, Mr. Laird. As I said before this is difficult. The difficulty right now is that there has not been careful cost accounting of what it takes to put a patient on and keep him on.

We have information from Seattle, for example, where we know what the patient charge is for the first year, putting them on home dialysis. This is around $17,000.

Mr. LAIRD. The fact is that it is a very high cost figure.

Dr. CHADWICK. That is right.

Mr. LAIRD. The decision a doctor has to make, whether a person will get this or not, is one of the most difficult decisions that a doctor ever has to make.

Dr. CHADWICK. Exactly.

Mr. LAIRD. He makes the decision between life and death.

Dr. CHADWICK. Actually, the Seattle Artificial Kidney Center has a lay committee which makes these decisions. You know that is a very difficult thing to do.

There are a large number of patients who die that are not medically suitable for this process.

We can supply information for the record on that.

(The information follows:)

The actual costs of quality chronic hemodialysis therapy in private institutions are virtually identical to those in institutions receiving partial Federal support. Such basic factors as personnel required, capital equipment, and consumable supplies that are required in the conduct of the hemodialysis operation account for nearly all of the cost of the therapy and are quite uniform from center to center. Any variations in overall dialysis program costs are the result of variations in the type of equipment used, the thoroughness and intensity of the medical and bio-chemical management of the patients, concomitant research into the problems of the chronically uremic and hemodialysis patient, and last but not least the size of the operation.

The cost of institutional chronic hemodialysis ranges between $10 and $30 thousand per patient per year. In private institutions these charges are met predominantly by individual patient resources, health insurance, hospital research funds, and out of the general hospital budget. The number of patients whose resources are sufficient to bear the cost of this care are very small indeed,

and the number of institutions capable of underwriting an operation of this kind out of their own funds is also severely limited. This explains why so few private institutions are willing to undertake this kind of responsibility.

Those centers receiving Federal support also utilize to whatever extent possible the same sources of non-Governmental support for their activity. However, the vast majority of the patients under care in these institutions would be unable to purchase this treatment with their own resources. One of the major objectives of the Federal demonstration program has been to allow institutions to develop and organize the various community resources that could be brought to bear on the problem of program support. This takes time.

It is because of the high cost of institutional chronic hemodialysis that we are embarking on our feasibility program to determine how applicable chronic hemodialysis in the patient's home will be. This promises a substantial reduction in cost and with further developments in their research and development area, we are anticipating additional reductions in cost.

CANCER CONTROL PROGRAM

Mr. FLOOD. You are asking for an increase of $101,000 for the cancer control program. Yet you are cutting back nine positions. This seems strange.

Dr. CHADWICK. There is a reduction in the cancer program as a result of nine people being moved out. This was a program of cervical cancer detection which we operated at the temporary R building across from the HEW north building. This program has been picked up by the hospital group. It actually amounts to $67,000 which has been reduced.

The $102,000 is the net increase which is necessary because of annualization reduced by the $67,000.

PROGRESS IN EARLY DETECTION OF CANCER

Mr. FLOOD. What progress has been made in early detection of cancer? Has there been any progress during the last year?

Dr. CHADWICK. This year we have raised our support to 150 hospitals where we are supporting cervical detection units.

As I indicated in my opening statement there has been in recent years a 25-percent reduction in the death rate from cervical cancer which is undoubtedly related, at least in part, to the more active program of cervical cancer screening.

Of course, we actually support a relatively small number of the total cervical screenings done, but we believe our program has contributed to this improvement.

Mr. FLOOD. You feel you can almost eradicate this?

Dr. CHADWICK. Evidence would suggest that if all of these cancers can be found in the early stage where there is no spread of the cancer to other parts of the body that it can be eliminated.

Mr. FLOOD. How do you attack that cancer?

Dr. CHADWICK. There are several methods of doing it. One of the other programs we are supporting is the use of cryogenic surgery, using the freezing technique on tissue. Commonly the entire uterus is removed.

COST-BENEFIT ANALYSIS OF EARLY DETECTION FOR CERVICAL CANCER

Dr. PRINDLE. Not only does it benefit humanity by saving the lives of these people, but we have done studies of the cost-benefit analyses

type. We find that with this early detection and early removal of the problem we are probably preventing the expenditure of $9 worth of medical care per dollar invested in this activity.

SMOKING AND HEALTH

Mr. FLOOD. Now for the activity "Smoking and Health." I have an idea you may hear more about this from other subcommittee members later on.

You are requesting $2,075,000, the same amount as for 1967.

Dr. CHADWICK. Yes, sir.

Mr. FLOOD. You say in the justifications you are "initiating a broad-based program of public information." Just what will that be?

Dr. CHADWICK. It is a combination of a number of different, commonly used techniques, Mr. Chairman. We prepare pamphlets——

Mr. FLOOD. Madison Avenue business?

Dr. CHADWICK. I don't know whether we are quite that good, but——

Mr. FLOOD. For that amount you should be.

Dr. CHADWICK. Not all of the $2 million is going to the direct public education program. We are using the regular techniques such as pamphlets and films. We are working with educational television stations to try to help them develop programs on smoking, and working with the community laboratories in San Diego and Syracuse to try to help provide aid to people who are trying to give up smoking.

Mr. FLOOD. I shall not dwell on this very long because I suspect some of my colleagues will.

COMMUNITY APPROACH TO SMOKING PROBLEM

You say:

An effort has been launched to develop effective community approaches to the smoking and health problem.

What are the approaches?

Dr. CHADWICK. The approaches mean two different things. One, they mean the organizational approach, how you organize to give aid to people who would like to give up smoking. This is the prime part of the program in San Diego and Syracuse.

The other use of the term "approach" is trying to develop through behavioral research how this person can be helped to give up smoking. Many people have found it difficult to give up smoking, so we are supporting behavioral studies to develop constructive ways of assisting a person who wants to give up smoking.

Mr. FLOOD. Was it Mark Twain who said there was nothing to it—"I have stopped many times"?

Dr. CHADWICK. Yes.

BRITISH ANTISMOKING PROGRAM

Mr. FLOOD. What other countries have done this, are doing it, and with what sort of success?

Dr. CHADWICK. There are a number of countries in varying stages of activity in this area. England is one which has made some progress.

They have been doing a number of things; among them eliminating advertising of cigarettes over television. Recently there is some——

Mr. FLOOD. That's BBC, nationally owned television?

Dr. CHADWICK. Yes, sir; but they also have nongovernment television which does advertising. They are doing some of the same things we are doing, namely, smoking clinics, and that sort of thing. Also they have been somewhat more active——

Mr. FLOOD. What about their success? Have you any yardstick?

Dr. CHADWICK. There is a definite reduction now in the smoking rate in Britain. Of course, in Britain, as there is in this country, there has been a dramatic reduction in the rate of smoking among physicians. Their figures are quite analogous to ours. Whereas before 1954 more than 60 percent of physicians smoked cigarettes, now less than 30 percent do so.

ARTHRITIS

Mr. FLOOD. With regard to arthritis you say "With proper application of currently available information severe disability can be delayed for 5 years."

What are the procedures for bringing about this 5-year delay? To what extent are they applied?

Dr. CHADWICK. The problem in arthritis, Mr. Chairman, is similar to the problem in a number of other diseases. There is a sense of discouragement on the part of both physicians and patients in the treatment of arthritis. The treatment is quite demanding and time-consuming and requires a number of different professional disciplines, not only the orthopedic surgeon but also the physical therapist and the other ancillary people. Because of the complicated, difficult, and protracted nature of the treatment, there is a sense of discouragement among both physicians and the general public in the treatment. These figures of a 5-year delay in disability are drawn primarily from some rather large studies done in Britain: They used very intensive physical therapy, active drug treatment during the acute episodes, together with rest where indicated, and then progressive exercise. Rest is important during the acute stage, putting the joints at rest.

Mr. FLOOD. What about the tropics? Is there as much arthritis in the tropics?

Dr. CHADWICK. I believe it is considered to be less common in the tropics. Again this is not entirely clear as to why. We don't know what the cause of arthritis is, of course. It is a fact that with intensive treatment one can reduce the disability. Indeed some of the figures we are quoting were used in a cost benefit analysis which we did which shows a really intensive program could return about $40 for each dollar invested in the program of active treatment and study and rehabilitation of the people suffering from arthritis.

INTENSIVE CORONARY CARE

Mr. FLOOD. Last year we added $1 million for the further development of the coronary care program. How are these funds being used? What is your evaluation of that program?

Dr. CHADWICK. This is one of our most exciting programs, I would say, because as you know coronary heart disease is the largest killer in this country, something over half a million persons dying per year.

Coronary care units are being set up around the country; we have supported a relatively small number of them. The major problem which has arisen is the need for special training, particularly for the nurses.

One of the most significant aspects of this coronary care unit is the amount of responsibility that is placed on the nurse. The nurse is right there with the patients and has them under very close supervision. She is observing all of the electronic equipment that is used to monitor the patients. She is prepared to know what needs to be done at the time when trouble occurs. This requires a degree of training for the nurse which is over and above what the nurse commonly gets.

Therefore our effort is to try to develop training centers where nurses can be trained to operate these coronary care units.

Mr. FLOOD. What are one or two things she would do? A red light goes on. What might happen?

Dr. CHADWICK. There are several things that can go bad with a coronary patient who is in the acute stages. Cardiogenic shock and heart stoppages are two of the major things that can happen. For example, the nurse might look at the oscilloscope which shows the tracing of the electrocardiogram and she might be able to observe a condition of ventricular fibrillation taking place. This is a common cause of death. The ventricles, the major portion of the heart, instead of contracting in a regular fashion and forcing the blood out through the body are just quivering all over. This leads to death within minutes unless something is done.

The something that is done is the use of the defibrillator, putting the heart in an electrical field. This has been found in many instances to stop that fibrillation.

Mr. FLOOD. A nurse can do this without running down the hall for a doctor?

Dr. CHADWICK. She has everything set up and usually the physician comes in and actually administers the defibrillator. She has everything ready so there is no lost time. As soon as she sees that happening she signals the physician, gets the defibrillator out, gets it ready and the physician actually applies the procedure.

Mr. LAIRD. She can do it?

Dr. CHADWICK. Yes, she can. You see, many of these patients die because of complications like ventricular standstill, for example, where the heart just stops. You can do something to tide the patient over this active stage of the coronary, and in many instances the patients will come through and have hearts that are perfectly capable of keeping them going for many years thereafter. So many of those who die because of these complications during acute stages are wasted deaths.

CHRONIC RESPIRATORY DISEASE CONTROL PROGRAM

Mr. FLOOD. In the bill for 1966 Congress gave you $1 million to start a chronic respiratory disease control program. What has been done about that? What plans do you have on this chronic respiratory disease program?

Dr. CHADWICK. There are a number of things we are doing. First we are trying to develop programs for early detection of these respiratory diseases, particularly emphysema. It is our hope that if we get these patients early, before the emphysema——

Mr. FLOOD. This deals with the whole spectrum of respiratory diseases, does it not?

Dr. CHADWICK. It does, but from a practical point of view the overwhelming majority of the patients are in this chronic bronchitis-emphysema category. Most of the other diseases are relatively minor causes of death and disability. Bronchitis has been going down in recent years as a cause of death.

Mr. FLOOD. Again I raise the question of asthma.

Dr. CHADWICK. Asthma has been tending to go down and it is not an important cause of death at the present time, so really the major problem in the chronic respiratory diseases is in this chronic bronchitis and emphysema area. We are trying to diagnose them early, trying to work with clinicians to develop better means of treating these patients, and then also to work with some of the far advanced cases and see whether they can be rehabilitated.

Mr. FLOOD. I am not aware of this sort of activity as a result of the 1966 program in our part of the country at all, and we certainly have a lot of third degree asthma. The purpose of the grant was not to let you specialize in emphysema, was it?

Dr. CHADWICK. Money was added in two different areas of the budget. Some was added, also, to NIH. There the Institute of Allergy and Infectious Diseases is working intensively on the problem of asthma.

With the relatively small amount of money we have we cannot cover too wide an area. Yet the rehabilitation clinics which we are supporting under this program would be able to take patients with chronic asthma, that is, disabled by chronic asthma. In other words, they are not restricted by any sense of the word to emphysema and chronic bronchitis. The overwhelming majority of the patients who present themselves to these clinics are in the category of chronic bronchitis and emphysema.

Dr. PRINDLE. The problem of chronic respiratory disease is such an important thing. Because mechanisms are so poorly understood several programs of the Service are involved. As Dr. Chadwick mentioned, the National Institutes of Health are primarily concentrating on some of the basic mechanisms of causation.

Within our own Bureau we have three major programs which are concerned in one way or another with these diseases, not only those Dr. Chadwick has, but the air pollution program, which for a number of years had an interest. Their concern was not so much directly in chronic respiratory diseases, but the effects of air pollution, and these turn out to be one of the major effects. By the same token, we have the occupational health program which has been much concerned, and has been working on this, especially in the problems of the soft coal miners.

Mr. FLOOD. I am from the hard coal region.

Dr. PRINDLE. I recognize that. However, I think we have a better understanding of the problems with respect to hard coal, but less of an understanding with respect to soft coal. Our problem is to begin to understand some of these mechanisms and design some methods of prevention. Then, hopefully, Dr. Chadwick's group can apply these to the population.

Mr. FLOOD. Are there one or two programs you would like to talk about that I have forgotten or that you have forgotten?

PREVENTIVE MEDICINE PROGRAM

Dr. CHADWICK. I don't think you have forgotten them. The automated systems approach to preventive medicine programs is one of the things that I think is really a fascinating area and one which promises great returns. I am referring to the kind of program we are supporting at Kaiser Permanente at the present time.

This is a program which we hope will permit us to detect chronic diseases at their very earliest stages, or perhaps even detect pre-disposing factors and permit us to intervene to negate or reduce those predisposing factors. We have a number of programs within our centers directed toward the development of measures which can be used to reduce some of these predisposing causes.

For example, we are doing research in physical activity related to heart disease. It has been found that persons who are more physically active tend to have less coronary heart disease than those who are not active.

Is it possible to develop and apply a program of physical activity for the highest risk group, middle-aged men, which can be effective in reducing——

Mr. FLOOD. You do not include shoveling of snow in that, do you?

Dr. CHADWICK. Shoveling of snow is all right as long as it is by a person who is active and keeps physically fit through the year. The problem with shoveling snow, as you know, is that people who are sedentary will be faced with the problem of shoveling snow and go out and shovel a driveway, come in the house and die of a coronary thrombosis. Whereas we feel that had the person been carrying on a regular program of physical activity this would be far less likely to take place.

COMPUTER INTERPRETATION OF ELECTROCARDIOGRAM

Another area I touched on briefly is the computer interpretation of the electrocardiogram. I think this is a fascinating area of development, one which can do a great deal when applied nationally.

Mr. FLOOD. Would you set this hardware up in a center or must every hospital have it?

Dr. CHADWICK. This is one of the things we would like to find out, Mr. Chairman. We would like to be able to try this technique in a number of different settings and see how it would be best organized within the community, whether it would be better to have each hospital have a computer unit or whether it would be better to have a central computer unit with transmission lines and various——

Mr. FLOOD. Would you be limited to the electrocardiogram?

Dr. CHADWICK. No. There are other kinds of procedures that we are working on right now. For instance, we have the electroencephalograms which produces a tracing, something on the order of the electrocardiogram. We are working on this to see whether a computer program can be developed for it. We have used it to interpret spirographs, a diagnostic tool for chronic respiratory diseases. One of our most successful case finding programs in Alabama uses a spirometer where the tracing is interpreted by computer. It is a computer program set up to interpret the spirogram and take off measurements from it and give the diagnosis.

Dr. PRINDLE. There is interrelationship between our Center's activities and this whole disease prevention mission.

I personally was involved in the Alabama project some years ago when we were attempting to establish some of the effects of air pollution. At that time there really were inadequate tests for pulmonary function; certainly they were inadequate in terms of finding out what was happening in a population. The only technique was one which brought a patient in the hospital for several days and required all kinds of fancy tests to make a determination. We attempted to develop portable equipment so we could go out to a population group and find out what was happening to people exposed to such contaminants. We were successful working with the Alabama Tuberculosis Association and using their mobile trucks.

In the course of this, as the chronic respiratory disease program got into it, we began to automate the data handling and now have a method where the findings on pulmonary function can be determined in something like 9 seconds.

I remember doing some basic research work on this some 20 years ago and analyzing pulmonary function curves. It took a physician and two technicians about two and a half days to accomplish the same thing that the computer now does in approximately 9 seconds. One can examine 400 to 500 patients a day, where previously we could do studies on only one patient a day.

COORDINATION WITH HEART, CANCER, AND STROKE PROGRAM

Mr. LAIRD. How do you coordinate this program with the heart, cancer and stroke program? Many grant applications I have seen and which are being considered also fit into your program in some ways.

Dr. CHADWICK. The relationship we are developing with this program is that generally we are in the developmental business. We attempt to develop a particular technique or procedure.

Mr. LAIRD. That is what I thought, but many of these applications being considered by the council also are developmental in nature.

Dr. CHADWICK. Some are. Some I think, if I am correct, are generally developmental in the sense of how you bring this procedure into the regional complex, into the regional health complex rather than developmental in the sense of finding out, for example, how you set up a coronary care unit.

They might well, for example, fund coronary care units, but these would be oriented toward producing the service.

CORONARY CARE PROJECTS

Mr. LAIRD. How many coronary projects have you funded on an experimental basis?

Dr. CHADWICK. We have funded on an experimental basis, seven.

Mr. LAIRD. How many have you pending?

Dr. CHADWICK. We have 12 pending now. These are for training. These are units for training the nurses. Then we have four additional projects which are an effort to find out how this technique can be applied in smaller hospitals where it is not feasible to set up a special unit. A coronary care unit is actually a number of beds

exclusively devoted to coronary patients. It represents an area in the hospital exclusively devoted to this. A small hospital does not have a large enough number of patients to be able to afford the luxury of a separate area devoted exclusively to coronary patients.

Mr. LAIRD. We are doing that in a number of programs, funding a number of beds. We are doing it in the National Cancer Institute and the Heart Institute. We are funding beds all over the country on an experimental basis. I was trying to see how this was coordinated in the Public Health Service.

Dr. CHADWICK. As a matter of coordination, we work with the regional medical program from their council level down to the working level. We attend the council meetings. We review all of their applications when they come in, in order to indicate to what extent these might overlap or potentiate or help projects that we are supporting. There is a very close coordination between us and the regional medical program in terms of making certain that the most effective job is done with the funds available.

Mr. LAIRD. The regional program has not gotten off the ground, anyway. We were talking about Madison Avenue a while ago. I think the buildup for the regional program in heart, cancer, and stroke was about 1,000 percent greater than its performance. It does seem there is some similarity between some of these projects. I am glad to learn that you are attending the council meetings and at least looking over some of these applications.

Dr. CHADWICK. We look over all of the applications. We review all of the applications under the regional medical program.

PREVENTICARE LEGISLATION

Mr. LAIRD. You mentioned and it has been mentioned in several of the statements submitted to the committee, the new program which has been called preventicare, I believe. Legislation has been introduced to authorize preventive care programs.

I would like to know why this legislation is needed. I think you have statutory authority already for every activity covered by the proposal. Is this just to delay it again for another year so you can work through an authorization as you did in heart, cancer, and stroke? You probably are not the right witness to address this to, but several statements have mentioned the proposed preventicare program.

The Public Health Service has all the authorization now to go forward with such a program and we can fund it tomorrow. There is nothing in this program that cannot be funded under the present authorization of the Public Health Service.

Dr. CHADWICK. You are quite correct that I am not the person best qualified to answer this, but it does represent quite a different approach.

Mr. LAIRD. It is not of high enough priority to fund in this budget; is that it?

Dr. CHADWICK. It was not included in this budget as an identifiable program of anything like the magnitude it would take to do the job.

Mr. LAIRD. We had a big buildup on heart, cancer, and stroke, and the budget request for heart, cancer, and stroke represents an entirely different program than that presented to the Congress originally, as far as the funding of it.

Do you know anything that bill provides for which you could not do now in the Public Health Service if you had the money?

Dr. CHADWICK. I really would have to defer on that question to someone better qualified to answer.

Mr. LAIRD. I see the Deputy Surgeon General is here. Perhaps he could comment on that.

Dr. GEHRIG. Mr. Laird, I think, first, the two programs carried out on chronic disease have really been in the developmental stage. The preventicare bill itself, as I interpret it, provides for the application on a broad base to the population around the United States. This would in a sense be the delivery of service to a broad category of people.

Mr. LAIRD. You can do that now. What is to prevent the Public Health Service from going into that area?

Dr. GEHRIG. We do have specific groups identified to which we can provide care. It is my understanding, however, in the broad community application of this we do not have the authority to provide such service.

Dr. PRINDLE. I think the reorganization has changed the picture considerably. A year ago many of these things that are part of the chronic disease program were viewed separately. It was much more difficult for us to establish a comprehensive program in terms of a total approach. I think with reorganization we could do more in this direction.

Mr. LAIRD. The only difference is the way you interpret the word "demonstration."

Dr. PRINDLE. That is correct.

Mr. LAIRD. The Public Health Service has authority to carry on any kind of demonstration it wants to in the health field. You will not be doing much more than that for a few years under the preventicare program. You would be far better off, if you wanted to move in this area now, to go into it on a demonstration basis.

Dr. PRINDLE. I think this is one of the things our bureau in particular would be interested in trying to do.

Mr. LAIRD. By putting in the legislation, you are delaying moving as rapidly as you could in this area. It ties the hands of this committee in going forward with a demonstration of preventicare in fiscal years 1968 and 1969.

It seems to me it is a way of postponing a very important decision that could have been made this year.

Dr. PRINDLE. We wish in our bureau to get this kind of program started and demonstrated. This would fit very much in the mission of our bureau in its attempt to demonstrate new techniques and approaches to problems, and we would be happy to try to establish a program along these lines.

Our mission, as we see it, is to provide this information and the evidence that it works or does not work, the cost, and to help establish the activity with such support as is desirable.

Mr. LAIRD. I think it should be understood there is no reason that the Public Health Service cannot move on a preventicare program now. You are talking about the next 2 or 3 years when you would be on a demonstration basis, anyway. I think this legislation merely

delays the application of many things that have been learned and with which we are ready to move forward now.

I have no further questions, Mr. Chairman.

Mr. FLOOD. Mr. Hull.

Mr. HULL. Thank you, Mr. Chairman.

DEATHS FROM VARIOUS CHRONIC DISEASES RELATED TO CIGARETTE SMOKING

Dr. Chadwick, you say to give some idea of the dimensions of the problem, eight out of 10 Americans will die from one or another chronic disease. Cardiovascular diseases take 995,000 lives each year. How many of those do you relate to cigarette smoking?

Dr. CHADWICK. If one applies the rate——

Mr. HULL. I want to know how you get the figure, whatever it is.

Dr. CHADWICK. Sir, I would like to be sure I am getting the question. How do you get to the 995,000?

Mr. HULL. No. How many of those are related to cigarette smoking?

Dr. CHADWICK. I see. You mean this figure down below, 300,000.

Mr. HULL. I am talking about the 995,000. How many of those deaths do you relate to cigarette smoking?

Dr. CHADWICK. I could supply a better estimate for the record, but it is somewhere between 100,000 and 150,000.

Mr. HULL. Cancer adds another 290,000 deaths. How many of those deaths are related to cigarette smoking?

Dr. CHADWICK. In lung cancer, it is of the order——

Mr. HULL. Just cancer.

Dr. CHADWICK. I am trying to develop it for you, Mr. Hull.

In lung cancer it is on the order of 40,000. Then the other varieties of cancer would probably be something close to that number in addition.

Mr. HULL. That includes cervical cancer?

Dr. CHADWICK. There hasn't been the type of direct association with cervical cancer, although several things have been found. First of all, the gross mortality rate among smokers from all causes is higher than the mortality rate among nonsmokers. Then there are various diseases, as you know, in which there has been a more specific association developed—heart disease, of course, and lung cancer being several of the obvious ones.

Mr.HULL. You say approximately 100,000 Americans die annually from kidney disease. How many of those are related to cigarette smoking?

Dr. CHADWICK. The figure that I would prefer to use for kidney disease is the 25,000 which I used in my written testimony. I would not be prepared to hazard an estimate on this.

Mr. HULL. In terms of disability, nearly 15 million people are suffering from definite heart disease, and 13 million more have suspected heart disease. How many of those are related to cigarette smoking?

Dr. CHADWICK. I would have to supply that information for the record.

Mr. HULL. I wish you would supply that for the record.

Also, 13 million suffer from arthritis and rheumatic diseases. How many of those are related to cigarette smoking?

Dr. CHADWICK. Similarly, I would have to ask to supply that information.

Mr. HULL. There are 2 million known diabetics and another 2 million have diabetes undiagnosed and not being treated. How many of those do you relate to cigarette smoking?

Dr. CHADWICK. I would again like to supply this information for you.

Mr. HULL. Neurological and sensory diseases such as epilepsy, glaucoma, speech and hearing disorders, disable more than 16 million. How many of those are related to cigarette smoking?

Dr. CHADWICK. Similarly, I would like to supply that information for the record, if I may.

Mr. HULL. And the same question on emphysema.

Dr. CHADWICK. Yes.

(The requested information follows:)

Of the 995,000 lives lost to cardiovascular disease, it is estimated that 125,000 are the excess associated with cigarette smoking.

Of the 290,000 people who die of cancer in a year, about 60,000 represent the excess associated with cigarette smoking.

The evidence is inadequate to determine whether or not cigarette smoking is related to death from kidney disease.

Of the nearly 15 million people suffering from heart disease, it is estimated that at least 400,000 is the excess associated with cigarette smoking.

The evidence is inadequate to evaluate the relationship between cigarette smoking and arthritis and rheumatic disease, diabetes, and neurological and sensory disease.

It is estimated that approximately three-fourths of the persons with chronic respiratory disease represent the excess associated with cigarette smoking.

COMMUNITY LABORATORIES

Mr. HULL. According to your statement, you say we are currently supporting two community laboratories which are trying new approaches to help adults who wish to stop smoking and to keep younger people from starting. Where are those two laboratories?

Dr. CHADWICK. In San Diego, Calif., and in Syracuse, Onondaga County, N.Y.

Mr. HULL. How much money have you asked for those two?

Dr. CHADWICK. These include of the order of $300,000.

Mr. HULL. Each?

Dr. CHADWICK. No. About $160,000 for the one, and about $150,000 for the other.

ESTABLISHING CAUSAL RELATIONSHIP BETWEEN CIGARETTE SMOKING AND VARIOUS CHRONIC DISEASES

Mr. HULL. Do you claim that any individual death can be medically established as having been caused by cigarette smoking?

Dr. CHADWICK. Sir, you cannot take individual deaths and decide on an individual case-by-case basis. If I may borrow from my previous program, radiological health, radiation exposure is known to be a causative factor in leukemia, and groups of people who have been exposed to radiation have higher leukemia rates—for instance, the Japanese survivors at Hiroshima.

You cannot look at any individual patient and determine whether that patient's leukemia came from radiation or not. Similarly, you

cannot look at a given case of lung cancer and establish with certainty that that case was caused by cigarette smoking.

On the other hand, the lung cancer rates among smokers versus nonsmokers clearly indicate there is a causative relationship in the great increase in lung cancer in this country.

Mr. HULL. Have you a scientific basis for claiming that each such disease as we have mentioned has been proved to be caused by cigarette smoking?

Dr. CHADWICK. Sir, to answer that question I think I should refer to the Surgeon General's Committee which did so indicate for a number of these diseases. There is a very long list of professional and scientific organizations that have similarly associated themselves with the view that there is a causal relationship between these diseases and cigarette smoking. I am sure you are familiar with the list—the American Heart Association——

Mr. HULL. But some of those are in disagreement on some of these, too.

Dr. CHADWICK. I do not think there is any disagreement, sir, among these organizations on the overall fact that cigarette smoking is associated with increased death rates among these various diseases. There may be details on which there is difference of opinion. I do not believe, sir, in the overall there is a difference.

Mr. HULL. Are you claiming there is no dispute among scientists with regard to whether cigarette smoking has been proved to be a cause?

Dr. CHADWICK. Sir, I am not altogether certain that you would be able to find any scientific matter in which there isn't some dispute. I am sure if you look at all scientific developments through the ages, you will find that generally there is a certain group that takes a good deal longer to be convinced about a particular development than the majority of scientists.

I certainly think that the majority of scientists, as illustrated by the professional and scientific organizations that I have referred to, have associated themselves with the view that these diseases are caused by cigarette smoking. But there are some individuals, as there always are in every scientific development, who disagree.

Mr. HULL. Have you any programs going on the environmental behavior of drinking, such as you might drink a quart a day or something like that?

Dr. CHADWICK. This program is in the National Institute for Mental Health, sir. I am sure they would be able to give you information about the program.

Mr. HULL. I believe that is all, Mr. Chairman.

Mr. FLOOD. Mr. Michel.

CARDIOVASCULAR DISEASE

Mr. MICHEL. Doctor, none of us on this side of the table has enjoyed the privilege that you have of graduating from medical school, so at times we are at a loss to be perfectly conversant with the terms you use.

One very common one before this subcommittee is "cardiovascular diseases," and the 995,000 lives that it costs each year. For the layman, what are we talking about by cardiovascular disease?

Dr. CHADWICK. The big one, of course, is heart disease. This accounts for something around 550,000. The balance is made up by strokes, which is another very large cause of cardiovascular deaths.

NUMBER OF PARTICIPANTS IN SMOKING STUDIES

Mr. MICHEL. In these answers, you may or may not be replying to Mr. Hull's series of questions on smoking. Doesn't this have to be deskwork in a large measure if you come up with any figures?

Dr. CHADWICK. In the case of the mortality, it is quite clear, because there have been very large-scale studies of hundreds of thousands of individuals, comparing the mortality rate in smokers and nonsmokers.

Mr. MICHEL. Have those studies really been that broad based? You mentioned hundreds of thousands.

Dr. CHADWICK. Yes, sir. Absolutely.

Mr. MICHEL. How many people are we talking about who could be included in these statistics? Would you say several hundred thousand?

Dr. CHADWICK. Yes.

Mr. MICHEL. Is it more than that?

Dr. CHADWICK. Yes. In the American Cancer Society study, for example, the Hammond Study, which is one of the major ones, the number is almost 1 million.

EDUCATIONAL APPROACH VS SAFER CIGARETTE

Mr. MICHEL. It is a problem which distresses me. My wife does smoke. I hope the kids will not. They have not up to this point. I do not know that our educational program is making much headway, although this subcommittee, except for the new members who have been added, have taken the tip. I do not know how long it will take the new members to do the same. I do not know whether that is good or bad.

I am wondering, since it is such a hard job to change people's habits and the things they like to do, if we should place more emphasis on the research side concerning what is it in the cigarette that is bad and try to eliminate that part of it, and let people go about their smoking. Is there anything wrong with that approach?

Dr. CHADWICK. First of all, we are working in the area of trying to identify the factors in cigarette smoking.

Mr. MICHEL. Are we doing enough? Could we do more? Could we speed up that avenue?

Dr. CHADWICK. I am sure that it would be possible to do more work with additional funds.

Dr. PRINDLE. It was pointed out yesterday that this would be a very appropriate question to cover with the NIH research people. That is the major place where this work is being done.

Dr. CHADWICK. May I add, though, it will be difficult to tell when that approach would pay off, and in the meantime, of course, people are dying. I know we feel a sense of urgency to do something about helping those who want to give up smoking because it is quite clear, also from statistics, that those who give up smoking, even if they have been smoking for a number of years, do have an improvement in

their mortality rate. So, there is hope. It is not an entirely black picture.

ARTIFICIAL KIDNEYS

Mr. MICHEL. How many artificial kidneys would you say we actually need today? How many could we utilize if we had them?

Dr. CHADWICK. I have given an estimate in this testimony that there are on the order of 5,000 patients a year medically suitable for the artificial kidney; that is, 5,000 people experiencing kidney failure who would be suitable candidates. This is 5,000 out of the 25,000 I mentioned as being the annual death rate from kidney disease. Some people are not medically suited.

The total number would increase as the years went by because you would be adding the 5,000 per year.

Mr. MICHEL. What is the actual cost of an artificial kidney?

Dr. CHADWICK. It depends on what you define as the cost of the artificial kidney.

Mr. MICHEL. You cannot have just part of the equipment?

Dr. CHADWICK. That is right, and the machine. You have to have all the associated instrumentation and the capability to train, and so on.

Mr. MICHEL. Is it conceivable that somewhere down the road we could develop one without all the ancillary items we need to keep an artificial kidney going?

Dr. CHADWICK. One of the promising developments is kidney transplant. As you know, a good deal of work is going on in this area. The surgical technique is reasonably well mastered but the problem is that the body rejects the foreign tissue. The same defense that defends the body against communicable diseases also defends against an artificial organ and tends to destroy it. Work is going on to find out how this can be prevented and how you can transplant organs into individuals without having them destroyed.

Dr. PRINDLE. There is something else we are trying to look at, that is, trying to prevent the kidney disease in the first place. In this center we have started some programs where we try to examine the various factors which have gone into a person's life before he developed these diseases. Dr. Chadwick has programs along this line.

Dr. CHADWICK. This is very important. We would like to put the entire artificial kidney and kidney transplant operation out of business by preventing kidney disease. We would like to do more work to see how this can be done.

SUPPORT OF KAISER FOUNDATION

Mr. MICHEL. How much is involved in research grants to the Kaiser Foundation?

Dr. CHADWICK. About $700,000 this year.

Mr. MICHEL. Is that an increase over last year?

Dr. CHADWICK. No, sir.

Mr. MICHEL. Has it been pretty much static over this period?

Dr. CHADWICK. Not really. We have supported that program through the years with a number of different mechanisms. We had a

community health grant during the initial period when it was getting started.

A research grant project now is to accumulate the basic data we need on the benefits of such a program. They are doing a comparative study of the patients on the preventive program and those not. Kaiser-Permanente has some 700,000 people who are members of their plan. About 50,000 are going through this program of screening.

They are going to compare the disease mortality and morbidity experience of these people going through this preventive program versus those not going through it and give us information on the effectiveness of it.

There are other things they will get from this program, of course, normal values for various physiological measurements on which we need more information.

Mr. MICHEL. Although you show only a slight increase in cancer control and none in heart disease control, it is reasonable to assume that the increase in NIH budget items affect your programs in a substantial way?

Dr. CHADWICK. In a sense they affect us by providing us with research findings which we need to develop into community application. This is the relationship which presently exists between our program and that of NIH. They are responsible for basic research and we are responsible for developing these findings into community programs.

In a sense they produce more work for us, if you will, by giving us developments.

Mr. MICHEL. That is all, Mr. Chairman.

RESEARCH CHARACTERISTIC OF THE CENTER FOR CHRONIC DISEASE CONTROL

Mr. CASEY. Just exactly what grants come through your specific department? Are they primarily the construction type, installations such as the intensive care centers?

Dr. CHADWICK. No, sir. Our research grants are exclusively for research projects. They are not for construction of facilities. They are for doing studies of chronic disease prevention and control.

Mr. CASEY. Would your function have to do with research on viruses?

Dr. CHADWICK. No, sir.

Mr. CASEY. What department would that be under? Do you know?

Dr. CHADWICK. This would be at NIH and also in the Communicable Disease Center which will be following.

Mr. CASEY. What are your grants? What types of research grants do you process and award?

Dr. CHADWICK. These are in the various chronic diseases—heart, cancer, stroke, diabetes, and so on, various diseases listed here.

Mr. CASEY. How about a grant for possible role of viruses in human cancer?

Dr. CHADWICK. This would very likely be a grant which would go to the National Cancer Institute.

Mr. CASEY. The National Cancer Institute?

Dr. CHADWICK. Yes.

Mr. CASEY. Is that under NIH?

Dr. CHADWICK. Yes, sir.

Mr. CASEY. The same thing with studies on viruses which are related to human cancer with emphasis on leukemia?

Dr. CHADWICK. Yes, sir.

Mr. CASEY. In other words, you have some overlap as far as particular studies on cancer are concerned. Cancer in some other form is your research?

Dr. CHADWICK. The research that we tend to support is more in the applied fields. If I may use an example, we are supporting by research grants community methods of detecting cancer. We are supporting studies—I mentioned earlier—physical activity as a means of preventing heart disease. These are applied projects rather than the more fundamental basic studies that are supported in NIH.

Mr. CASEY. You are Director of the Center for Chronic Diseases under Dr. Prindle's Bureau?

Dr. CHADWICK. Yes, sir.

Mr. CASEY. And then we have next the Communicable Disease Center which may come in for some of the virus programs.

Dr. CHADWICK. Yes, sir.

Mr. CASEY. Do you publish a list of the projects and programs you have in operation?

Dr. CHADWICK. Under research grants?

Mr. CASEY. Yes.

Dr. CHADWICK. Yes, sir.

Mr. CASEY. Might I be furnished one of those, please?

Dr. CHADWICK. Certainly. We shall supply that to you.

Mr. CASEY. I believe that is all, Mr. Chairman.

Mr. FLOOD. We shall resume at 2 o'clock, gentlemen.

JUSTIFICATION MATERIAL

CHRONIC DISEASES

Amounts available for obligation

	1967	*1968*
Appropriation	$91,614,000	$27,942,000
Transfer to "Operating expenses, Public Buildings Service," General Services Administration	−23,000	----------
Comparative transfer to:		
"Community health services"	−6,932,343	----------
"Comprehensive health planning and services"	−59,513,000	----------
"Hospitals and medical care"	−171,000	----------
"Health manpower education and utilization"	−397,000	----------
Unobligated balance brought forward	+630,343	----------
Total	25,208,000	27,942,000

Obligations by activity

	1967 estimate		1968 estimate		Increase or decrea	
	Positions	Amount	Positions	Amount	Positions	Amount
Grants	----------	$4,074,000	----------	$4,512,000	----------	+$438,000
Research	----------	3,774,000	----------	4,212,000	----------	+438,000
Training	----------	300,000	----------	300,000	----------	----------
Direct operations	983	21,028,000	974	23,430,000	−9	+2,402,000
Cancer control	251	3,059,000	242	3,160,000	−9	+101,000
Smoking and health	37	2,075,000	37	2,075,000	----------	----------
Diabetes and arthritis control	90	1,662,000	90	1,730,000	----------	+68,000
Heart disease control	400	7,021,000	400	7,021,000	----------	----------
Respiratory disease control	32	1,139,000	32	1,175,000	----------	+36,000
Neurological and sensory disease control	90	1,624,000	90	1,659,000	----------	+35,000
Preventive services	28	665,000	28	665,000	----------	----------
Kidney disease control	55	3,783,000	55	5,945,000	----------	+2,162,000
Total, obligations	983	25,102,000	974	27,942,000	−9	+2,840,000
Unobligated balance, reserve	----------	106,000	----------	----------	----------	−106,000
Total, obligations and balance	983	25,208,000	974	27,942,000	−9	+2,734,000

Obligations by object

		1967 estimate	1968 estimate	Increase or decrease
	Total number of permanent positions	983	974	−9
	Full-time equivalent of all other positions	67	74	+7
	Average number of all employees	842	870	+28
11	Personnel compensation:			
	Permanent positions	$7,466,000	$7,746,000	+$280,000
	Positions other than permanent	452,000	452,000	
	Other personnel compensation	25,000	25,000	
	Total personnel compensation	7,943,000	8,223,000	+280,000
12	Personnel benefits	1,001,000	1,021,000	+20,000
21	Travel and transportation of persons	1,129,000	1,129,000	
22	Transportation of things	154,000	154,000	
23	Rent, communications, and utilities	236,000	265,000	+29,000
24	Printing and reproduction	149,000	149,000	
25	Other services	587,000	587,000	
	Project contracts	8,886,000	11,023,000	+2,137,000
	Services of other agencies	423,000	356,000	−67,000
	Payments to:			
	"Public Health Service management fund"	103,000	128,000	+25,000
	"National Institutes of Health management fund"	22,000	22,000	
26	Supplies and materials	228,000	228,000	
31	Equipment	167,000	145,000	−22,000
41	Grants, subsidies, and contributions	4,074,000	4,512,000	+438,000
	Total obligations	25,102,000	27,942,000	+2,840,000

Summary of changes

1967 enacted appropriation	$91,614,000
Transfer to "Operating expenses, Public Building Service," General Services Administration	−23,000
Unobligated balance brought forward	+630,343
Comparative transfer to:	
"Community health services"	−6,932,343
"Comprehensive health planning and services"	−59,513,000
"Hospitals and medical care"	−171,000
"Health manpower education and utilization"	−397,000
Unobligated balance, reserve	−106,000
1967 total estimated obligations	25,102,000
1968 estimated obligations	27,942,000
Total change	+2,840,000

	Base		Changes to base	
	Positions	Amount	Positions	Amount
INCREASES				
A. Built-in: Annualization of 65 new positions authorized in 1967				$329,000
B. Program:				
1. Research grants		$3,774,000		438,000
2. Expansion of kidney disease program		3,783,000		2,137,000
3. Pro rata share of Public Health Service management fund		103,000		25,000
Total program increases				2,600,000
DECREASES				
A. 1 less day of pay, (261 days in 1967; 260 days in 1968)				−22,000
B. Cytology laboratory	9	67,000	−9	−67,000
Total decreases			−9	−89,000
Total net changes requested			−9	+2,840,000

EXPLANATION OF CHANGES

Research grants

An increase of $438,000 will provide for six additional non-competing continuation awards. The major emphasis will continue to be in applied research directed toward the development of new preventive measures for the control of death and disability resulting from chronic diseases.

Kidney disease control

A net program increase of $2,137,000 will permit continued and expanded support of kidney home dialysis programs. The kidney home dialysis programs will support an estimated 500 patients in 1968 as compared with 80 in 1967, and will provide an opportunity to further develop and test this extremely promising method of artificial kidney therapy.

AUTHORIZING LEGISLATION

The legislative authority in Section 301 of the Public Health Service Act which provides for the award of grants for research and research training is included in the section of the justifications under the tab "Preamble Paragraph" in Volume V.

Explanation of transfers

	1967 estimate	Purpose
Transfer to "Operating expenses, Public Buildings Services," General Services Administration.	−$23,000	Transfer to the General Services Administration for space rental costs.
Comparative transfer to—		
"Comprehensive health planning and services."	−59,513,000	Consolidation of all formula and project grant programs authorized by Public Law 89-749 into 1 appropriation.
"Community health services"	−6,932,343	Transfer of mental retardation and gerontology activities in accordance with Public Health Service reorganization and realinement of appropriation structures.
"Hospitals and medical care"	−171,000	Transfer of medical rehabilitation activities in accordance with Public Health Service reorganization and realinement of appropriation structures.
"Health manpower education and utilization."	−397,000	Transfer of certain management activities in accordance with Public Health Service reorganization and realinement of appropriation structures.

INTRODUCTION

The mission of the National Center for Chronic Disease Control is to advance the nation's health by preventing and controlling chronic diseases such as cardiovascular diseases, chronic respiratory diseases, cancer, diabetes, arthritis, chronic kidney diseases, and neurological and sensory disorders. It also includes the National Clearing House for Smoking and Health and other preventive health programs directed toward the development of good health practices—periodic physical examinations for instance—to prevent development of disease and disability in the later years of life. The Center is concerned with diseases which include seven of the ten leading causes of death and 12 of the 25 leading causes of disability.

The National Center for Chronic Disease Control was established on January 1, 1967 when the Service was reorganized. It includes all of the programs of the previous Division of Chronic Diseases with the exception of the mental retardation and gerontology programs which were transferred to the new Bureau of Health Services.

Our mission will be accomplished through applied research to develop new and improved approaches to the prevention and control of chronic diseases; technological development to translate or adapt basic research findings in specialized chronic diseases into new and improved processes or procedures to permit the application in communities of these new approaches; training of professional and technical personnel in specialized categorical activities; and operation of programs for primary prevention and early detection of chronic diseases. It is also accomplished through the establishment of standards

and guidelines for the operation of programs and provisions of services for the prevention and management of these specific chronic diseases.

Grant programs fund research and research training projects at non-profit organizations or institutions. In 1968, 57 research projects will be supported as compared to 51 in 1967. Seven research training projects will be supported in 1968, the same number as in 1967.

Direct operations programs provide intramural research, training of specialized health personnel, and program consultation and technical assistance directed toward State and local health agencies and voluntary organizations.

In 1968, an increase of $2,162,000 is requested for continued and expanded kidney disease contract support of home dialysis programs. The number of patients receiving this life saving artificial kidney treatment will be increased from 80 to an estimated 500. The major objectives will be to test and develop home dialysis, provide training for medical and paramedical personnel and for the patients, families, and local physicians involved in these artificial kidney programs.

Grants

	1967 estimate	1968 estimate	Increase or decrease
Research	$3,774,000	$4,212,000	$438,000
Training	300,000	300,000	
Total	4,074,000	4,512,000	438,000

Research Grants

	1967 estimate		1968 estimate		Increase or decrease	
	Number	Amount	Number	Amount	Number	Amount
1. Noncompeting continuations	37	$2,787,000	43	$3,225,000	+6	+$438,000
2. New grants	14	942,000	14	942,000		
3. Supplementals	(5)	45,000	(5)	45,000		
Total	51	3,774,000	57	4,212,000	+6	+438,000

The demand for support of research into the community aspects of the prevention and control of chronic disease and disability has grown rapidly.

It is of prime importance that techniques be developed which will effectively prevent or delay the onset of disabling chronic illness, since ultimately the most efficient and humane way to deal with the problem of chronic diseases is through prevention rather than through treatment after the fact. Increased funds are requested to expand this important program. New projects initiated in 1966 included an evaluation of chest X-ray screening for lung cancer; an evaluation of treatment of gynecologic cancer in various types of hospitals; studies of exercise in the treatment of chronic lung disease; a study of the relationship of streptococcal skin infections to kidney disease; the relationship of stress to cardiovascular disease; and, various studies aimed at improving the operation of clinical pathology laboratories.

Examples of research to be supported in 1967 are studies in the prevention of heart disease through an organized program of diet control; physical activity and medication; an evaluation of several new approaches to screening for incipient disease; an evaluation of new approaches to the provision of laboratory services.

The $4,212,000 requested for 1968 will fund 43 continuing grants and 14 new awards. The major emphasis will continue to be in applied research directed toward the development of new preventive measures for the control of death and disability resulting from chronic diseases.

Training Grants

	1967 estimate		1968 estimate		Increase or decrease	
	Number	Amount	Number	Amount	Number	Amount
1. Continuations	6	272,084	7	$300,000	+1	+$27,916
2. New Grants	1	27,916			−1	−27,916
Total	7	300,000	7	300,000		

This program is designed to provide predoctoral and postdoctoral training of investigators for research in chronic diseases. These grants generally support the salaries of the teaching staff; provide stipends and tuition for students; supplies and other expenses.

Chronic diseases research training projects are planned to be integrated around sophisticated and experienced research investigators who have demonstrated their productivity in applied or community type medical research problems and are employed in two or more departments of a university. In most cases, these senior professional staff are participating in research projects which serve as a model to the student and allow an opportunity for on-the-job experience. Typically, these projects are based in a community and affiliated with health or medical institutions so that the student must learn to master all of the aspects of this type of communiy research. Also, the student must develop his own research project and carry this out independently under the review and supervision of the professional staff. One project which has been supported and is typical in many ways is a project which involves cooperation between three social science departments (anthropology, psychology and sociology) and a school of public health and preventive medicine. Students are selected from each of these areas; however, they receive core training in public health and preventive medicine. The students work on such problems as stress and hypertension, social and economic aspects of the rehabilitation of coronary heart disease patients, distribution of patients with cancer in selected population sub-groups, and identification of high risk groups for selected chronic diseases.

The need for chronic disease research specialists in preventive medicine, epidemiology, behavorial sciences, biostatistics, biomedical engineering, computer science, medical specialities and other health related disciplines is constantly growing. The Center increased its support of research grant projects from 39 active in 1964 to 51 at the end of 1967. Almost every project staff could be considerably enhanced by the addition of a person trained in one of these specialties. In addition, State and local health agencies are seeking competent professional research investigators in areas which will be supported. Students trained in these projects generally require two to three years of training. Approximately 20 students will be trained directly in 1968 and will write reports or dissertations on a chronic disease problem. This compares with 20 persons trained in 1967 and 8 in 1966. Many more students will benefit indirectly since they will receive training through some aspect of the projects.

This program was initiated in 1965 with $100,000 which funded three projects. In 1966, $200,000 supported three additional projects. At the end of 1967, $300,000 will be supporting a total of seven projects. The projects are all in high priority fields such as sociology, epidemiology, and public health.

Direct operations

	1967 estimate		1968 estimate		Increase or decrease	
	Positions	Amount	Positions	Amount	Positions	Amount
Personnel compensation and benefits	983	$8,944,000	974	$9,244,000	−9	+$300,000
Other expenses		12,084,000		14,186,000		+2,102,000
Total	983	21,028,000	974	23,430,000	−9	+2,402,000

Summary of program

	1967 estimate		1968 estimate		Increase or decrease	
	Positions	Amount	Positions	Amount	Positions	Amount
Cancer control	251	3,059,000	242	3,160,000	−9	+101,000
Smoking and health	37	2,075,000	37	2,075,000		
Diabetes and arthritis control	90	1,662,000	90	1,730,000		+68,000
Heart disease control	400	7,021,000	400	7,021,000		
Respiratory disease control	32	1,139,000	32	1,175,000		+36,000
Neurological and sensory disease control	90	1,624,000	90	1,659,000		+35,000
Preventive services	28	665,000	28	665,000		
Kidney disease control	55	3,783,000	55	5,945,000		+2,162,000
Total	983	21,028,000	974	23,430,000	−9	+2,402,000

Cancer Control

	1967 estimate		1968 estimate		Increase or decrease	
	Positions	Amount	Positions	Amount	Positions	Amount
Cancer control	251	$3,059,000	242	$3,160,000	−9	+$101,000

The general mission of the Cancer Control Program is to accelerate and assist in the reduction of death and disability from cancer. The state of the art provides few means for controlling cancer through primary prevention of the disease. However, relatively high survival rates result when cancers of certain types and sites are detected at early or localized stages of the disease. The major thrust of the Cancer Control Program is toward improved early detection of these cancers.

Cancers of the uterus, breast, head and neck, lung, and colon and rectum accounted for an estimated 49% of all cancer deaths (147,000 of 296,000) in 1965. These five site groups receive most of the attention of the cancer control program. In all of these except cancer of the lung, statistics show much higher five year survival rates for cases treated early than for those detected at later stages. Our staff, supplemented as necessary by contractors having special capabilities and resources, explores and develops needs and opportunities for improving the nation's control of cancer and backs up and evaluates the cancer control activities of voluntary and governmental public health and medical care agencies and institutions.

Grant supported projects are a significant part of the public health cancer control effort. In 1967, it is estimated that 506 project awards totaling $14,500,000 will be made. In 1968 the request for funds to support project grants in cancer control is included in the discussion of project grant requirements generally in the appropriation "Comprehensive health planning and services." These projects pursue lines of activity charted from the Cancer Control Program's analyses of needs and opportunities for demonstration of cancer control methods, training in cancer control, and development of promising leads to improvement in specific aspects of the detection and treatment of cancer or its effects.

Project grant program studies

Observation of the performance of project grant programs and the problem to which they are directed is a continuing function of the program. From collections of comparable data from the cervical cancer control demonstration projects, for example, it has been confirmed that there is an inverse correlation between socio-economic status and the incidence of cancer of the uterine cervix, and this has enabled us to determine a probable rate of casefinding in screening of a population group roughly identifiable as the medically indigent. With these data it was possible to estimate the probable results of a proposed screening program for women of this group. It was found that the proposed program

could be expected to find and cure more than 34,000 cases of early (in situ) cancer. Observation of these demonstration projects also showed that the effects of such screening on the local cervical cancer death rate do not become apparent immediately. This is because the very early cases that were found and cured would not have resulted in the deaths of the victims until an average of ten years later. Under economic analysis which took into account this "deferral" of benefits the study showed that the proposed program could be expected to yield $9 in preserved earning power and savings in medical and hospital care for each grant dollar invested.

In another form of problem observation conducted by periodic surveys of laboratories performing cytological examinations, the program has been able to compute goals for the cytotechnology training program. Computations from the 1963 survey show that training 500 new cytotechnologists per year will offset attrition and expand the national work force to keep pace with the growing utilization of cytology in cancer detection as observed in that survey.

Studies of cancer detection opportunities

The cancer control program also has a continuing concern with the procedures by which early cancer are detected, and the aids to detection employed in these procedures.

In a pilot project in endoscopy, the program has had two flexible proctosigmoidoscopes developed by contractors. Beginning near the end of fiscal year 1967, these instruments will be tested under contract by qualified medical centers and evaluated for effectiveness and training requirements. The instruments use fiberoptics to attain flexibility, small diameter and deeper penetration into the colon than is possible with the conventional instrument. Already, it seems apparent that greater flexibility and lower cost would be possible if plastic materials could be substituted for the glass now used in the optical fibers. The program is now seeking contractors to do the engineering necessary to produce plastic optical fibers adaptable not only to the proctosigmoidoscope but also to endoscopes employed in cancer examinations of the larynx, esophagus, stomach, and bronchi. Meanwhile development of materials and plans for offering physicians training in the use of the proctosigmoidoscope are already in progress. The objective of the entire endoscopy program is to increase the number of examinations performed by providing instrumentation that is easy and effective to use. To achieve this objective expeditiously, it is necessary to show physicians how the instruments are used when they become available.

Breast cancer detection also is under study. The development of mammography—X-ray examination of the breast—has not made this technique itself into an early detection procedure. It has, however, provided an important tool for evaluation and development of breast examination by other means. Field studies are now going forward in projects supported by grants and contracts.

Detection of cancer of the uterine cervix

To test and develop guides for the use of cervical cytology in the office of the family physician, the American Academy of General Practice has initiated a national study project. Groups of Academy members in 34 States are participating. The cancer control program is providing statistical services and consultation to the project. By the end of December 1966, the number of examinations reported has passed 240,000. Suspicious or positive results were found in 3,481 of these examinations. Diagnostic follow-up so far has shown 233 of these cases to be cancer, while 501 were shown to be non-cancerous conditions. Diagnostic reports still were incomplete on 2,747 cases; if these eventually follow the pattern of the diagnosis already reported, the project will have detected more than four cases of cancer per 1,000 women examined. Of the entire 240,000 women examined to date, 35% were receiving their first "Pap" test. It will take another year to complete this project as planned. The Academy is considering extending it.

Health maintenance programs

The cancer control program is participating with other Center programs in contractual experimental health maintenance projects in a community hospital and a medical school hospital. These projects are testing and developing data on the association of individual health hazards such as cancer, coronary heart disease and others with specified characteristics of personal and familial histories and life styles. The projects seek to evaluate the use of such data as guides to health maintenance for the individual.

Continuing education for physicians

There is a widespread interest in continuing medical education for practicing physicians. This interest is accompanied by considerable uncertainty as to the values of various plans and methods for helping the physician update his practices. The cancer control program contracts for and studies continuing education projects of several kinds, seeking to identify the specific values of various approaches. Closed circuit television to hospitals, intermittent courses administered cooperatively by State medical groups and medical schools, and long-term community hospital cancer programs are the principle types of programs under observation in 1967 and 1968.

Public education

Public education is necessary in order to encourage people to obtain early diagnostic examinations. During 1967 and 1968 the cancer control program will contract with selected sponsors of demonstration projects and other institutions, to develop ways of realizing the potential of these projects in local public education. A major seminar will bring together leading health education and medical authorities on cancer for this purpose at the University of Michigan. In 1967 the program will also plan and contract to produce public education films and publications. In 1968 the program will seek and observe application of the patterns and materials so developed in a large number of educational efforts. Local efforts will be reinforced by national distribution to the press, radio and television of cancer control information of general interest. In these activities, the Cancer control program will seek to cooperate with and buttress the programs of voluntary and State health agencies, national labor and civic organizations, and others.

The net increase of $101,000 is for "Built-In" changes, which are partially offset by a program decrease.

Smoking and Health

	1967 estimate		1968 estimate		Increase or decrease	
	Positions	Amount	Positions	Amount	Positions	Amount
Smoking and health	37	$2,075,000	37	$2,075,000	.....	.....

A national effort was initiated in 1966 to combat what has become one of the most serious health problems of recent history. The National Clearinghouse for Smoking and Health, which was established to spearhead this effort in the Public Health Service, has begun activities in three basic areas as a means of implementing this national program: (1) the development of a broad comprehensive program of information on smoking and its relation to health; (2) research in the behavioral, psychological and social aspects of smoking; and (3) assistance to State and local communities in the development of programs to reduce death and disability associated with smoking.

The health information program is designed to provide a complete comprehensive, responsive source of material for dissemination to scientific, professional and public audiences. During 1967 means will be employed to expand the systematic collection, review and evaluation of newly published scientific and technical data. Current methods of dissemination will be modified and supplemented through publication of periodic and special reports, including a report to Congress, July 1, 1967, and annually thereafter, as required under the Cigarette Labeling and Advertising Act. The National Clearinghouse is also initiating a broad based program of public information. In addition to collecting, evaluating and publicizing the availability of materials produced by other sources, the Clearinghouse is initiating the production of films, pamphlets, television programs and other materials for mass distribution.

Epidemiologic research is being undertaken in an effort to learn more regarding the basic behavioral, psychological and social aspects of smoking. In order that effective procedures to bring about significant changes in smoking habits may be introduced, we need to know more about the basic characteristics of smoking behavior. Primary emphasis in 1967 will be placed on the evaluation

of the results of basic studies and the development of methods which will be effective in helping individuals change their smoking habits.

Coupled with the more basic research, an effort has been launched to develop effective community approaches to the smoking and health problem. Primary emphasis has been given to the encouragement of an interagency approach due to the large number of community groups with a responsibility in the area.

The greatest deterrent to programs in the control of cigarette smoking has been pessimism as to their effectiveness. The grass roots demand is for effective programs and materials—not just for any kind of programming.

By 1968 results of the research and development carried out during 1966 and 1967 will have provided a definition of more effective tools which can be applied at all levels—particularly the community level.

Diabetes and Arthritis Control

	1967 estimate		1968 estimate		Increase or decrease	
	Positions	Amount	Positions	Amount	Positions	Amount
Diabetes and arthritis control	90	$1,662,000	90	$1,730,000	----	+$68,000

Arthritis

Since rheumatoid arthritis is the nation's number one crippler, major effort has been devoted to this disease. With proper application of currently available information, severe disability can be delayed for five years. With continued investigation of methods of applying available knowledge it is probable that this period of delay can be lengthened. The five year delay is the result of progress against this crippling disease in recent years. Studies will (a) develop reproducible and valid techniques for measuring joint function and strength, (b) develop and test better methods for early detection of the arthritis victim, (c) define the characteristics and problems of individuals with specific forms of arthritis, and (d) develop valid incidence and prevalence information concerning other forms of arthritis.

Emphasis will also be given to the development of better methods for the detection of gout-prone individuals, as acute attacks of gout can be prevented or limited in duration. Since these individuals are also prone to kidney stones, early detection can have a significant effect on morbidity and mortality from this condition.

Diabetes

Diabetes continues to rank as the eighth leading cause of death and the third cause of blindness in the United States. But this is only a part of the seriousness of the problem. Thousands of additional diabetics die prematurely from other conditions, such as cardiovascular and renal diseases, caused or aggravated by diabetes. Nearly two million diabetics are yet to be discovered and therefore are without the benefit of treatment. Many of the nearly two million diagnosed diabetics are not maintaining proper control of their disease due to the absence or inadequacy of existing patient and professional education programs at the community level. Diabetes casefinding, while increasing, is still not being done on a scale proportionate to the problem. Casefinding without patient services at the community level also fails to meet the problem.

During 1968, work begun in a model community will be continued. This is a community where proper casefinding techniques are applied, where the level of professional awareness of the problem is conducive to good management, where the public, including police officers and others likely to encounter a diabetic in distress, is aware of the problem and where the patient is properly versed in the methods of maintaining metabolic balance and recognizing crises.

It is expected that the results of this study will demonstrate the benefits that can derive from such concerted community awareness and action.

Programs operating in 1967 are designed to assist States and communities to meet these inadequacies. Twenty-five State and local health agencies during the past year have converted to automated quantitative blood testing procedures, utilizing for the most part formula grant funds to acquire the necessary equip-

ment. Reported screening continues to increase and, more importantly, quality of yield has been progressively improving each year.

Additional emphasis will be placed on more reliable diabetes test methods. Both headquarters and the field research personnel will continue to develop, test and evaluate methods and techniques of detection, diagnosis and control.

The increase of $68,000 is for mandatory changes, including the annualization of 10 positions new in 1967.

Heart Disease Control

	1967 estimate		1968 estimate		Increase or decrease	
	Positions	Amount	Positions	Amount	Positions	Amount
Heart disease control	400	$7,021,000	400	$7,021,000	----------	----------

Diseases of the heart and circulatory system are the leading causes of death and illness in this country. In 1965, 989,130 people died from cardiovascular diseases and according to the National Center for Health Statistics, an estimated 15,000,000 people have one or more cardiovascular disease in a diagnosable form. During fiscal year 1966 it is estimated that cardiovascular diseases caused about 429,000,000 days of restricted acitvities or more than 1,000,000 man-years of disability.

Epidemiology

During 1968, the principal effort of the Heart Disease Control Program will be directed toward population studies to obtain knowledge and information which will aid in the development of methods to prevent and control the cardiovascular diseases. These studies will be designed to contribute to our knowledge of how and why such diseases as atherosclerosis and hypertension develop and progress. Changing patterns of disease over time, differences in death rates between various geographical areas and different rates of disease occurrence between various socio-economic groups will be studied. Further definition will also be sought for those factors which increase the susceptibility of certain individuals to heart diseases or strokes.

These studies will incorporate activities pertinent to the development of casefinding, diagnosis, management, prevention and rehabilitation techniques. For example, epidemiological methods will be employed to determine the value of removing or reducing factors which have been identified with increased susceptibility or increased risk of developing heart disease.

Field trials and demonstrations

Techniques or methods which show promise in preventing, controlling or detecting heart disease in an early stage, under controlled conditions, will be tested and refined in a representative community population. In addition to measuring actual effectiveness, such field tests are necessary to ascertain compatibility of the control measures with community attitudes, customs and institutions, as well as to determine their acceptance by the physicians and other health professions who will be ultimately responsible for applying them.

Special technology

Emphasis will be given to the development of special techniques and instruments to support the program's population studies and field trials. Modern electronic devices, biochemical tests, psychemetric instruments and data procesing techniques will be adapted to the problems of finding diagnosing and evaluating persons with cardiovascular disease. These devices will reduce the costs and professional time required to measure the early and perhaps less obvious effects of intervention measures. This technology may be employed to evaluate ongoing community cardiovascular control efforts. Its widespread application also holds promise of a considerable saving of physician time, by relieving them of many routine tasks, such as regular health appraisal.

Coronary care training and demonstration

Activities begun in 1966 and 1967 as initial steps in the development and evaluation of training programs for personnel to staff coronary care units will

be continued. These efforts are necessary to determine optimum patterns of student selection, teaching methods, course effectiveness, and production of trainees. These activities are intended to demonstrate and establish standards of quality and quantity for coronary care unit training programs and facilities thus leading to plans to meet the total needs. In addition programs will be continued to develop, evaluate, and demonstrate the provision of special care services for coronary patients in small community hospitals.

Respiratory Disease Control

	1967 estimate		1968 estimate		Increase or decrease	
	Positions	Amount	Positions	Amount	Positions	Amount
Respiratory disease control	32	$1,139,000	32	$1,175,000	----------	+$36,000

In 1952, emphysema and chronic bronchitis, the major chronic respiratory diseases, killed a reported 3,846 persons. By 1962, reports listed 15,915 deaths and in 1964 more than 20,200. Authorities also believe these diseases were responsible for an additional 62,600 deaths, for a total of more than 82,000 in 1964 alone. During 1963, the Social Security Administration declared 14,897 workers were totally and permanently disabled from these diseases, an increase of 2,523 over the number certified in the previous year. The annual cost of disability payments to these workers is now estimated at $90,000,000. The National Health Survey reported that between July 1962 and June 1964, nearly 3,000,000 individuals with bronchitis and/or emphysema visited their doctors for treatment.

The Congress, recognizing this trend as a serious menace to the nation's health, provided $1,000,000 in 1966 for the establishment of a chronic respiratory diseases control program. In the first year, the program initiated model demonstration and training projects in five locations across the country. Retrospective studies of 4,000 medical records from three chest clinics will permit an evaluation of the benefits of various regimens of treatment for emphysema and chronic bronchitis. Intensive educational campaigns have been directed towards the general public. Latest knowledge of standard control methods has reached 150,000 individual physicians in the nation. Training projects reached 285 physicians, 300 nurses and 115 ancillary personnel in short-term courses designed to increase and update their knowledge in the management of chronic respiratory diseases.

In 1967, the budget increase provided will permit continuation and expansion of programs initiated in 1966. Close coordination of efforts with other respiratory disease programs within the Public Health Service, other Federal agencies and voluntary organizations in program planning and execution will result in the most effective use of available funds and personnel. The number of additional physicians, nurses, and ancillary personnel receiving short-term, intensive training will increase to 875 in 1967. Evaluation of mass screening techniques, diagnostic validation, modes of treatment, rehabilitation, and after-care will continue as currently planned.

In 1968, emphasis will be placed on providing criteria for program planning in the chronic respiratory diseases and realistic standards for secondary prevention, detection, treatment and rehabilitation in these diseases. Consultation and advice will be provided to assist health agencies, hospitals, physicians and other medical workers in planning for and providing optimum control services at the community level.

Vigorous efforts will be directed to the dissemination of the findings of the National Tuberculosis Association-Public Health Service Task Force on Emphysema and Chronic Bronchitis, and the encouragement of State agencies to incorporate the recommendations thereof into State plans for the control of these diseases.

Although basic and applied research in these diseases should be expanded in the future, even the present level of research productivity results in an extensive medical literature on this subject. These reports are published in many different medical journals related to separate disciplines. Keeping informed of contemporary knowledge presents an almost impossible task for clinicians and

investigators in this field. New knowledge must be disseminated more promptly and effectively in order to improve patient care and to provide a basis for continuity of research efforts. Within available resources, some assistance in assembling and distributing such information will be attempted.

A "built-in" increase of $36,000 for annualization of 5 positions new in 1967 is requested.

Neurological and Sensory Disease Control

	1967 estimate		1968 estimate		Increase or decrease	
	Positions	Amount	Positions	Amount	Positions	Amount
Neurological and sensory disease control	90	$1,624,000	90	$1,659,000	.....	+$35,000

The mission of the program is to provide a national focus for the prevention, control, and eradication of diseases in three major program categories—neurology, vision, and communicative disorders. Approximately 5,500,000 people have neurological disorders, 3,000,000 have visual disorders, and 7,500,000 have communicative disorders. Many people suffer from a combination of these disabilities.

The methods employed in this effort are the support of studies and applied research programs; the support of demonstration programs in the more effective organization of services and the support of training programs to increase the numbers and quality of medical and allied medical personnel; the provision of specialized consultation to officials of State, local, academic and related agencies and institutions; the developing of public information programs, and the dissemination of promising research results to professionals.

In 1968, the efforts already underway will continue to show significant results in improving the quality of services available to people with neurological impairments.

Studies and demonstrations offer both an immediate and long-range hope for significant "breakthroughs" in the development of new techniques and instrumentation and the development of patterns of more effective use of personnel through better organized services. New devices, diagnostic techniques, and instruments and patterns of service will be evaluated and their merits and limitations made known to professionals in the field.

Minimal brain damage, associated with learning disorders, has only recently been widely recognized as a health and educational problem. Currently, an evaluation of diagnostic techniques for minimal brain damage is being conducted, and in 1968 an interim report will be available. This study will evaluate various screening instruments for detecting this disorder and will provide an initial assessment of the most effective tools to use for diagnosis. If such disorders can be properly diagnosed in the infant or small child, appropriate teaching techniques can be used to prevent unnecessary handicaps.

In 1968, the results of a study which tested the calibration of 100 audiometers in use in schools, clinics, and elsewhere in North Carolina will be published. The results of the study indicate that most of these audiometers are out of calibration, severely limiting their accuracy. This report will be used to alert great numbers of hearing personnel as to deficiencies in critical instrumentation.

A study will be completed in 1968 which will indicate the availability and utilization of eye bank facilities vital in corneal transplant operations. The initial findings from this study indicate that there are backlogs of people needing this operation in several sections of the country. In 1968, these findings will be evaluated and recommendations will be developed to determine the most effective way to eliminate these deficiencies.

Evoked-response audiometry is a technique which permits the audiologist, by observing brain waves, to determine hearing loss in people too young or physically or mentally impaired to offer verbal response.

The methodology to test this technique has only recently become available through the application of high speed computers. A three-year study has been undertaken to test the feasibility of this technique for use as a screening device on a widespread basis.

The organization of services in the community can be the major determinant in the provision of effective service. A continual evaluation of programs which have been supported is underway. Communities, academic institutions, State and other agencies will be advised of potential areas of difficulty and of factors contributing to success in establishing community programs. Communities will be in a better position to plan more effectively and efficiently based upon the experience of related programs in other geographical areas.

Satellite clinics affiliated with medical centers have been supported in vision, speech and hearing, and neurology. The satellite programs make highly specialized service more widely available. The program will appraise the effectiveness of satellite clinics based upon the operation of these programs now in various stages of development. The results of these analyses will be made available to the respective professional disciplines and to interested health agencies.

A comprehensive demonstration program for the treatment of epileptics will be continued in 1968. This program includes a full range of allied medical disciplines (nursing, social work, psychology) supporting the neurologist. The program was established in Phoenix, Arizona, a community of 800,000 people. In 1968, an intensive analysis of the program will be completed. Interim results indicate that this program is accepted by the community and will be continued after termination of the contract. This project has received widespread visibility throughout a large geographical area, and has served as a model for several presently developing programs in other locations throughout the country.

The program has supported specialized professional and technical training programs in areas of its missions, including speech pathologists and audiologists, electroencephalographic technicians, ophthalmologists, neurologists, and otolaryngologists. It has provided training for general practitioners and internists in specialized techniques such as use of tonometers for glaucoma testing.

The nature of most neurological and sensory diseases requires a number of allied disciplines supportive of the physicians. Two important team members are nurses and social workers. Programs in neurological nursing are supported at the University of California Medical Center at San Francisco, New York Medical College, and the University of Florida. These programs offer the first opportunity in this country for nurses to become highly specialized in providing services to neurologically stricken people and should provide plans and curricula for filling national needs. In 1968, these programs will be well established and an increasing number of qualified nurses will be available. An evaluation of these programs will be conducted and the results will receive widespread dissemination.

Social workers perform an equally critical role. The program has supported four graduate schools of social work in introducing neurological and sensory content into their curricula for all students and provides learning opportunities in field placement settings serving these disabilities. The four programs, which represent the only effort now being made to train social workers in the sociomedical aspects of physical chronicity, will be evaluated by project directors, consultants, and program personnel, and in 1968, a report on the experience will be widely distributed within the profession.

The requested increase of $35,000 is for the annualization of 7 positions new in 1967.

Preventive Services

	1967 estimate		1968 estimate		Increase or decrease	
	Positions	Amount	Positions	Amount	Positions	Amount
Preventive services	28	$665,000	28	$665,000	.....	.....

The current system of medical practice in this country, with its emphasis on treatment of acute illness, together with the shortage of physicians, has failed to provide preventive health services to a large segment of the adult population—the group most prone to chronic disease with its attendant and increasing incidence of both disability and mortality. The adult counterpart to

the pediatrician's well-baby clinic is generally not available for preventing chronic disease and its resulting disability.

Typically, an adult patient seeks treatment for an acute episode and then drops out of the medical care system until another episode brings him again to medical attention. There is no general systematic approach to periodically examining patients for incipient chronic disease, or for establishing baseline chemical and physical measurements which can be used for comparative purposes throughout the patients' lifetime. In summary, prevention of chronic disease and disability is not incorporated into the practice of medicine in this country as we know it today. Our ultimate goal is to develop systems, standards, and trained manpower to a point where each person in our country will receive high quality periodic health examinations as a normal part of his way of life.

During the next five years, we hope to conduct the necessary research to develop basic systems. This will include research to determine the character of the systems, the timing of introduction and methods of measuring progress. Standards of periodicity and content of a health appraising examination, by age group, will also be developed.

Our current major efforts have been directed toward the development of an automated screening laboratory for obtaining the basic physical, chemical and medical history profiles required by a physician performing a health protection examination. The Kaiser Permanente Group located in the San Francisco Bay area, has developed and demonstrated, with project grant support from the National Center for Chronic Disease Control, the feasibility of using an automated, computerized approach to the laboratory examination of large numbers of people in preparation for a physician's evaluation. With the successful demonstration of the automated multiphasic laboratory, the Center is now supporting the Kaiser Permanente project with a research grant to identify precursors of chronic disease, and investigate preventive medical methods for more effective detection, prevention, and control of chronic diseases.

The application of the chemistry profile element of the automated multitesting laboratory is being studied in a hospital setting Pueblo, Colorado, where it is planned to have physicians make use of this service for their office patients.

During 1968, work will continue towards the development of new methods and procedures for applying basic research findings and modern technical discoveries to the practice of preventive medicine. Objectives include: (1) new and improved testing procedures; (2) the application of automation so that large numbers of people will benefit; (3) the development of new systems; (4) the study of human behavior and attitudes as they relate to preventive practices; (5) the creation of quality standards for health protection examinations and laboratory procedures; (6) epidemiological studies which will provide essential information as to the nature and scope of the overall chronic disease problem and; (7) identification of specific risk factors involved in the development of chronic diseases.

We also will be concerned with training specialized personnel in the technical developments related to preventive services, including laboratory training.

Kidney Disease Control

	1967 estimate		1968 estimate		Increase or decrease	
	Positions	Amount	Positions	Amount	Positions	Amount
Kidney disease control	55	$3,783,000	55	$5,945,000	----------	+$2,162,000

The kidney disease problem

Primary diseases of the kidney killed an estimated 100,000 Americans in 1966.

Each year an estimated four to six thousands persons who are medically suitable candidates for artificial kidney therapy die of kidney disease. These persons, most of whom are in the prime of life, could be kept alive and productive through the use of artificial kidney therapy.

Conditions listed as acute genito-urinary tract disease (excluding venereal disease and menstrual disorders) in the National Health Survey of 1964 led to 36.9 million days of restricted activity for 6.7 million individuals. An addi-

tional 1.1 million persons reported limitations of activity as the result of chronic genito-urinary disease. This latter figure accounts for 5.4% of all activity limitations in individuals under the age of 45, which makes it the fourth most common cause of non-orthopedic impairment. An estimated 3,300,000 Americans harbor infectious organisms in their urinary tract. A significant number of these persons will have no warning of their disease until kidney damage is so severe that they cannot survive.

Unlike the majority of chronic diseases, these diseases are particularly likely to cause death in patients in the middle, productive years. The social and economic impact of kidney diseases therefore is far out of proportion from what one would expect from simple analysis of the bare statistics.

A great deal more knowledge and highly developed methodology is necessary before effective programs of primary and secondary prevention can be undertaken on a broad scale. Such diseases as chronic glomerulonephritis and chronic pyelonephritis, which are responsible for the vast majority of patients with chronic renal failure, are poorly understood. In addition to the further development of such promising areas as artificial kidney therapy and kidney transplantation, the Kidney Disease Control Program is planning and conducting investigations into the problems of incidence, cause, natural history and appropriate therapy for all common kidney diseases.

Kidney disease control programs and plans

During 1966, the Kidney Disease Control Program established the groundwork for a comprehensive developmental program for the prevention, early detection, and management of kidney diseases. Eleven new kidney disease projects were approved and funded through the use of "other chronically ill and aged" project grants. These eleven grants helped to establish ten new artificial kidney centers, including two pilot home artificial kidney programs, and a community kidney disease prevention center. These projects are being continued during 1967, and in 1968 will be funded under the appropriation, "Comprehensive health planning and services." Emphasis during this period will be placed upon the collection and analysis of medical and cost data. Also during 1966, contract projects were begun to: (1) develop and test methods for early detection and management of kidney diseases; (2) develop training projects at artificial kidney centers in order to design and test formal training programs for medical and paramedical personnel; (3) obtain better definitions of kidney disease morbidity and mortality and obtain data pertaining to its cost and socio-economic impact.

In 1967, the Congress provided an increase of $3,000,000 which is being used to contract for the establishment of approximately 12 new artificial kidney centers directed toward the development and evaluation of home artificial kidney therapy. The purpose of these centers is to develop and test the hypothesis that home programs, properly administered and controlled, can substantially reduce the cost of artificial kidney therapy without sacrificing quality of patient care. The centers planned for 1967 will be able to train and support a sufficiently large home patient population to permit sound conclusions to be drawn regarding the medical, social, and economic feasibility and possibilities of applying this therapy to all who need it.

These centers, which will have been planned, staffed and equipped during 1967, will begin their first full year of operation during 1968. The increase of $2,162,000 proposed for 1968 will permit medically suitable patients (and their family members and local physicians) to be trained in the techniques of home artificial kidney therapy and then placed upon continuing treatment within the setting of their own homes. As a result of two factors—well planned, staffed and equipped training centers plus a statistically significant patient population—the developmental home artificial kidney programs will be able to: (1) test the feasibility of widespread and prolonged home treatment with the artificial kidney and various methods of providing it, (2) generate and evaluate cost data on both the training center and the home treatment of patients, (3) generate and evaluate uniform patient and medical data, and (4) determine the extent to which many possible sources and combinations of funds (i.e. insurance, private funds, voluntary sources, and local, State and Federal sources) can be developed to support this need. Information and data derived from these programs over the next several years will help the Public Health Service in the determination of requirements, and the development of guidelines, criteria and plans for efficient and effective ways to curtail this needless loss of life.

COMMUNICABLE DISEASES

WITNESSES

DR. DAVID J. SENCER, DIRECTOR, NATIONAL COMMUNICABLE DISEASE CENTER
DR. WILLIAM J. BROWN, CHIEF, VENEREAL DISEASE PROGRAM, NATIONAL COMMUNICABLE DISEASE CENTER
DR. ALFONSO H. HOLGUIN, CHIEF, TUBERCULOSIS PROGRAM, NATIONAL COMMUNICABLE DISEASE CENTER
DR. ARTHUR OSBORNE, CHIEF, FOREIGN QUARANTINE PROGRAM, NATIONAL COMMUNICABLE DISEASE CENTER
JAMES D. BLOOM, ASSISTANT EXECUTIVE OFFICER, NATIONAL COMMUNICABLE DISEASE CENTER
DR. RICHARD A. PRINDLE, DIRECTOR, BUREAU OF DISEASE PREVENTION AND ENVIRONMENTAL CONTROL
VERNON G. MacKENZIE, DEPUTY DIRECTOR, BUREAU OF DISEASE PREVENTION AND ENVIRONMENTAL CONTROL
PETER J. BERSANO, FINANCIAL MANAGEMENT OFFICER FOR DISEASE PREVENTION AND ENVIRONMENTAL CONTROL PROGRAMS
DR. WILLIAM H. STEWART, SURGEON GENERAL
G. R. CLAGUE, ACTING CHIEF FINANCE OFFICER
JAMES B. CARDWELL, DEPUTY ASSISTANT SECRETARY, BUDGET

Object classification

[In thousands of dollars]

		1966 actual	1967 estimate	1968 estimate
	Personnel compensation:			
11.1	Permanent positions	21,218	24,349	25,247
11.3	Positions other than permanent	1,331	1,972	1,972
11.5	Other personnel compensation	474	469	469
	Total personnel compensation	23,022	26,789	27,687
12.0	Personnel benefits	2,321	2,638	2,712
21.0	Travel and transportation of persons	1,654	2,237	2,320
22.0	Transportation of things	834	1,148	1,196
23.0	Rent, communications, and utilities	1,270	1,520	1,553
24.0	Printing and reproduction	231	377	418
25.1	Other services	1,548	1,920	1,972
	Project contracts	11,718	13,276	15,400
25.2	Services of other agencies	523	403	421
25.3	Payment to:			
	"Public Health Service management fund"	592	863	900
	"National Institutes of Health management fund"	26	27	27
26.0	Supplies and materials	3,826	4,908	5,172
31.0	Equipment	2,280	1,803	1,715
32.0	Lands and structures	22		
41.0	Grants, subsidies, and contributions	6,899	14,054	10,805
42.0	Insurance claims and indemnities	3		
	Subtotal	56,771	71,963	72,298
95.0	Quarters and subsistence charges	−26	−26	−26
99.0	Total obligations	56,745	71,937	72,272

Personnel summary

	1966 actual	1967 estimate	1968 estimate
Total number of permanent positions	3,156	3,265	3,280
Full-time equivalent of other positions	235	319	343
Average number of all employees	2,857	3,178	3,243
Average GS grade	8.0	8.1	8.2
Average GS salary	$8,181	$8,619	$8,756

Program and financing

[In thousands of dollars]

	1966 actual	1967 est.	1968 est.
Program by activities:			
1. Grants:			
(a) Research	3,015	3,375	4,232
(b) Community immunization	4,778	12,974	9,100
2. Direct operations:			
(a) Communicable diseases	14,900	17,728	18,467
(b) Tuberculosis	2,936	3,617	3,669
(c) Venereal diseases	4,091	4,329	4,366
(d) Pesticides	4,238	7,234	7,572
(e) Foreign quarantine	7,630	8,001	8,175
(f) Aedes aegypti eradication	10,980	14,679	16,691
Total program costs funded [1]	52,568	71,937	72,272
Changes in selected resources [2]	4,177		
10 Total obligations	56,745	71,937	72,272
Financing:			
16 Comparative transfers from other accounts	−19,432	−24,040	
21 Unobligated balance available, start of year	−888	−3,874	
24 Unobligated balance available, end of year	3,874		
25 Unobligated balance lapsing	172	197	
New obligational authority	40,470	44,220	72,272
New obligational authority:			
40 Appropriation	40,497	44,220	72,272
41 Transferred to—			
"Operating expenses, Public Buildings Service," General Services Administration (79 Stat. 531)	−2		
"Office of the Surgeon General, salaries and expenses" (42 U.S.C. 226)	−25		
43 Appropriation (adjusted)	40,470	44,220	72,272
Relation of obligations to expenditures:			
10 Total obligations	56,745	71,937	72,272
70 Receipts and other offsets (items 11-17)	−19,432	−24,040	
71 Obligations affecting expenditures	37,313	47,897	72,272
72 Obligated balance, start of year	18,812	17,129	22,515
74 Obligated balance, end of year	−17,129	−22,515	−42,140
77 Adjustments in expired accounts	−692		
90 Expenditures	38,304	42,511	52,647

[1] Includes capital outlay as follows: 1966, $523,000; 1967, $771,000; 1968, $818,000.
[2] Selected resources as of June 30 are as follows (in thousands of dollars):

	1965	1966	1967	1968
Stores		7	7	7
Unpaid undelivered orders	2,623	6,793	6,793	6,793
Total selected resources	2,623	6,800	6,800	6,800

Mr. FLOOD. We now have with us from the Public Health Service, Dr. David J. Sencer, Director of the National Communicable Disease Center.

BIOGRAPHICAL SKETCH OF PRINCIPAL WITNESS

We have a biographical sketch of you, I see, Doctor, which we will insert in the record at this time.

(The sketch follows:)

Name: David J. Sencer
Position: Director, National Communicable Disease Center
Birthplace and date: Grand Rapids, Michigan, November 10, 1924
Education:
College, 1942–44: Wesleyan University, Middletown, Connecticut
College, 1945–46: University of Mississippi
M.D., 1946–51: University of Michigan
Internship, 1951: University Hospital, Ann Arbor, Michigan
1952–54: Internal medicine residency
M.P.H., magna cum laude, 1957–58: Harvard University School of Public Health
Experience:
February 1966–Present: Director, NCDC
Oct. 1964–Feb. 1966: Deputy Chief, CDC, Atlanta
Dec. 1960–Oct. 1964: Assistant Chief, Communicable Disease Center, U.S. Public Health Service, Atlanta, Georgia.
Feb. 1959–Nov. 1960: Program Officer, Bureau of State Services, U.S. Public Health Service, Washington, D.C.
Oct. 1955–Feb. 1959: Medical Officer in Charge, Muscogee County TB Field Research Facility, USPHS, Columbus, Georgia
Jan. 1955–Oct. 1955: Medical Consultant, Tuberculosis Program, U.S. Public Health Service
Association memberships:
American Medical Association
American Public Health Association
American Thoracic Society
American Society of Tropical Medicine and Hygiene
Georgia Tuberculosis Association
Delta Omega

General Statement

Mr. Flood. I notice that the Harvard Alumni Association in the Public Health Service stick together, don't they.

Doctor, I see you have a statement. You may proceed.

Dr. Sencer. The National Communicable Disease Center is the oldest Center in the Public Health Service. This year the Communicable Disease Center completes 20 years of service to our States and joins four other Centers in the new Bureau of Disease Prevention and Environmental Control. The Communicable Disease Center feels at home in this environment of centers because its mission has been disease prevention, control, and eradication; and, the techniques of communicable disease control can be and should be broadly applied to better the health of the Nation.

The use of pesticides has brought about dramatic change in the occurrence of communicable disease, but we also recognize that pesticides are one of the major chemical contaminants in our environment. The safe and effective usage of pesticides for disease control has long been a responsibility of the Communicable Disease Center. The reorganization will allow the fullest exploitation of our talents to understand the human effects of these compounds and thus can provide a model for the study of other chemicals in our environment.

Foreign quarantine has been an important factor in the control of communicable diseases by excluding them from the United States. Coupling this effort with internal communicable disease control programs will make this Nation healthier. Thus, the reorganization has strengthened the total program for infectious disease control, and I am here today to defend the communicable diseases budget of $72,272,000, an increase of $4,029,000.

EXTENT OF THE PROBLEM

Although infectious diseases, many of them preventable, cause death, disability, discomfort, and hundreds of millions of man-days lost from work, infectious diseases are most often noticed in unusual occurrences. A single case of plague is newsworthy; 50,000 cases of tuberculosis can occur with little public awareness. An encephalitis epidemic can call forth the Air Force to spray a community with pesticides; but increasing venereal disease in teenagers is often ignored by press and PTA's. All of these events occurred in the past year.

Mr. FLOOD. Didn't Texas have a flareup of encephalitis recently?

Mr. CASEY. We surely did.

Mr. FLOOD. Bad?

Mr. CASEY. Yes.

Mr. FLOOD. What caused that?

Mr. CASEY. I do not know. They think it may be carried by a mosquito. They inaugurated a mosquito control program.

Mr. FLOOD. Did not New Orleans have a problem on this?

Dr. SENCER. Not in the past few years. They have had some encephalitis in horses around New Orleans, but no human cases.

Mr. FLOOD. Is it cleaned up now?

Mr. CASEY. I hope so.

Dr. SENCER. They have established a good mosquito abatement district in Houston as a result of the epidemic in 1964.

PLAGUE

Consider the potential of plague. Five persons contracted the disease from natural reservoirs in the West. This past year saw major outbreaks of plague in wild animals and the increased recreational use of our land increases the chance of exposure. The sixth case is frightening. A furloughed service man from Vietnam, where plague is epidemic, was admitted to a hospital in a Western State—Texas, as a matter of fact, sir—and remained for 16 days before the disease was suspected. Slightly altered circumstances could have lead to pneumonic plague—a true catastrophe, for pneumonic plague can spread into an epidemic, with person-to-person transmission.

FOREIGN QUARANTINE

This illustrates the need for reorienting our foreign quarantine activities to a posture of intensive surveillance abroad, at our borders, and at home. We cannot rely on a principle of exclusion. We must actively seek out possible hazardous situations before they strike. Today's transportation and movements of people are so rapid and of such magnitude that we need increased vigilance to protect our people from plague, smallpox, malaria, and other diseases which are still rampant in many parts of the world.

TUBERCULOSIS

Although the 49,000 new cases of tuberculosis represent a decrease from the previous year, it is a small decrease. This is not to indicate lack of progress. The increased productive activity in State and local

tuberculosis control programs that has been manifested in the 2 years since the report of the Task Force on Tuberculosis Control requested by this committee bodes well for the future. The nature of tuberculosis is such that immediate gains in lowered morbidity are not to be expected, but performance of vital tuberculosis control procedures has markedly improved. During the past year, the total coverage for improved and intensified activities was expanded from 60 percent to include 75 percent of all new cases. The program for tuberculin testing of children entering school increased from 20 percent to 60 percent of all first graders.

Mr. FLOOD. I thought a few years ago you were on the way to licking TB. Now I understand it is coming back strong.

Dr. SENCER. It is not coming back strong. I think much of our encouragement of a few years ago was the fact that mortality from the disease decreased so dramatically. The drugs which became available in the early 1950's were remarkable in cutting back on mortality.

The decline in morbidity, though, has been very slow. There really has not been an increase. One year, 1964, there was a very slight increase, but we think this was probably due to change in reporting practices rather than a true increase in the disease.

Mr. FLOOD. The excitement about the vaccine a few years ago just did not pan out?

Dr. SENCER. No, the vaccine does not have much use in tuberculosis control in this country where there is not a great deal of transmission of the disease going on.

ENCEPHALITIS

This year there were two major epidemics of encephalitis—one in Dallas, the other in Corpus Christi. Last year, this committee approved our request for additional funds for investigations in encephalitis. Today, I am pleased to report progress. In the 1964 epidemic in Houston, the disease went undiagnosed for 6 weeks. This year, through laboratory support from the Communicable Disease Center, it was recognized in almost the first week in Dallas. In 1964, conventional mosquito control efforts had little effect upon the epidemic. This year, as a result of research conducted jointly by the Communicable Disease Center and the Air Force, a new method of aerial spraying was used and stopped the transmission of the virus of encephalitis.

VENEREAL DISEASE

Although venereal diseases continue to increase in numbers of reported cases, we are hopeful that the tide is turning as far as syphilis is concerned.

For the first year since 1958 there has been no reported increase in infectious syphilis. We would like to believe that this is due to the increased control activities supported as a result of the Task Force Report on Syphilis Control. To put blind faith in this, however, would be to court disaster. Therefore, we are exploring better methods of epidemiology, of screening, of diagnosis, and are progressing toward a vaccine. If there is some optimism in regard to syphilis, all I can report is pessimism with respect to gonorrhea. Each year, but 1, for the past 10 years, this disease has increased.

Mr. FLOOD. I asked the Surgeon General a series of questions having to do with venereal disease. Have you seen those or have you arranged to see them?

Dr. SENCER. Dr. Stewart mentioned at lunch that you have them, and we will be glad to supply answers to them.

Mr. FLOOD. I have been into this subject at length for many years with the Surgeons General of the various branches of the Armed Forces.

MEASLES

Dr. SENCER. There are other communicable diseases which have not yet been conquered, but where the solution is close upon us. To mention two: The measles—German and red. Last year, we asked for and were given support to develop a method for the rapid diagnosis of German measles—rubella. I am pleased to report that we have accomplished this. Concurrently with the National Institutes of Health, our virologists developed a rapid, sensitive, and simple test to diagnose the disease.

Mr. FLOOD. It is a blood test?

Dr. SENCER. It is a blood test, a serologic test.

In December, representatives from 32 States were trained to perform the test and were furnished the reagents.

Last year, we requested and received funds to institute a nationwide program to control red measles—rubeola. Our experience to date has been encouraging—measles is at an all-time low. This year, we are broadening our horizon, and asking for funds to eradicate the disease. This will be accomplished through our program of grants for immunization activities and by increasing our assignment of epidemiologists to States to improve surveillance. It can only be through epidemiological surveillance that true eradication can be achieved.

AEDES AEGYPTI

Measles is a disease still with us. Yellow fever has not been with us since 1924. This disease, however, still constitutes a threat to us so long as the Aedes aegypti mosquito, which carries dengue as well as yellow fever, is present. Equally, if not more important, is the constant threat—and occasionally the occurrence—of an exportation of our country's yellow fever mosquitoes to other countries of the hemisphere which have already achieved eradication. Therefore, we are engaged in a program of eradicating that vector, the Aedes aegypti mosquito, from the United States. At the end of December 1966, 51 percent of 571 operational zones in advanced program areas were free of Aedes aegypti, and other zones showed marked reduction in the prevalence of this mosquito.

INTERNATIONAL HEALTH

While not defended in this budget, two programs of eradication should be mentioned, for they have become integral parts of our Communicable Disease Center operation—malaria and smallpox eradication. The Communicable Disease Center is now the operating agency for the Agency for International Development in both of these programs—the former in existence since 1958, the latter new this year.

In malaria, we have programs and staff in 17 countries; in smallpox, 19 countries of West Africa.

DIAGNOSIS OF SMALLPOX

Mr. FLOOD. Periodically, every couple of years, there are scare headlines in the metropolitan press on smallpox, and then when the tests are finally made, we are advised that it is not smallpox. How can they possibly make a mistake on anything like that?

Dr. SENCER. You and I have talked about this before. I think one of the mistakes was our own, a case here in the District of Columbia. But we do not see smallpox in this country. Very few physicians have ever seen a case of smallpox. Therefore, they confuse the diagnosis.

I think this is one of the reasons that we are so pleased with the reorganization of the Public Health Service, which has made foreign quarantine part of CDC. This past week you may have read in the newspaper about the dermatologist from Frankfurt who showed up with smallpox after riding in a plane from India. Fifteen of these people on that plane were coming on to the United States. We have been able to place all 15 of them under surveillance, vaccinate them and have them under constant observation to make sure they do not develop smallpox.

I think with increased travel and as long as smallpox exists anywhere in the world, we shall have the scare headlines.

LABORATORY PERFORMANCE

Last year we presented testimony before this subcommittee on the problems in the clinical laboratories of this country. As a result of this, the late chairman and Mr. Laird requested a study in depth of the problem and ways to improve laboratory diagnostic services. This study has been delivered to the committee staff.

The study points out that accurate laboratory performance is essential today in the practice of medicine. Yet up to 25 percent of the laboratory determinations performed are in error.

LABORATORY ERRORS

Mr. FLOOD. I have before me the Washington Post, February 7, 1967, a picture of somebody named Dr. David J. Sencer, who "cites laboratory errors." "Senators Told 1 of 4 Lab Tests Is Erroneous."

Have you any objection if we put this in the record at this point?

Dr. SENCER. No, sir.

Mr. FLOOD. You are going to tell us the same thing you told the Senators?

Dr. SENCER. Yes.

(The article follows:)

SENATORS TOLD 1 OF 4 LAB TESTS IS ERRONEOUS

(By Morton Mintz)

At least 125 million medical laboratory tests a year—about one quarter of those done in the United States—are erroneous, the Senate Antitrust subcommittee was told yesterday.

The estimate was made by Dr. David J. Sencer director of the National Communicable Disease Center in Atlanta, on the basis of studies done by the Public Health Service facility.

Subcommittee Chairman Philip A. Hart (D-Mich.) said that to delay Federal action while waiting for the states to start regulating laboratories will "keep the undertakers and cemeteries busier than usual, earlier than usual. He said he is drafting a remedial bill aimed at "the only aspect of medicine that is unlicensed."

Dr. Sencer gave the following "actual examples in which clinical laboratory errors resulted in misdiagnosis, mistreatment, prolonged illness or death":

The blood of the wife of an Army sergeant was said to be group B, Rh positive; actually it was Group O, Rh positive. This error was made in a hospital that then proceeded to give her a transfusion of two pints of the wrong blood type in connection with surgery. She suffered permanent kidney injury. This was one of between 50,000 and 250,000 serious and sometimes fatal reactions occurring each year because of blood mismatching.

A California study of 328 deaths of newborn from a bloodcell disease showed that in 34.5 per cent there were "avoidable laboratory factors," including personnel who were unavailable or insufficiently trained, inadequate facilities, faulty methods and deficient reporting of test results.

On the basis of a physician's analysis of tissue that it did not check out, "a famous clinic" removed a woman's breast that was assumed to be cancerous but turned out not to be.

Malaria was diagnosed and treated in 33 persons, including one from whom bone-marrow specimens had been taken eight times. None of the 33 actually had malaria. This was established by the Communicable Disease Center when specimens from the 33 patients were submitted for verification.

At least three times during the hearing, Senator Hart expressed concern that the public would be alarmed by the testimony from Dr. Sencer and other witnesses. But he said that perhaps the alarm will be so "pervasive as to bring about reforms."

Dr. Sencer said that "through the laboratory . . . you can do as much to control the quality of medical care as any other way." Hart agreed.

When the physician was in private practice, he recalled, he had a "blind faith" in the reliability of reports on laboratory tests. Now, he said, even the case histories he mentioned in his testimony fail to suggest "the overwhelming magnitude of the problem which results from substandard work in the laboratory."

Dr. Sencer said there are about 7000 laboratories in hospitals, 5600 to 6600 independent labs and about 400 operated by state and local public health authorities. A significant share of the workload is borne in the offices and clinics of an untabulated number of physicians.

Studies indicate, Dr. Sencer testified, that 10 to 40 percent of the labs doing bacteriological testing—as, for example, typhoid fever—do "unsatisfactory work." The highest range, 40 to 80 percent, was given for laboratories doing blood cell studies such as those needed in leukemia.

Although dishonesty in laboratories was recognized as a problem by Dr. Sencer and other witnesses, the feeling seemed to be that it is relatively minor and remediable.

The principal concern was the lack of regulation of a business that grosses an estimated $3 billion a year. Only California, New York, Illinois, New York City and Puerto Rico, for example, require some form of licensing for independent clinical laboratories. The other states, Hart said, "require a license for a fellow who cuts our hair."

Other problems include severe shortages of trained personnel, which are aggravated by low salaries; poor techniques and quality controls, and lack of standard methods.

Dr. Morris Schaeffer, a New York City health official, proposed a reform program including Federal legislation to regulate labs in interstate commerce and state legislation to license all labs and to require registration of schools of medical technology.

Some of these schools are "nothing but diploma mills," the subcommittee was told by Howard L. Bodily, a California public health official.

Dr. SENCER. These errors can be important.

Consider that a falsely positive test for rabies can lead to a painful series of injections that occasionally causes permanent spinal damage,

that a falsely positive test for syphilis can ruin a marriage, that an error in blood typing can cause death, and it is obvious that a 25 percent error rate cannot be tolerated.

The remedies recommended include establishment of Federal standards of performance, licensure of laboratories in interstate commerce—the administration has introduced such legislation—support to States to develop programs of laboratory performance improvement in all labs, and strengthening the existing laboratory improvement program of CDC. I would emphasize the word improvement, for our goal is not control, but better service for better health.

Therefore, we present for your consideration this budget of $72,272,000, including program increases for our program of improving the quality of laboratory performance, expansion of the *Aedes aegypti* eradication program, improving our knowledge of pesticides, and strengthening our research grants program. Project grants to States for tuberculosis and venereal diseases are included in the appropriation "Comprehensive health planning and services."

I would be pleased to answer any questions.

Mr. FLOOD. On the question of licensing laboratories, suppose you have laboratories that have been licensed by the State and conform with whatever requirements the several States make in this connection. Do you intend to impose your sovereignty in cases of that sort?

Dr. SENCER. If a State has a program which is at least as good as the Federal standards, we would certainly respect the State's. We would hope most States would be developing programs such as California has, where they are today able to impose higher standards than we would initially be able to impose in many other parts of the country because it just would not be practical with the people available in those States.

Mr. FLOOD. You have no objection to that.

Dr. SENCER. No, sir.

SUMMARY OF BUDGET REQUEST FOR COMMUNICABLE DISEASES

Mr. FLOOD. The adjusted appropriation for 1967 is $68,440,000. The request for 1968 is $72,272,000, an increase of $3,832,000.

Dr. SPENCER. Yes.

"AEDES AEGYPTI" ERADICATION PROGRAM

Mr. FLOOD. Of which over half, $2,012,000, is for the *Aedes aegypti* eradication program which you have talked about. You told us something about it in your direct statement, and we talked about this last year and before.

Is the program on schedule? You were taking two steps forward and one step backward, like walking in the desert sand. Are you still falling behind?

Dr. SENCER. We think with the increase in appropriation that we are requesting this year, we will be able to hold our own. One of the problems is, if you do not continue to expand your activity out of a central core, you will get mosquitoes coming back in and you will have lost the gains that you have made. So, our plans for the coming year are predicated upon moving out from the areas where we have achieved eradication so we can gradually expand the area that is free.

Mr. FLOOD. It is very hard to impress these characters. They do not pay much attention to you.

Dr. SENCER. No, they are inhuman.

Mr. FLOOD. Yes, that is right. Why do you need all this for 1968? Are you going to go ahead that fast in one year?

Dr. SENCER. Actually, we feel this is relatively slow. It is a minimal increase to hold the gains that we have made. We say that we are operational in 571 zones. This means that there are around 2,000 zones in which we are not yet operational where there are *Aedes aegypti*.

Mr. FLOOD. You are talking about zones. What do you mean by "zones"?

Dr. SENCER. With the geographical situation in this country, with counties being of such indiscriminate size and shape, we have divided the *Aedes aegypti* infested areas into zones which are about 2,000 households.

Mr. FLOOD. You apparently have been reading the Supreme Court decisions on reapportionment.

Go ahead.

Dr. SENCER. So, rather than approaching this on a county-by-county basis where you may have a completely different geographic terrain and different housing situations scattered through the county, we have tried to divide the *Aedes aegypti* invested area into zones of equal housing units.

Mr. FLOOD. Are there any States where you have complete eradication?

Dr. SENCER. There are States where *Aedes aegypti* eradication has taken place. We cannot take credit for it. For some reason or other, the State of Louisiana does not have *Aedes aegypti* that we can find, except in the laboratory.

Mr. FLOOD. Are the States cooperating with you in this?

Dr. SENCER. The States are cooperating quite well with us, sir. In particular, Texas and Florida. We have had excellent working relationships. Also, Puerto Rico is working with us quite well. We do have administrative problems with some of them.

Mr. FLOOD. What is the percentage of the Federal cost?

Dr. SENCER. This is completely a Federal program, sir.

Mr. FLOOD. One hundred percent Federal?

Dr. SENCER. Yes.

COST OF ERADICATION IN ALL OF THE UNITED STATES

Mr. FLOOD. Let us try the schedule again. When do you expect eradication in all of the United States to be achieved?

Dr. SENCER. We believe that eradication could be achieved by 1973.

Mr. FLOOD. What would that cost us at the end of fiscal year 1973?

Dr. SENCER. From the beginning, not from now but from the beginning——

Mr. FLOOD. A nice round figure.

Dr. SENCER. $200 million.

Mr. FLOOD. Very round.

Dr. SENCER. $213 million.

Mr. FLOOD. You mentioned some other countries cooperating with you. In what way?

Dr. SENCER. Mexico has achieved eradication. Brazil has achieved eradication. Many of the Central American countries have achieved eradication. This country will be under continued criticism any time the *Aedes aegypti* mosquito is found in a country which has been certified to be free of *Aedes aegypti.*

Mr. FLOOD. Different types of governments in some of the Latin countries react in various degrees to such opportunities.

RESEARCH GRANTS PROGRAM

You have a relatively large increase, $857,000, for your research grants program. You say,

In 1968, this program will be expanded to include two areas of particular importance, the standardization of laboratory diagnostic tests and the support of reference laboratories.

Tell us why this is of particular importance. Who wrote that?

Dr. SENCER. I believe those are my words.

Mr. FLOOD. Good. They are good words.

STANDARDIZATION OF LABORATORY DIAGNOSTIC TESTS

Dr. SENCER. The standardization of laboratory diagnostic tests goes back to one of the problems we point out in our report on the diagnostic laboratories. We do not have the technology available in many areas at the present time to perform tests accurately. No matter what your intentions are, we do not have the reagents or the techniques that will make a reproducible test. So, we are trying to encourage chemists, in particular, biochemists, to begin to look at the whole problem of standardization of laboratory tests, rather than our trying to do it all ourselves.

REFERENCE LABORATORIES

Then, I think a good example of the necessity for the support of reference laboratories has come out of the encephalitis epidemics of 1964 and this past year. In 1964, CDC was doing just about all of the diagnostic work for the epidemic in Texas, but we have had a research grant now with the State health department, and Dr. Irons, the State laboratory director, and his laboratory is now able to perform the same tests that we do and get a common answer as we would.

Simultaneously, at the State laboratory in California, the laboratory of the University of Illinois at Urbana, and the laboratory of the New Jersey State Health Department, we were able to set up a surveillance of mosquitoes and the viruses they were transmitting last summer.

All of these laboratories received research grant support from CDC. We would like to expand this concept of developing common reference laboratories across the country.

Mr. FLOOD. I never heard you mention Alaska. Did you ever see Alaskan mosquitoes?

Dr. SENCER. They are big ones, yes, sir, but so far we have not been able to identify any viruses or diseases other than misery that they transmit.

REQUESTS FOR RESEARCH FUNDS

Mr. FLOOD. Every year the executive branch comes up here and asks for different types and kinds of research programs. Are they all equally important? Couldn't you, for instance, the situation being what it is here, cut back on something else instead of coming up here for $875,000 to take care of this thing? If this is so hot, is everything that hot?

Dr. SENCER. I think the field of applied disease control is something which has been neglected. You can find many research investigators who are very willing to work on the genetics of bacteria, the mosaic patterns, and so on, but we are trying to support research in areas of more immediate application to protecting the health of the people.

Mr. FLOOD. Yes, I know all about research. I do not like to bore this subcommittee by repeating that I have been on Defense Appropriations for about 100 years, and if anybody knows anything about R. & D., mister, I do. It takes an act of Congress to close one R. & D. outfit on a line item with two men in it.

Dr. SENCER. I must say, Mr. Chairman, this is the first year that I have been privileged to ask for anything more than about a $100,000 increase in our research grants budget, and I am quite astounded by being permitted this much of an increase. We have had a backlog of grants every year.

NATIONAL LABORATORY IMPROVEMENT AND REFERENCE SERVICE

Mr. FLOOD. I am certainly not astounded at all.

There is an increase here of $739,000 and 30 positions for your old line communicable disease activities. Practically all of that is for the National Laboratory Improvement and Reference Service, I gather from the justifications. I think you had better tell us what these services are, and what this increase will be used for.

Dr. SENCER. At the present time, our laboratory improvement program is aimed primarily at helping the State laboratories improve themselves to the point——

Mr. FLOOD. What are the States doing to help in this improvement?

Dr. SENCER. The States, unfortunately, in the laboratory area are not doing as much as they would like to. If you look at the budgets of State health departments, the laboratory usually is undersupported.

Two years ago we looked at the Federal funds going into State health departments, and less than 1 percent of the Federal funds that were available to State health departments ever found their way to the laboratory.

I think this is indicative of the fact that the States have not really supported the laboratory as well as they should. But today, with increasing attention being paid to the quality of laboratory services, they are feeling the need. They have the responsibility under medicare for assuring that laboratory determinations done for medicare are accurate, and they are under tremendous pressure to develop programs themselves to improve laboratory services.

We have been working with them to try to train their people, develop their people, their technologies, so they can then transmit

this on to the laboratories within the States. This coming week we are having a meeting of all the State laboratory directors in Atlanta——

Mr. FLOOD. All?

Dr. SENCER. Yes, sir.

Mr. FLOOD. Then they are all active now.

Dr. SENCER. All the States have a laboratory director.

Mr. FLOOD. All of them do have laboratories to direct?

Dr. SENCER. It depends upon your definition of a laboratory. In a couple of our States, it is a disgrace. We are bringing them in to try to develop how we can do proficiency testing, how they can set up a proficiency testing program within their State to determine whether a laboratory is doing accurate tests or not. We are doing a fair amount of developmental work, of automation of laboratory results, how you can use the so-called autoanalyzer to reduce human errors in the laboratory determinations.

Our program will include developmental work on such mundane things as how you develop a standard solution that you can mail out to 100 laboratories and have them get a common answer from this.

Mr. FLOOD. Why wouldn't the various medical associations have been concerned about this for the last 25 or 30 years?

Dr. SENCER. The medical associations, particularly the College of American Pathologists and the American College of Clinical Pathologists, have been concerned, but they recognize themselves that they are not able to do the entire job. The College of American Pathologists, for example, has 6,000 members. They offer to their members a proficiency testing service where each month they send out check specimens that they can run in their laboratories to see if they get answers that agree with the reference laboratory. Only 2,000 members out of the 6,000 subscribe to this proficiency testing program.

Mr. FLOOD. Why?

Dr. SENCER. I think one of the things in medicine is that we are never taught really to question ourselves in medical school. We are assumed to be right. Doctors like to think that they are usually right. Quality control is something that industry has adopted, but medicine has not.

Mr. FLOOD. Very interesting.

PERSONNEL INCREASE

For these old line communicable disease activities, you have 1,519 people.

Dr. SENCER. Yes, sir.

Mr. FLOOD. That is quite an operation. That is a full-strength battalion.

Dr. SENCER. To do our type of work, sir, we have to maintain large colonies of animals, we have to raise animals, so we have to have not only people who are professional scientists, but people who take care of animals, who sweep the floors, who tend to our pastures.

Mr. FLOOD. You want 30 additional.

Dr. SENCER. Yes, sir.

Mr. FLOOD. Let's look at it from this side of the table. If we say, "OK, it is only 2 percent, but why don't you pick it up someplace

else by cutting back a little on some lower priority activities," then, what do you say?

Dr. SENCER. Over the years we have had to do this, sir. For example, we are now producing four times as many diagnostic reagents as we produced 2 years ago with no increase in personnel. By redirecting effort, by a certain amount of automation, we have been able over the years to pick up new activities without asking for new positions. However, we feel that the laboratory improvement program is the highest priority in our budget this year, and the types of people we are asking for we do not have. We have to go out and get them.

Mr. FLOOD. Have you been reading the papers the last 3 or 4 days? Comments have been made about the size of research and development in this Nation by different people. Doesn't that impress you particularly?

Dr. SENCER. I like to think our program is primarily a service-oriented program and that the research we do is to provide a better service to the people of this country. It is difficult in our type of activity to say this is research and that is service, but I would estimate out of our total appropriation, only about $24 million would be for any type of research, and this includes our research grants.

Dr. PRINDLE. One of the problems here when we speak of research, especially in our Bureau, is really the definition of research. As I recall, at some earlier point in the proceedings one of the Members asked about basic research. Much of what we call research, even though it is supported by the mechanism of research grants, is a different kind. It is aimed toward the mission of problem solving, trying to develop solutions and put them into use.

Although it is often paid for by the mechanism of research grants, it is not the kind of basic research that, perhaps in some situations, may not be as immediately applicable to the solution of a problem.

PESTICIDES

Mr. FLOOD. The rest of the increase in this appropriation is $338,000 and 19 positions for pesticide work. Congressman Whitten, of Mississippi, chairman of the Appropriations Subcommittee for the Department of Agriculture, has recently published a book on this subject which he gave to me and which I have read. If you haven't, I suggest you take a look at it. It is the result of many years of experience in this area.

For pesticide work, $338,000 and 19 people. What does that mean? What do you need that for?

Dr. SENCER. This increase is to carry out what we refer to as our pesticides intelligence system. The pesticide program was started in the Public Health Service about 2 years ago. There were a series of things that were needed to be done to develop community competence in doing pesticide work to determine what effects pesticides were having on people. Equally important was the need to gather the information that was being developed all over the country, not just by the Public Health Service, but by Agriculture, by Food and Drug, by private universities, on the occurrence of pesticide poisoning, on the levels of pesticides in our environment.

Mr. FLOOD. It is a two-edged sword. That is the trouble.

Dr. SENCER. Yes; it is good and it is bad.

Mr. FLOOD. You upset the cycle.

Dr. SENCER. The increase this year is really not to expand, but to get the pesticide intelligence system in operation. This will be a system that will be monitoring population groups all over the country, monitoring the journals as well as people to find out what is being developed in the pesticide field.

FOREIGN QUARANTINE ACTIVITIES

Mr. FLOOD. You have a small reduction of $6,000 for foreign quarantine and you are absorbing the mandatory cost increases, which will require a reduction of 34 positions. The explanation appears to be in the statement on page 117 of the justifications. I quote:

Beginning in 1967, greater emphasis will be placed on surveillance rather than inspectional activities.

I would like to hear a little more about that, why you abandoned one weapon for another.

Dr. SENCER. At the present time, everybody returning to this country or entering this country has his vaccination certificate looked at, and he is looked at by a quarantine inspector. We know many people are coming from areas of the world where the dangerous diseases do not exist at the present time—England, Scandinavian countries, and Australia. Why should we devote as much time to inspecting them as we should to a person coming from India, for example, where smallpox is epidemic today?

So, we feel we can absorb this decrease by not cutting back on the quality of service, but by making the type of inspectional service a more scientific one. Instead of looking at everybody, look at those people who are likely to bring disease into this country.

This is what we mean by the difference between a routine inspection as against a surveillance.

Mr. FLOOD. And the agricultural people work with you on the plant business?

Dr. SENCER. Yes. There are four inspectional agencies.

Mr. FLOOD. I have some interest in Panama as a defense area. I was down there a year or so ago. Somebody gave me a crate of beautiful big oranges. They were good. I forget what the name was, some famous orange. They would not let them in, whatever they were.

Dr. SENCER. Because they might have an insect.

Mr. FLOOD. Yes. They knew them right away. The fellow knew what it was, and it was no dice.

PANEL OF PHYSICIANS IN MANILA

Do you plan any change in Manila with respect to that panel of physicians?

Dr. SENCER. Manila, sir? Dr. Osborne.

Dr. OSBORNE. Mr. Chairman, no, sir.

CONTROL AND ERADICATION OF GONORRHEA

Mr. MICHEL. You speak a little optimistically on syphilis eradication or prevention. Why so pessimistically about gonorrhea?

Dr. SENCER. Gonorrhea continues to increase. Each year more cases are reported than in the previous year. With the resources available to us, we have concentrated our efforts on syphilis, feeling that we have better tools to work with in syphilis and we know how to control syphilis better. So, we put program emphasis on syphilis control rather than gonorrhea.

Today we have better diagnostic tests for gonorrhea. We feel we have a good method of diagnosing gonorrhea, and we feel efforts should be made to begin to control the disease.

Mr. MICHEL. Am I to understand that it has been really recently, within the last year or two, that you have come up with a new method?

Dr. SENCER. In the last 2 years we have developed a method which has been field-tested, and we now feel is capable of being put in common usage, to diagnose gonorrhea in the female. The big problem has been to diagnose gonorrhea in the female. We now have a diagnostic method that will work well.

We also have a better understanding today than we had 2 years ago of the method of treatment of gonorrhea. We realize that you have to maintain high levels of penicillin for a prolonged period of time. You cannot do it, as you do with syphilis, with one shot.

Mr. MICHEL. Is there an increase in this year's budget to tackle that problem which is still on the increase?

Dr. SENCER. No.

Mr. MICHEL. Is the program level moneywise for syphilis increased this year over last year?

Dr. SENCER. No. It remains about constant, sir. Much of it will depend upon the applications that come in from the State health departments under the comprehensive health services program.

Mr. MICHEL. What would happen in the area of gonorrhea if you had more money?

Dr. SENCER. I think we would not entertain a major national push to eradicate gonorrhea. I think we would try to identify some areas in which some pilot studies could be done to evaluate the community effectiveness of the methodolgy that we have at the present time, coupling our diagnostic measures with increased epidemiologic work to see what we can do to lower gonorrhea. We are not ready to promise eradication by any manner of means.

Mr. MICHEL. So, we cannot really look for a change in that trend for the next couple of years unless we make some decided change?

Dr. SENCER. Unless some effect takes place that we do not anticipate, I think we can look forward to an increase in gonorrhea.

Mr. FLOOD. The thing that worries me about the gonorrhea program is that at a certain place in time some years ago, the word got around with all these kids that if you did get gonorrhea, you went someplace and got a shot and it was all over, like a bad cold, in the morning. This was common talk. That must have contributed drastically to the increased incidence we are running into now, did it not? This is not so. You do not run around the corner and get a shot and clear it up.

Dr. SENCER. That is correct. You can suppress it, but the symptoms will come back later.

COOPERATION OF MEDICAL PROFESSION IN REPORTING CASES OF VENEREAL DISEASE

Mr. FLOOD. Are the doctors playing ball in reporting to a better degree than they used to a few years ago?

Dr. SENCER. We still feel that we are getting only about 25 percent of the reported infectious syphilis.

Mr. FLOOD. Twenty-five percent?

Dr. SENCER. Yes, sir. This is why this year we are undertaking some pilot studies in community hospitals, screening people who come in to outpatient clinics to see if by doing this we can pick up a higher percentage of reactors.

Mr. FLOOD. I want the record to show my shock that the medical profession is not cooperating better in this particular case.

Mr. MICHEL. With the increased number of servicemen and with the war effort, would you say within the ranks of the military the incidence of both gonorrhea and syphilis is at roughly the same percentage as in civilian life, or has it shown a marked increase?

Dr. SENCER. Could Dr. Brown answer that, please?

Mr. MICHEL. As much attention as we give the military in resources, and one thing and another, and with the control that they have, are we doing any better in the military than in civilian life?

GONORRHEA PROBLEM IN VIETNAM

Dr. BROWN. From the information we get from Vietnam, the greatest problem is gonorrhea, and very little syphilis occurs among the troops in Vietnam.

Mr. FLOOD. What is that?

Dr. BROWN. There is very little syphilis among the troops in Vietnam. The big problem is gonorrhea. This is the report that we hear from the military. Here at home, the problem is essentially the same as it is in civilian life. It is on a plateau now.

Mr. MICHEL. In view of that answer, is the military to your knowledge, doing anything special to remedy this rapid increase of gonorrhea in the troops in South Vietnam, for example?

Dr. BROWN. I am not aware of any specific programs they have.

Dr. SENCER. We have been in communication with the military, trying to establish joint programs in areas around Military Establishments in this country.

Mr. FLOOD. Do you have the most recent military figure for the increase in gonorrhea in the troops in South Vietnam as of this morning?

Dr. BROWN. No, sir; I do not.

Mr. FLOOD. The increase is appalling.

Mr. Laird is on that committee. Didn't they come up with a new strain which uses penicillin for dessert?

Mr. LAIRD. They are having difficulty with penicillin-resistant organisms.

Dr. SENCER. The organisms coming out of southeast Asia, Hong Kong and Vietnam, have shown at least laboratory resistance. Whether this is clinically resistant, we are not sure. If you give a person an adequate dose of penicillin, you can cure it.

Mr. MICHEL. What can this subcommittee do by way of inducing you to do more on this problem and to move faster? You say you

have to move faster in a lot of other areas, but not here where you give us the prediction that gonorrhea will be on the increase for years ahead. We would like to know how we can be helpful in eliminating all these ills.

Dr. SENCER. I think we share that desire with you. I would have to say, to get back to the question of the resources that have been available to us, we have had to put the priority on syphilis because of its more serious effects.

Mr. MICHEL. There ought to be a two-pronged attack.

Mr. LAIRD. Why don't you ask them how much more they need to control it?

Mr. FLOOD. You are on the wrong side. You better have me ask that.

BUDGET REQUIREMENT TO LAUNCH ATTACK OF GONORRHEA

Mr. MICHEL. No. It would really be better coming from us. As a matter of fact, it might even make it more dramatic, because on most of these things I will have to take another posture, but on this one, when we see a real need, we will be glad to respond to that need, Mr. Chairman.

What would you need? What could you utilize?

Dr. SENCER. There has been a statement by the Association of State and Territorial Health Officers and the American Social Health Association, which each year looks into the venereal disease situation. While the States have said they could use x amount of money in this coming year, it was felt, being realistic, if $2 million could be put into gonorrhea in the coming year, we could gain the knowledge of how we should best go about a really intensive gonorrhea program.

Mr. MICHEL. Is there money in this budget?

Dr. SENCER. There is nothing in this budget for gonorrhea, no.

Mr. MICHEL. Could you utilize, without wasting it and blowing it, $2 million?

Dr. SENCER. Yes, sir.

Mr. MICHEL. And show at least some ray of hope that we can turn this thing around sometime?

Dr. SENCER. Yes, sir.

Mr. FLOOD. How much did you ask the Secretary for?

Mr. LAIRD. He asked for a little more than that.

Dr. SENCER. $5 million went to the Bureau of the Budget from the Department, and it came out $4.3 million.

COOPERATION WITH DEPARTMENT OF AGRICULTURE ON PESTICIDES

Mr. MICHEL. To what extent are you working with the Department of Agriculture with respect to the pesticide program?

Dr. SENCER. We are in literally daily communication with the Department of Agriculture on the pesticide program, sir, in the registration program in which the Department of Agriculture registers the pesticides and approves the label. Each one of these registration applications comes to the Public Health Service for determination of its human health effects, and we are therefore in literally daily communication with the Department of Agriculture on this.

Mr. MICHEL. Do the States provide any funds for the pesticide intelligence system?

Dr. SENCER. Not at the present time. It has been a question, really, of developing the States to a position where they have the capability to provide the needed people. We have had to develop a whole new breed of analytical chemists. I think it is too early to expect much in the way of basic information.

DISEASES COMMUNICATED BETWEEN ANIMALS AND HUMANS

Mr. MICHEL. Do you work with the Department of Agriculture on those diseases that can be communicated between animals and humans?

Dr. SENCER. Yes. We have working relationships with them on the problem of brucellosis and salmonella. Particularly in the past 2 years we have had considerable dealings with them, most recently on the problems of salmonella in dried milk.

Mr. LAIRD. The President has recommended more in his budget for brucellosis and more for hog cholera, than he has for gonorrhea.

Mr. MICHELL. Isn't the problem of salmonella, trichinosis, and Q fever or some of the animal diseases on the increase?

Dr. SENCER. Salmonella definitely is on the increase. I do not think we have good enough information to say that trichinosis is. Q fever is a sporadic situation. It comes and goes. Salmonella is definitely increasing from year to year.

Mr. FLOOD. Trichinosis is exclusively pork, is it not?

Dr. SENCER. Yes, sir.

Mr. FLOOD. I have not heard of that in a long time.

Dr. SENCER. We have educated the American public to do a good job of cooking their pork, and this has done more than any of the sanitation programs.

Mr. MICHEL. They do not feed the hogs uncooked garbage any more, either.

Dr. SENCER. In some States.

Mr. MICHELL. What do you do in the area of carcinogenic foods? Anything at all?

Dr. SENCER. Our programs are not concerned with that in any way, sir. I am familiar with some of the recent concern about overbroiling steaks, but we are not in this area.

Dr. PRINDLE. I might point out, Congressman, that our food programs are concentrated in the Urban and Industrial Center. The Division of Environmental Health Science at NIH is concerned with carcinogenesis.

Mr. CARDWELL. That item will be heard tomorrow.

SEMINARS FOR PUBLIC HEALTH WORKERS

Mr. MICHEL. You cited under Training of Public Health Workers that during 1966, 47 seminars were presented. Was that 1966 or 1967?

Dr. SENCER. It was calendar year 1966.

Mr. MICHEL. What was the cost of these seminars?

Dr. SENCER. They are really quite inexpensive in that other people provide the space and the travel. Once we get our basic expenses of reproduction of printed material and exhibits, which we are able to keep below $50 per exhibit so we can leave them behind to be left

with the State, our costs will be for the travel of our personnel, whoever they may be, plus honorariums for visiting speakers. I would guess that as you annualize these out, about $5,000 per seminar, which will reach, some of them, as high as 700 people.

Mr. MICHEL. Do you think you get your money's worth?

Dr. SENCER. Yes, sir. If demand is any indication, the demand for these has grown every year. We were a little leery at first. We approached the Academy of General Practice to see if they would like to participate in the program, and they grabbed at it. We tried the pediatricians, and they are all in favor of it. Finally, we went to the American Medical Association, and they have been utilizing our seminar services, too.

So, we think we have made the grade.

BCG VACCINE

Mr. MICHEL. What are the results that you have demonstrated through the use of mathematical models with the BCG vaccine?

Dr. SENCER. Our mathematical model has not been directed solely toward BCG vaccination. It has been an attempt to measure all the various components of the tuberculosis control effort to see where soft spots in the epidemiology of the disease are.

At the present time, it is our feeling that our model would indicate that we can bring about the most dramatic reduction in tuberculosis by chemoprophylaxis of people who are infected. We think we can decrease tuberculosis over the next 5 years by 50 percent if we could find those people infected and give them chemoprophylaxis. BCG would add only about 2 to 3 percent to the gain.

EPIDEMICS RESULTING FROM WARFARE

Mr. MICHEL. Are we spending anything at all to combat what could be an epidemic in the event we had biological warfare?

Dr. SENCER. Actually, our whole epidemiology intelligence service was started because of this threat back in 1951. Dr. Prindle and Dr. Stewart were members of the first group of that program which was developed as a result of the fact that we realized we did not have the capability to recognize the diseases if they were introduced into this country.

I think indirectly by the continuation of our epidemiology program, of training young physicians in epidemiologic techniques and also making sure most of them have experience in an underdeveloped area where these diseases are daily occurrences, where they get a chance to see smallpox, and yellow fever in Africa, we maintain a cadre of people who can recognize these diseases.

Mr. MICHEL. I see Dr. Osborne back there. We were in Munich last year about May, were we not? Will bringing back troops that apparently are coming out of Europe have any effect or bearing on that station in Munich, for example, that we went through?

Dr. OSBORNE. I cannot answer that question.

Dr. SENCER. I would doubt it, because with the change in immigration laws, we still will have as many people trying to come to this country and we will have to maintain the examination services.

Mr. MICHEL. That is all, Mr. Chairman.
Mr. FLOOD. Mr. Natcher.

PESTICIDES

Mr. NATCHER. Doctor, you have $7,572,000 in the bill for pesticides under direct operations, is that correct?
Dr. SENCER. Yes, sir.
Mr. NATCHER. Is there anything else in the bill for this particular function?
Dr. SENCER. Some of our research grants support work in the pesticide area, sir.
Mr. NATCHER. Is it now necessary that the District of Columbia and other large cities have a pesticide program?
Dr. SENCER. I think there is a need for certain basic services in all communities, the ability to diagnose acute poisoning from pesticides, the laboratory competence to recognize whether this is a pesticide poisoning so the appropriate steps can be taken. I do not think every large community at the present time should have a complete community study. Our concept has been to try to pick areas of the country where there are varying pesticide exposures—high level, low level, different types of pesticides—so we get an understanding of the community effect of pesticides across the country.
I think certain large metropolitan areas have problems that are worthy of investigation, where there is a lot of home usage of pesticides for cockroach control, and so on. Is this developing a hazard to the people?

MILK AND PESTICIDES

Mr. NATCHER. What about milk and pesticides? Here in the District of Columbia they are requesting $200,000 to $300,000 a year. They say this program is absolutely essential. Do you agree with that?
Dr. SENCER. Milk is one of the major areas where pesticides get into human beings. We have to monitor this to be sure that all of a sudden levels do not go up. We had hoped we would be able to get milk that was free of pesticides, but with the usage of pesticides in agriculture today it is impossible to get milk that does not have some.
If we are going to be exposed to some we have a responsibility to assure that the levels do not become high enough to add an intolerable burden.
Mr. NATCHER. Thank you, Mr. Chairman.

BUDGET REQUIREMENTS FOR GONORRHEA PROGRAM

Mr. LAIRD. Back to the statement you made in response to Mr. Michel's question, was that $2 million more would be needed in order to control gonorrhea?
Dr. SENCER. No, sir.
Mr. LAIRD. In fiscal year 1967? That seems a rather low estimate of the cost.
Dr. SENCER. I didn't say control, sir. If I did I misspoke. I said it would allow us to establish a pilot project to develop a methodology.

We have a laboratory methodology. We haven't the community know-how of how to go about it as yet but we could establish in this coming year pilot studies in several areas of the country to put a crash program on in those areas to develop the technology to do the job.

I would not hold out promise of control for $2 million, sir.

Mr. LAIRD. Can there be any improvement in this program with the budget you have submitted to us?

Dr. SENCER. I think about all we can hope for is some minor redirection of effort to perhaps do a very small pilot study.

Mr. LAIRD. Where will this study be done?

Dr. SENCER. I think it would depend upon how much money we are able to free up. It would depend on the size of the community.

Mr. LAIRD. On the basis of the budget presented today how much would you estimate would be freed up for such a pilot study?

Dr. SENCER. If we could free up to 4 to 5 man-years of epidemiology time and $50,000 we could begin to look at a small segment of a community.

Mr. LAIRD. You are talking about a program of $50,000.

Dr. SENCER. Yes, sir.

Mr. LAIRD. To make some inroads on gonorrhea which was the major infectious disease in this country in 1966. It was the major infectious disease.

Dr. SENCER. In terms of number of cases reported; yes, sir.

Mr. LAIRD. Why has this such a low priority in your budget?

Dr. SENCER. We had submitted to the Bureau of the Budget funds for gonorrhea. We felt this year we were in a position to do something. The Department supported our request to the Bureau of the Budget but I think we all recognize this has been a difficult budget year. It is not that we did not feel this should have priority.

Mr. LAIRD. There are many other things in this budget, though that most people would give a much lower priority than this. I am talking about the overall budget before the Congress. We have to look at it not on the basis of just your operation but the overall budget request.

You say you have $50,000 for gonorrhea?

Dr. SENCER. No. This is how much we would be able to free up. We have more than that in continuing laboratory research in gonorrhea. We have around $400,000.

Mr. LAIRD. I wonder whether we should continue the research if you are not going to be able to put the research results to work?

Dr. SENCER. We are at a point where we now have a good diagnostic methodology for diagnosing gonorrhea in the female. By adapting some of the new techniques we are beginning to get to a point where we hopefully will develop a blood test for gonorrhea.

At the present time we are dependent upon purely a bacteriological examination. We think we are about ready to field test a new method in serology that will help us diagnose it on a serologic basis which is a more efficient and economic method.

GONORRHEA AMONG TEENAGERS

Mr. LAIRD. This last year you had 340,000 cases of gonorrhea, most of it among teenagers. My figures may be off a few thousand but it is in that general area. Is that correct?

Dr. SENCER. That is right.

Mr. LAIRD. Primarily among teenagers? Is that correct?

Dr. SENCER. Yes, sir.

Mr. LAIRD. What are you doing about that?

Dr. SENCER. We feel that the thing that can best be done, other than community epidemiology and case finding, is education aimed at this vulnerable group of children.

VENEREAL DISEASE EDUCATION PROGRAM IN THE SCHOOLS

Mr. LAIRD. What are you doing in the way of education?

Dr. SENCER. We have developed a programed instruction which we have made available. This is a teacher's handbook.

Mr. FLOOD. The witness now shows Mr. Laird a teacher's handbook on venereal disease education, published by the National Education Association, dated 1965, by Mr. William Schwartz.

Dr. SENCER. Mr. Schwartz is on our staff. We make this available to the NEA to encourage them to promote it into the school systems.

Along with the teacher's handbook there is a students' workbook, so this is the education for the teacher, which gives her enough background so she is not ill at ease in trying to talk to the eighth and ninth graders about the problems of venereal disease.

Mr. FLOOD. Have you met resistance from local school boards?

Dr. SENCER. In some areas, yes, but in general we are getting good acceptance of this in the school systems.

Mr. FLOOD. What about PTA's and organizations like that?

Dr. SENCER. You have the situation they faced in Colorado now and then, where people will get up in arms about teaching sex education in schools, and so on. Once you can get to the PTA's and sit down and talk with them usually you will find that this is accepted.

In Houston this has been used considerably and very well accepted. Actually we field tested this program instruction in the school systems around Houston and found it worked and was also a very useful device for the teachers to have.

TASK FORCE RECOMMENDATIONS ON SYPHILIS

Mr. LAIRD. I have been listening to testimony on the programs that the Public Health Service has in the area of venereal disease for quite a few years. We had a task force set up. The panel made a study on syphilis. It was limited entirely to that area. They made certain recommendations and we have tried to meet the task force recommendations.

Does this budget meet the task force recommendations for 1967 on syphilis?

Dr. SENCER. No, sir, because the cost of living has gone up in the past 5 years. It costs more now, just for personnel, than it did at the time this task force report was published, so we are behind a little bit in terms of just meeting the same level of effort.

Mr. LAIRD. Accomplishments projected by that task force will not be met?

Dr. SENCER. That is why I said in the opening statement we were reassessing the whole situation. We didn't want to say that today we were at the appropriate level.

Mr. LAIRD. What good did it do us to go along with the task force report in the last 3 years if you are now going to go back?

Dr. SENCER. We hope we will be able to keep things fairly close to the same amount of effort by perhaps changing some of the things we are doing.

For example, we will put less emphasis on physician visitation because for one thing it has not paid off as well. We will be devoting the effort we have been putting on physician visitation into increased epidemiologic services.

Mr. LAIRD. The task force did dramatize to the Congress and to the American people the need for moving forward in this area. Perhaps one of our mistakes was not to include gonorrhea in that task force study.

Dr. SENCER. I think at that time it would have been too early. I don't think we really knew enough about gonorrhea then to say other than we should do more research. Today I think it is different.

Mr. LAIRD. Today we have found out more about it and are ready to move?

Dr. SENCER. Yes, sir.

"BCG TO FIGHT TB"

Mr. LAIRD. There was a recent article published in Today's Health, and reprinted in Readers Digest "Let's Use BCG to Fight TB."

Are you familiar with that article?

Dr. SENCER. Yes sir.

Mr. LAIRD. Do you concur in the conclusions that BCG, which has been tested abroad for over 40 years, has been largely neglected by the U.S. Public Health Service?

Dr. SENCER. I would disagree that we have neglected it. The Public Health Service conducted the first of the large-scale control trials of BCG done in this country. It was the first control trial done anywhere.

All the work in Europe up until 1947 had been uncontrolled in that they did not maintain a group of people who did not get vaccinated, so I don't think we have neglected BCG at all.

This past year we had an advisory committee together of people expert in tuberculosis, including people from Europe, from the Pasteur Institute in Paris, from the Netherlands, to reexamine the Public Health Service position on BCG.

They came out again recommending that BCG be used only in those cases where there were intimate contacts of a person with active tuberculosis who could not be controlled. The characteristics of tuberculosis in this country today are such that the risk of developing tuberculosis is highest in those people who are already infected and carrying the germs in their bodies, and these people do not benefit from BCG vaccination. In fact, it is contraindicated.

The recommendation has continued to be that the use of BCG should be limited only to the very infrequent situations where there are unin-

fected people living in the same dwelling with a person who has active tuberculosis and won't do a thing about it.

Mr. LAIRD. So you would not recommend using it——

Dr. SENCER. There are so many other things that can be done on Indian reservations—community use of prophylaxis. This will be a more effective way of combatting tuberculosis.

TB PROGRAM IN MENOMINEE COUNTY

Mr. LAIRD. That program in Menominee County, I suppose it is too early for you to show results on it?

Dr. SENCER. That is right.

Mr. LAIRD. You had perhaps the highest per capita incidence of TB of any county in the United States.

Dr. SENCER. It depends on your definition of tuberculosis, sir.

Mr. LAIRD. You thought some was not?

Dr. SENCER. Yes, sir.

Mr. LAIRD. May I have a copy of that report on BCG?

Dr. SENCER. I would be glad to provide it to you.

Mr. LAIRD. That is all I have, Mr. Chairman.

VENEREAL DISEASE PROGRAM

Mr. CASEY. I want to follow up a little more on the VD program. You say you are progressing toward a vaccine for syphilis. Is that correct?

Dr. SENCER. Yes, sir. We are working on the approach of a vaccine.

Mr. CASEY. What approach are you taking on gonorrhea?

Dr. SENCER. Our approach there to date has been primarily aimed at developing methods of diagnosing the disease.

Mr. CASEY. Just detection?

Dr. SENCER. That is correct.

Mr. CASEY. What do you propose after you get that done?

Dr. SENCER. I think if we can act before the organisms become resistant to penicillin we have effective treatment and we can probably do more by treating diagnosed cases than we can by vaccinating people.

Our experience with vaccines for bacterial disease has not been terribly good. Where there is a toxin such as in diphtheria, the vaccine does not work so much against the infection as against the poisons that the organisms put out.

We can combat the toxins but we cannot combat the bacteria themselves with vaccines, so I think the long-range hope of a vaccine for a disease like gonorrhea is not good.

Mr. CASEY. The detection and cure.

Dr. SENCER. Detection, treatment, and cure.

Mr. CASEY. With so many failing to be reported do you not run into difficulties there?

Dr. SENCER. One way around this is to increase your epidemiology. Every time you do find a case, as you interview this individual, to find out who their sex contacts have been, you move out into that group of unreported cases.

Mr. CASEY. Then you run into hard work.

Dr. SENCER. It is real shoe leather work.

TYPES OF RESEARCH GRANTS MADE BY NATIONAL COMMUNICABLE DISEASE CENTER

Mr. CASEY. What type of grants come out of your section?

Dr. SENCER. We have research grants and then we have community immunization grants.

Mr. CASEY. What do the research grants cover?

Dr. SENCER. These are grants made to individual investigators who present research plans that have to do with improving the methods of diagnosing communicable diseases, improving methods of control of communicable diseases, improving diagnostic methodologies, and also in the field of pesticides.

Mr. CASEY. Are you in the field of virology at all?

Dr. SENCER. Yes, sir, we do a considerable amount of work in the field of virus diseases.

Mr. CASEY. That is whenever it has to do with communicable diseases?

Dr. SENCER. Yes, sir. We have a very small activity, though, which is beginning to look at the epidemiology of leukemia as it becomes more and more apparent that viruses are associated with this disease. We are trying to develop surveillance techniques to begin to understand something of the epidemiology of leukemia.

Mr. CASEY. Would research grants concerning studies on viruses as related to human cancer with emphasis on leukemia come out of your section?

Dr. SENCER. This sounds to me—titles are sometimes misleading—as though it refers to the National Cancer Institute.

Mr. CASEY. Which is under NIH?

Dr. SENCER. Yes, sir.

Mr. CASEY. How about infectious disease training?

Dr. SENCER. We have no training grant authority.

Mr. CASEY. Under the manpower section?

Dr. SENCER. Under manpower. Actually some training of this nature—well, is this university type training?

Mr. CASEY. Yes.

Dr. SENCER. This would be under manpower or perhaps under the Institute of General Medical Sciences.

Is this the program that Baylor and Houston are proposing to start in the infectious disease laboratory work?

Mr. CASEY. They are both supposed to be doing it.

Dr. SENCER. We have had some discussions with Dr. Melnick and Dr. Pigford about the program they have in mind to train laboratory workers in infectious diseases.

Mr. CASEY. Do you maintain a publication of the types of grants and projects under you?

Dr. SENCER. Our grants are published in the overall index of research grants. I have a listing of our activity research grants if you would like them.

Mr. CASEY. I asked the other gentleman about his. Will this be in one big one?

Dr. STEWART. There is published by the Public Health Service a compendium of all the research grants made regardless of where they come from.

Mr. CASEY. Does it designate where these Bureau grants come from, also?

Dr. STEWART. Yes, sir. We will get you a copy of that.

INTERNATIONAL HEALTH PROGRAM

Mr. CASEY. How much do you have budgeted for the international health program?

Dr. SENCER. The international health program is all reimbursable from AID. It is a little hard to know. We are still trying to figure it out for this fiscal year. I think with both smallpox and malaria it will be around $32 million.

Mr. CASEY. It is all reimbursable?

Dr. SENCER. Yes, sir.

Mr. CASEY. It does not show here.

Dr. SENCER. That is right.

Mr. CASEY. Do you license laboratories?

Dr. SENCER. At the present time we do not. There has been legislation introduced into the House and Senate which would give the Secretary the responsibility for licensing laboratories, clinical laboratories, which perform in interstate commerce.

Mr. CASEY. I gather you have been encouraging the States to set higher standards?

Dr. SENCER. That is right.

Mr. CASEY. They are just beginning to do that in Texas. We are beginning to hear from some of the laboratories that they cannot get the personnel. They are letting some of them continue to operate, but I believe they are now requiring at least one resident supervisor for laboratory technicians. They are getting someone with a higher scale of education than they have had in the past.

Dr. SENCER. This is one of the problems. Too many laboratories are unsupervised. A person will say that he is the director of eight different laboratories, but they may be in eight different cities and it is difficult for him to provide good supervision.

Mr. CASEY. I can remember when I took a sample of water around Houston to be tested some 15 years ago.

Dr. SENCER. They have a fine new laboratory in Houston.

Mr. CASEY. I know they have or I wouldn't have mentioned it. It was in an old abandoned hospital.

Dr. SENCER. I was there during the epidemic in 1964. It is quite a place.

In spite of that they were doing good work, sir.

Mr. CASEY. There was nothing wrong with the capabilities of the boys in charge of the work there, especially considering the horrible conditions under which they had to work.

That is all I have.

Mr. FLOOD. An excellent presentation, Doctor.

Thank you.

Dr. SENCER. Thank you, sir. It was a pleasure.

JUSTIFICATION MATERIAL

Communicable Diseases

Amounts available for obligation

	1967	*1968*
Appropriation	$44,220,000	$72,272,000
Comparative transfer from:		
"Control of tuberculosis"	+3,617,000	
"Control of venereal diseases"	+4,329,000	
"Foreign quarantine activities"	+8,001,000	
"Environmental health sciences"	+8,727,000	
Comparative transfer to:		
"Comprehensive health planning and services"	−232,000	
"Health manpower education and utilization"	−267,000	
"Office of the Surgeon General, salaries and expenses"	−135,000	
Proposed supplemental for pay increases	+180,000	
Unobligated balance brought forward	+3,873,733	
Total	72,313,733	72,272,000

Obligations by activity

	1967 estimate		1968 estimate		Increase or decrease	
	Positions	Amount	Positions	Amount	Positions	Amount
Grants:						
Research		$3,375,000		$4,232,000		+$857,000
Community immunization		[1] 9,100,000		9,100,000		
Direct operations:						
Communicable diseases	1,519	17,728,000	1,549	18,467,000	+30	+739,000
Tuberculosis	230	3,617,000	230	3,669,000		+52,000
Venereal diseases	353	4,329,000	353	4,366,000		+37,000
Pesticides	137	7,234,000	156	7,572,000	+19	+338,000
Foreign quarantine	677	8,181,000	643	8,175,000	−34	−6,000
Aedes aegypti eradication	349	14,679,000	349	16,691,000		+2,012,000
Total obligations	3,265	68,243,000	3,280	72,272,000	+15	+4,029,000
Unobligated balance reserve		197,000				−197,000
Total obligations and balance	3,265	68,440,000	3,280	72,272,000	+15	+3,832,000

[1] Excludes an unobligated balance brought forward of $3,873,733.

Obligations by object

	1967 estimate	1968 estimate	Increase or decrease
Total number of permanent positions	3,265	3,280	+15
Full-time equivalent of all other positions	319	343	+24
Average number of all employees	3,178	3,243	+65
11 Personnel compensation:			
Permanent positions	$24,512,700	$25,029,400	+$516,700
Positions other than permanent	1,971,700	2,189,400	+217,700
Other personnel compensation	468,900	468,900	
Total personnel compensation	26,953,300	27,687,700	+734,400
12 Personnel benefits	2,653,600	2,712,500	+58,900
21 Travel and transportation of persons	2,237,100	2,320,500	+83,400
22 Transportation of things	1,147,900	1,195,900	+48,000
23 Rent, communications and utilities	1,519,600	1,553,000	+33,400
24 Printing and reproduction	377,100	418,100	+41,000
25 Other services	1,920,500	1,972,500	+52,000
Project contracts	13,276,000	15,399,200	+2,123,200
Services of other agencies	402,600	420,600	+18,000
Payment to—			
Public Health Service management fund	863,000	900,000	+37,000
National Institutes of Health management fund	27,000	27,000	
26 Supplies and materials	4,908,300	5,171,700	+263,400
31 Equipment	1,803,400	1,715,100	−88,300
41 Grants, subsidies, and contributions	[1] 10,180,000	10,804,600	+624,600
Subtotal	68,269,400	72,298,400	+4,029,000
95 Deduct quarters and subsistence	−26,400	−26,400	
Total obligations by object	68,243,000	72,272,000	+4,029,000

[1] Excludes $3,873,733 unobligated balance brought forward.

Summary of changes

1967 enacted appropriation	$44,220,000
Proposed supplemental	180,000
Comparative transfer from:	
"Control of tuberculosis"	3,617,000
"Control of venereal diseases"	4,329,000
"Foreign quarantine activities"	8,001,000
"Environmental health sciences"	8,727,000
Comparative transfer to:	
"Comprehensive health planning and services"	−232,000
"Health manpower education and utilization"	−267,000
"Office of the Surgeon General, salaries and expenses"	−135,000
Unobligated balance, reserve	−197,000
1967 total estimated obligations	68,243,000
1968 estimated obligations	72,272,000
Total change	+4,029,000

	Base		Changes from base	
	Positions	Amount	Positions	Amount
INCREASES				
A. Built-in:				
1. Annualization of 125 new positions authorized in 1967				$473,000
2. Net additional cost of civil service employees' within grade salary increases, longevity increases and incentive pay of commissioned officers for foreign quarantine activities				97,000
B. Program:				
1. Research grants		$3,375,000		857,000
2. Expansion of communicable diseases program national laboratory and improvement services	335	4,056,000	30	614,000
3. Expansion of pesticides program	137	7,234,000	19	306,000
4. Expansion of aedes aegypti eradication program	349	14,679,000		2,020,000
5. Increase in pro rata share of the Public Health Service management fund		863,000		37,000
Total increases			+49	+4,404,000
DECREASES				
A. 1 less day of pay (261 in 1967, 260 in 1968)				−93,000
B. Nonrecurring items of equipment				−153,000
C. Reduction in foreign quarantine program			−34	−129,000
Total decreases			−34	−375,000
Total net changes requested			+15	+4,029,000

EXPLANATION OF CHANGES

Research grants

An increase of $857,000 is requested for 1968 to support 114 research grants projects, an increase of 38 over the 76 projects to be supported in 1967. Emphasis will be given to projects relating to communicable disease control and pesticides.

Communicable diseases: National laboratory improvement and reference services

An increase of 30 positions and $614,000 will provide for expanded State activities directed toward improving and strengthening State laboratory competence. The program expansion will: (1) provide additional staff and facilities for training; (2) increase consultation capability to meet the demands of the Nation's laboratories; (3) develop education curricula with the cooperation of universities to encourage students to pursue careers in laboratory fields; (4) evaluate and select the most efficient methods for upgrading laboratory results on certain communicable diseases (VD, TB, etc.) to facilitate epidemiological and control programs.

Pesticides: State services

An increase of 19 positions and $306,000 will permit expansion of the pesticide intelligence system which monitors and assesses levels of pesticides in the population. The increase will permit full implementation of a system of receipt, cataloging, and dissemination of published data and special reports to audiences of concern and also will provide for expansion of the staff of the Federal Committee on Pest Control to meet the increasing demands for review and analysis of all aspects of pesticides.

Aedes aegypti eradication

An increase of $2,020,000 will permit extension of the program for the eradication of the *Aedes aegypti* mosquito from the United States and its possessions. This program was undertaken to fulfill international commitment with the Pan American Health Organization and to remove the potential threat of an epidemic in the United States of yellow fever or dengue fever. Eradication activities of the on-going program will be expanded into contiguous areas; greater public and private assistance will be sought through emphasis provided on the scope and role of informational and educational activities; and eradication

procedures will be initiated in a few critical additional areas of focal infestations contributing to interstate and international transport of *Aedes aegypti.*

Foreign quarantine

A decrease of 34 positions and $129,000 represents savings which result from redirection of the program. The cost of operations will be reduced by greater emphasis on surveillance rather than inspection.

LEGISLATIVE AUTHORIZATION

Research grants.—The legislative authority in Section 301 of the Public Health Service Act which provides for the award of grants for research is included in the section of the justifications under the tab "Preamble Paragraph" in Volume V.

Community immunization grants.—Section 317(a) of Public Health Service Act as amended: "There are hereby authorized to be appropriated $14,000,000 for the fiscal year ending June 30, 1963, and $11,000,000 each for the fiscal years ending June 30, 1964, June 30, 1965, and each of the next three fiscal years, to enable the Surgeon General to make grants to States and, with the approval of the State health authority, to political subdivisions or instrumentalities of the States under this section. Amounts appropriated pursuant to this section for any fiscal year ending prior to July 1, 1968, shall be available for making such grants during the fiscal year for which appropriated and the succeeding fiscal year. Such grants may be used to pay that portion of the cost of intensive community vaccination programs against polyiomyelitis, diphtheria, whooping cough, tetanus and measles, which is reasonably attributable to (1) purchase of vaccines needed to protect children of pre-school age and such additional groups of children as may be described in regulations of the Surgeon General upon his finding that they are not normally served by school vaccination programs and (2) salaries and related expenses of additional State and local health personnel needed for planning, organizational, and promotional activities in connection with such programs, including studies to determine the immunization needs of communities and the means of best meeting such needs, and personnel and related expenses needed to maintain additional epidemiologic and laboratory surveillance occasioned by such programs. Such grants may also be used to pay similar costs in connection with immunization programs against any other disease of an infectious nature which the Surgeon General finds represents a major public health problem in terms of high mortality, morbidity, disability, or epidemic potential and to be susceptible of practical elimination as a public health problem through immunization with vaccines or other preventive agents which may become available in the future."

Explanation of transfers

	1967 estimate	Purpose
Comparative transfer from:		
"Control of tuberculosis"	+$3,617,000	Transfer of the direct operations of the tuberculosis and venereal disease programs into this appropriation in accordance with reorganization of the Public Health Service and realinement of appropriation structures.
"Control of venereal diseases"	+4,329,000	
"Foreign quarantine activities"	+8,001,000	Transfer of the Foreign quarantine function to this appropriation to reflect realinement of appropriation structure due to reorganization.
"Environmental health sciences"	+8,727,000	Transfer of pesticides activities to this appropriation to reflect realinement of appropriation structures due to reorganization.
Comparative transfer to:		
"Comprehensive health planning and services."	−232,000	Redistribution of payments to the management fund to reflect realinement of appropriation structures due to reorganization.
"Health manpower education and utilization."	−267,000	
"Office of the Surgeon General, salaries and expenses."	−135,000	

Introduction

The Communicable Disease Activities appropriation was realigned and retitled Communicable Diseases in accordance with organizational changes in the Public Health Service made under authority contained in the President's re-

organization plan No. 3 of 1966. This reorganization established the National Communicable Disease Center. The programs contained in the new Center were previously funded from Communicable Disease Activities, Control of Tuberculosis, Control of Venereal Diseases, Foreign Quarantine Activities, and a portion of the Environmental Health Sciences appropriation.

The new appropriation provides funds to plan, conduct, and coordinate (1) a national program, including research, investigations, epidemiological services, epidemic aid, consultation, and surveillance activities, for the prevention and control of communicable and certain other preventable diseases; (2) a national program for the detection, assessment, control, and reduction of potential and harmful exposure of man to pesticides and other chemical agents; (3) a comprehensive national laboratory improvement program including the provision of laboratory technical support for other segments of Public Health Service, and State, local and other groups engaged in medical laboratory practice or administration; (4) a national program in bio-medical audio-visual communication; (5) a program of continuing education for the practicing health professions on methods and techniques of disease prevention and control; (6) a program to eradicate the yellow fever (aedes aegypti) mosquito from the United States, Puerto Rico, and the Virgin Islands in cooperation with federal, state, local, and other appropriate authorities; (7) a national program to protect the United States against the introduction of communicable diseases from foreign countries; (8) a grant program for the prevention, control, and eventual eradication of serious infectious diseases for which effective immunizing agents are available; and (9) a research grants program which includes stimulation of research in neglected or under-emphasized fields.

Additional funds requested in 1968 will provide for expansion of activities directed toward improving and strengthening State laboratory competency, expansion of the pesticides intelligency system, peripheral expansion of the *Aedes aegypti* eradication program, and for additional grants.

Grants

	1967 estimate	1968 estimate	Increase or decrease
Research	$3,375,000	$4,232,000	+$857,000
Community immunization	9,100,000	9,100,000	
Total	12,475,000	13,332,000	+857,000

Research Grants

	1967 estimate		1968 estimate		Increase or decrease	
	Number	Amount	Number	Amount	Number	Amount
1. Noncompeting continuations	43	$2,160,000	68	$2,673,100	+25	+$513,100
2. New grants	33	1,065,000	46	1,390,000	+13	+325,000
3. Supplementals	(10)	150,000	(14)	168,900	(+4)	+18,900
Total	76	3,375,000	114	4,232,000	+38	+857,000

The need for practical application of existing knowledge to the control of communicable diseases is well recognized, but there are many gaps in the methodology needed to accomplish this long-range goal. Considerable research is needed; research directed toward the complex problems of disease control on a community-wide basis has received relatively little emphasis from grant programs in the past.

The research grant program at the National Communicable Disease Center supports extramural research projects with practical objectives in the broad field of communicable disease control. Examples of projects funded include those concerned with improvements in laboratory diagnostic techniques, field studies on the epidemiology and control of encephalitis and salmonellosis, evaluation of immunization techniques and their effects on the immunity levels

of large human populations, efforts at developing a human anti-rabies vaccine free of sensitizing foreign tissue, a project concerned with identifying high-risk groups exposed to tuberculosis infection, and research in the toxicology of pesticides.

In 1968, this program will be expanded to include two areas of particular importance: the standardization of laboratory diagnostic tests and the support of reference laboratories. In the first area, almost no work is being supported by research grants, in spite of an obvious need. In the second, the need is well recognized, but support mechanisms currently in effect lack flexibility and depth.

The increase of $857,000 is needed for competing and noncompeting continuations, for support of projects in the two new areas mentioned above, and for increased indirect costs. The total of $4,232,000 requested will support 114 grants, 68 noncompeting continuation and 46 new awards.

Community Immunization Grants

1967 estimate	[1] $9,100,000
1968 estimate	9,100,000
Increase or decrease	----------

[1] Excludes $3,873,733 unobligated balanced brought forward from 1966.

With the revision and extension of the Vaccination Assistance Act, the Surgeon General was given authority to make grants to States and communities to support immunization programs against measles, as well as poliomyelitis, diphtheria, whooping cough, and tetanus. The primary aim was to launch a nationwide effort against measles. This disease had been maintaining an annual incidence of approximately 4,000,000 cases (causing about 500 deaths) despite the fact that effective vaccines had been developed. Unless immunized, one out of every two children would have measles before entering school—90% before leaving school.

During 1966, major emphasis was placed on measles immunizations. All 75 of the initial projects in operation were revised to include measles, and project periods were extended through June 30, 1969. Twenty-four new projects have been awarded bringing the total number of projects to 99. The geographic areas in which these projects are located include 81% of the total population of the United States, Puerto Rico, and the Virgin Islands.

The plan for this activity was that intensive immunization programs would remove the backlog of susceptible pre-school children, and that on-going maintenance programs could be developed concurrently to keep pace with the annual newborn population. Upon removal of the backlog, a given project will be considered to be in the maintenance phase. All projects are presently in the transitional phase from an intensive to a maintenance program for the original four diseases; however, each project is still in the intensive phase as far as measles is concerned.

For 1967, it is anticipated that some seven million pre-school children will be immunized against measles. The public acceptance of measles vaccine is improving although continued intensive public information and education activities will be needed to achieve full implementation of the legislative intent of the Vaccination Assistance Act. As was originally projected, one of the major problems of program implementation has been the conversion of public apathy into action with reference to measles and its consequences. Proven educational approaches are, however, achieving the desired results in that the target population is being immunized at a rate which is satisfactory in terms of previous projections. For these reasons, previously formulated program plans for 1967 will be followed.

In 1968, it is anticipated that about 110 projects can be supported. Funding projections are based upon achieving economies in project operations.

Based on these projections, $9,100,000 is requested for 1968 to: (1) maintain support, in existing project areas, of minimum program activities such as organization, planning, public information, strong maintenance programs and surveillance; (2) purchase vaccine in substantially increasing quantities; and (3) give the necessary support to new project areas.

Direct operations

	1967 estimate		1968 estimate		Increase or decrease	
	Positions	Amount	Positions	Amount	Positions	Amount
Personnel compensation and benefits	3,265	$28,836,900	3,280	$29,397,800	+15	+$560,900
Other expenses		26,931,100		29,542,200		+2,611,100
Total	3,265	55,768,000	3,280	58,940,000	+15	+3,172,000

Summary of program

	1967 estimate		1968 estimate		Increase or decrease	
	Positions	Amount	Positions	Amount	Positions	Amount
Communicable diseases	1,519	$17,728,000	1,549	$18,467,000	+30	+$739,000
Development of communicable disease control techniques	(817)	(8,204,600)	(817)	(8,226,600)		(+22,000)
Special services to States	(702)	(9,523,400)	(732)	(10,240,400)	(+30)	(+717,000)
Tuberculosis	230	3,617,000	230	3,669,000		+52,000
Venereal diseases	353	4,329,000	353	4,366,000		+37,000
Pesticides	137	7,234,000	156	7,572,000	+19	+338,000
Foreign quarantine	677	8,181,000	643	8,175,000	−34	−6,000
Aedes aegypti eradication	349	14,679,000	349	16,691,000		+2,012,000
Total	3,265	55,768,000	3,280	58,940,000	+15	+3,172,000

	1967 estimate		1968 estimate		Increase or decrease	
	Positions	Amount	Positions	Amount	Positions	Amount
Communicable diseases	1,519	$17,728,000	1,549	$18,467,000	+30	+$739,000

The overall program is composed of (1) development of communicable disease control techniques and (2) special services to States. The development of control techniques covers research on viral, bacterial, and fungal diseases, biology and control of disease vectors, diseases of animals transmissible to man, and communicable disease control demonstrations, consultations, and investigations. Special services to States consists of epidemic services, national laboratory improvement and reference services, training of public health workers, medical audiovisual services, and community immunization services.

	1967 estimate		1968 estimate		Increase or decrease	
	Positions	Amount	Positions	Amount	Positions	Amount
(1) Development of communicable disease control techniques	817	$8,204,600	817	$8,226,600		+$22,000
Viral, bacterial, and fungal diseases	492	4,571,700	492	4,588,700		+17,000

Rubella.—Recognizing the large number of congenitally deformed babies that are born in the United States each year as a result of maternal infection with rubella (German measles) virus, and the hundreds of requests received at the National Communicable Disease Center for serodiagnostic studies of rubella, an expanded program was started in 1967. Continuing into 1968, studies of the physical, biological, and antigenic characteristics of rubella virus are being performed as a basis of further investigations of the pathogenesis, infectivity, and immune responses associated with rubella virus infection.

Influenza.—Epidemiological and laboratory data show that world-wide epidemics of influenza occur approximately every ten or more years due to antigenically distinctive strains of viruses. In 1967 and 1968, a period of expected increased prevalence, major effort in the respirovirus field will include close laboratory and field surveillance of influenza viruses, looking toward appearance of new virus variants so that immediate preparation and evaluation of new vaccines can be undertaken.

Encephalitis.—It has become apparent that many of the scientific activities of special concern to the mission of the Communicable Disease Center fall into a combined area of service and research. A prototype of this problem is arbovirus encephalitis. Through past and current grant support there are now several laboratories, primarily State public health laboratories, capable of joining into a common plan of investigation that will augment the efforts of National Communicable Disease Center to maintain clinical, laboratory, and field surveillance of such diseases as Eastern, Western, St. Louis, and California encephalitis and the many newly emerging viral encephalitides.

In 1967, an expanded program of diagnostic and epidemic assistance was initiated to meet increased demands in the area of encephalitis. These activities including training, consultation, and methodology research will continue in 1968.

Hepatitis.—Efforts to develop measures for the control of infectious hepatitis have been seriously limited by the lack of diagnostic procedures. These procedures depend upon definitive incrimination of the infectious agents, development of techniques for their demonstration, and knowledge of the epidemiology of the disease. Work continues in an attempt to establish the relationship between the viral agents and infectious hepatitis; to isolate other agents related etiologically to the disease; and to obtain epidemiological data on hepatitis. Two principal lines of investigation are being pursued: (1) isolation of viruses associated with sporadic cases and (2) studies in two Indian communities and at two institutions of populations at high risk of disease.

Serum hepatitis has been made a separately reportable disease which will enable more discrete surveillance of the hepatitis complex. This change will permit a more concentrated search for the causal agent of infectious hepatitis, closer surveillance of post transfusion hepatitis, and identification of substandard commercial sources of blood which are thought to be causing hepatitis.

Streptococcal infections.—The reported incidence of streptococcal infections in the United States now exceeds 400,000 cases per year. Present measures for the prevention of streptococcal infections are inadequate, and new approaches are needed. Preliminary field studies have been conducted on seasonal prevalance and the socioecologic factors related to streptococcal infections in elementary school children in El Paso County, Colorado. These studies have provided valuable information on various factors which appear to be correlated with prevalence rates of the most common group of these streptococcal infections. A complete analysis is being made of this information and the finding will provide the basis for selection of specific factors to be investigated.

Institutionally acquired infections.—Work is well advanced on detection and control of microbial contamination of institutions, and on survival staphylococci and other microorganisms under various environmental conditions. Consultations and epidemic aid are given on the environmental aspects of institutional infections. A program of formal and other training for hospital and operational health personnel has been expanded. Research on the environmental aspects of institutional infections will be continued and the findings will be applied through formal one-week training courses which will be conducted in the various States.

Viral gastroenteritis.—Studies on viral gastroenteritis continue to provide data on three aspects of the problem: (1) seasonal distribution and prevalence of nondescript viral gastroenteritides; (2) seasonal distribution and prevalence of enteric viruses; and (3) association of viruses with clinical cases of alleged viral gastroenteritis. The results of these investigations will form a basis for development and evaluation of suitable control measures.

Schistosomiasis.—Schistosomiasis is one of the foremost disease problems of the world, affecting approximately 150 million people. It is widely distributed, occurring in Africa, Asia, South America, southern Europe, Australia, and a number of Islands in the West Indies, including Puerto Rico and the Virgin Islands. In Puerto Rico approximately 15 percent of the population is infected with *Schistosoma mansoni*, and in highly endemic areas infection rates may be as high as 50 percent. The disease, which is caused by a parasitic worm, can

be controlled by eliminating the intermediate snail host (the *Australorbis glabratus*).

Cooperative studies with the Puerto Rico Department of Health on the control of schistosomiasis are in progress in 7 project areas. These limited studies include determination of factors responsible for the low but persistent incidence of the disease in existing control projects; the potential for biological control of the snail host; development and evaluation of new or improved diagnostic methods for rapid determination of disease incidence; and evaluation under field conditions of the most promising chemical molluscicides.

The increase of $17,000 for viral, bacterial and fungal diseases provides for annualization of positions new in 1967 offset by one less day's pay in 1968.

	1967 estimate		1968 estimate		Increase or decrease	
	Positions	Amount	Positions	Amount	Positions	Amount
Biology and control of disease vectors	184	$1,349,700	184	$1,343,700	.....	—$6,000

Diseases caused by bacteria, viruses, and other parasites and transmitted by arthropods and other animals constitute one of the largest and most important groups of human illnesses.

Plague.—The major importance of the continuing plague problem in the United States has been emphasized by the extent of the disease in wildlife occurring in recent years in Colorado, New Mexico, Arizona, Nevada, and California. The danger of becoming complacent concerning the hazards of wildlife plague to humans is illustrated by the 1965 and 1966 outbreaks in New Mexico. The 1965 outbreak was the largest since 1923. Plague was introduced to this country recently from Vietnam. Luckily it was detected in time to prevent spread of the disease.

Currently, the National Communicable Disease Center laboratory in San Francisco is responsible for providing authoritative information on plague in the United States in order that this country may fulfill its national and international commitments and obligations. During the past decade, the ecology of plague in a few foci in the vicinity of San Francisco has been studied. The Center's laboratory has also cooperated with State and local health departments and with military and other agencies on problems of an emergency nature involving plague, tularemia, and other rodent-borne diseases.

The program of field investigations will be continued in 1968 and will include emphasis on studies to determine the geographic distribution of sylvatic plague and to develop methods which may be used to minimize the hazards of plague infection in outdoor recreational areas where large numbers of people congregate.

The decrease of $6,000 for biology and control of disease vectors is due to one less day of pay in 1968.

	1967 estimate		1968 estimate		Increase or decrease	
	Positions	Amount	Positions	Amount	Positions	Amount
Diseases of animals transmissible to man	66	$1,341,900	66	$1,354,900	.....	+$13,000

Many infectious diseases of animals are known to affect man. The seriousness of the threat of these diseases to man's health and well-being changes as the modern evironment modifies existing relationships between vector and host. For this reason, continuing surveillance of the most important of these diseases (rabies, salmonellosis, trichinosis, Q fever, brucellosis, psittacosis, and leptospirosis) is carried on to assess the changing risk to our human population.

New and better methods of diagonsis and control of the zoonoses must be developed to protect our increasing population. Rabies, in particular, is a serious problem to both man and his domestic animals in many areas of the country.

The public Health Service and the government of Mexico now have a joint Border Rabies Control Program, administered by the Pan American Health Organization through contractual arrangement with both countries. This program has begun in Baja California and will be expanded to include all of the inhabited areas along the United States-Mexico Border. Two veterinary epidemiologists have been detailed to the Pan American Health Organization for duty in this program and facilities for training and other support in the United States have been provided. Together these activities constitute the first realistic approach to the control of canine rabies along our southern border, one of the areas of highest incidence of canine rabies in the United States.

The increase of $13,000 for diseases of animals transmitted to man provides for annualization of positions new in 1967 offset by one less day's pay in 1968.

	1967 estimate		1968 estimate		Increase or decrease	
	Positions	Amount	Positions	Amount	Positions	Amount
Communicable disease control demonstrations, consultations, and investigations	75	$941,300	75	$939,300	.....	−$2,000

Despite the reduction in the reported incidence of some communicable diseases in the United States, there remains an annual toll of about 140,000 communicable disease deaths, an estimated 300 million acute infections and approximately 1.5 billion days of communicable disease illness in this country.

The demonstration technique offers new combinations of approaches and methods to some of the unmet public health needs of the community. In particular, the demonstrations have provided local health units with a tool by which they can continuously identify the pockets of communicable disease, evaluate the socioeconomic problems involved, reach the "disadvantaged" populations that are usually associated with high disease incidence, and through stimulation of this group obtain their participation in community sponsored corrective action. Community action programs involving this group have taken place against such diseases as: tuberculosis, polio, enteric diseases, hepatitis, diphtheria, smallpox, tetanus, and salmonellosis.

During 1966 thirteen such demonstration programs were in operation with some 35 satellite programs underway in communities close to the established demonstrations. The number of demonstration sites remaining in 1967 will be approximately 13 with the emphasis being upon the development of satellite programs in States adjoining those in which the 13 sites are located.

The above programs for development of communicable disease control techniques will continue in 1968 at substantially the same level as in 1967 and the decrease of $2,000 is due to one less day of pay in 1968.

	1967 estimate		1968 estimate		Increase or decrease	
	Positions	Amount	Positions	Amount	Positions	Amount
(2) Special services to States	702	$9,523,400	732	$10,240,400	+30	+$717,000
Epidemic services	86	1,491,500	86	1,520,500	.....	+29,000

Basic elements in the control of communicable diseases are detection, surveillance, and epidemiological investigation of disease episodes. By maintaining nationwide surveillance of certain diseases, the Communicable Disease Center is often able to detect epidemic patterns as they develop. Thus, State and local health departments are provided the early warning required for effective control of epidemic situations. The Center's Epidemic Intelligence Service, a corps of trained epidemiologists, stands ready to furnish immediate assistance in the investigation and control of disease outbreaks. During 1966, the EIS responded to 117 requests for epidemic aid.

Incorporated into these epidemiological and surveillance services are two vitally important elements. The first one is the field evaluation of new or im-

proved diagnostic and control techniques. The second and perhaps more imperative part is the training of epidemiologists. The dearth of well trained epidemiologists has never been more keenly felt than at the present time. Burgeoning health activities, both domestic and international, have focused attention on demands for the specialized techniques and talents of epidemiologically trained individuals in carrying out programs of preventive medicine, general health care, and related facets of research.

At least 1,000 actively practicing epidemiologists are needed by the United States at the present time to adequately staff field investigations, research activities, and teaching programs. Less than half this number exists, and many of them are limited by general administrative responsibilities and are not available to practice their specialty. Because administrative duties do, however, invariably increase with tenure, one can realistically estimate that the average practicing life of an epidemiologist is only some five years. Therefore, a minimum of 200 epidemiologists needs to be made available each year merely to satisfy the current requirements. The present, inadequate supply being graduated from schools of public health, certain medical schools, and from State health departments is approximately 50.

The Epidemic Intelligence Service of the Communicable Disease Center has been actively engaged in training epidemiologists since 1951. In the 15 years through 1966, a total of 347 professionally trained individuals have received two years of intensive, practical field epidemiology experience under careful supervision. Of these, 85 continue on duty in the Public Health Service, 90 are in full-time academic positions directly related to epidemiology, and 15 are employed full-time in State and local health departments. Therefore, more than half of the EIS trainees have continued in epidemiologically related careers. The others completing the EIS training constitute as well, a national resource for emergency duty and are regularly providing an epidemiological viewpoint in public health affairs within their respective communities.

Further competency of a portion of individuals trained in the Epidemic Intelligence Service has been provided through an organized career training program in epidemiology extending beyond the two introductory years. Since 1957 when the program was established, 52 persons, 32 of them physicians, have undertaken carefully designed academic and investigative programs resulting in a cadre of highly qualified individuals capable of assuming broadened responsibilities in public health and preventive medicine.

With its unique national facilities, a reputation of excellence, a highly qualified staff, and established two-year and career programs, the National Communicable Disease Center is in an unparalleled position to provide epidemiologic training and at the same time offer comprehensive epidemic assistance to domestic and international programs.

The increase of $29,000 for epidemic services provides for annualization of positions new in 1967 offset in part by one less day of pay in 1968.

	1967 estimate		1968 estimate		Increase or decrease	
	Positions	Amount	Positions	Amount	Positions	Amount
National laboratory improvement and reference services	335	$3,924,900	365	$4,605,900	+30	+$681,000

In the United States, there are over 12,000 clinical and public health laboratories whose work is directly related to care of the sick. The quality of these laboratories affects the health and well-being, and thereby the productivity, of our population.

Premature death, extended hospital stay, unnecessary suffering and loss of productivity as well as tremendous economic losses are consequences of inaccurate laboratory results. It is conservatively estimated that at least 430,000,000 tests are performed annually and the approximate error rate of these tests is 25 percent. At an average cost of $4.00 per test, this represents a waste of some $430,000,000 annually to the nation in payment for erroneous laboratory diagnostic results. The cost in suffering in extended hospitalization and in actual loss of life is beyond monetary measurement.

Several factors contribute to substandard laboratory performance: (1) States and other responsible local jurisdictions lack sufficient enabling regulatory and licensure authority and funding to permit performance evaluation and on-site inspection to ensure that laboratories meet minimum quality standards. (2) There is an inadequate number of trained supervisory and working laboratory personnel. In State public health laboratories, 32 percent of professional and technical personnel have had less than four years experience; 9 percent have had less than one year experience; and 8 percent of the people holding professional-level positions in the laboratories do not have a college degree. An annual turnover of 13 percent of professional and technical personnel aggravates the problem. (3) There is insufficient effort on the part of educational institutions to stimulate students toward careers in the laboratory field. (4) Methology research, standardization, and improvement of laboratory procedures are needed, but are beyond the resources of private groups.

Recognizing the magnitude of the problem, a comprehensive plan was formulated in 1962 to raise competency and capability in medical laboratories to an acceptable level and to maintain that level; this plan became operative as the National Laboratory Improvement Program.

The basic elements of the National Laboratory Improvement Program which are now in existence are designed to meet the most urgent nationwide needs. These elements are: reference diagnostic services; consultation; training of personnel; performance evaluation; evaluation of methods and materials; standardization of techniques, reagents, and educational requirements; and developmental research.

The current program is aimed primarily at the State and Territorial public health laboratories. However, these laboratories represent only 5 percent of the personnel and tests performed. The Federal Government cannot provide training, consultation, and necessary performance evaluation directly to the more than 10,000 clinical laboratories in the United States; however, it can provide the leadership for a comprehensive nationwide laboratory improvement program. The National Laboratory Improvement Program, therefore, must be carried to the local level by providing adequate training and funds to State public health laboratories.

Significant strides have been made in improving and strengthening State laboratory competency. However, a much heavier demand will be placed upon this program to provide for expanded State activities, and State laboratories are urgently in need of additional Federal support. The increase of $681,000 and 30 positions will: (1) provide additional staff and facilities for training; (2) increase consultation capability to meet the demands of the nation's laboratories; (3) develop educational curricula with the cooperation of universities to encourage students to pursue careers in laboratory fields; (4) evaluate and select the most efficient methods for upgrading laboratory proficiency; (5) support the requirement for reporting positive laboratory results on certain communicable diseases (VD, TB, etc.) to facilitate epidemiological and control programs. Armed with these resources, the National Laboratory Improvement Program will develop effective model laws and performance standards for State laboratory regulation.

	1967 estimate		1968 estimate		Increase or decrease	
	Positions	Amount	Positions	Amount	Positions	Amount
Training of public health workers	101	$1,093,700	101	$1,105,700	----------	+$12,000

Changes in program emphasis, new developments in old programs and newly developed programs present constant problems of training, retaining, and continuing education for public health workers. This program is designed to meet these problems and to speed the flow of information from the research laboratory to its application in the field.

During 1966, 47 seminars were presented to State public health associations, State chapters of the Academy of General Practice, and the Academy of Pediatrics on salmonellosis, immunization, tuberculosis, and viral hepatitis. The Center has been requested by the American Medical Association to make the seminar services available to their State and local associations. Programmed

instruction and home study courses are being offered to public health workers who are unable to attend centralized training programs. The training aspects of epidemic assistance are being met through "instant training" courses. Methods have been sought to improve the basic training of physicians in the diagnosis, epidemiology, and control of communicable diseases. In an effort to improve this training, a teaching aid library has been developed and provided to each school of medicine and osteopathy in the United States.

Hospital associated infections present a major medical problem resulting not only in excess morbidity and mortality but one that involves considerable increase in expense to patients because of the increased length of hospitalization. This problem is growing in importance daily and will increase as new hospitals are constructed under the impact of the Hill-Burton program. The medicare program undoubtedly will lead to increased utilization of hospitals, nursing homes, and other institutions, especially by persons over age 65, a group which is particularly susceptible to hospital associated infections.

The National Communicable Disease Center has pioneered in the development of epidemiological techniques and control measures for hospital infections. The dissemination of these through the development and presentation of training activities (courses, seminars, programmed instruction) insures rapid application and the reduction of hospital associated infections.

The Center is uniquely qualified to provide the type of training that will be necessary to implement the President's International Health Program. The younger physician today has had no practical training in tropical diseases. If he is to function adequately in many of the nations of the world as a representative of this country he will need intensive short term training in diagnosis, treatment, prevention and control of diseases not normally seen in the medical schools of this country. The Center through its long involvement in international health activities has the nucleus of talents around which to build such courses not only in the classroom, but in the laboratory. Pilot courses have been developed on Malaria and Chagas disease and a training aids library is being developed on the gamut of tropical diseases.

The increase of 12,000 provides for annualization of positions new in 1967 offset by one less day's pay in 1968.

	1967 estimate		1968 estimate		Increase or decrease	
	Positions	Amount	Positions	Amount	Positions	Amount
Medical audiovisual services	112	$2,139,800	112	$2,136,800	.....	−$3,000

A rapidly increasing appreciation of audiovisuals in the teaching process has prompted medical schools in this and foreign countries, as well as Federal, State and local health agencies and other interested groups, to seek professional guidance and assistance from the Center. This increasingly requested assistance will be provided to the maximum extent possible.

The medical audiovisual program was expanded in 1966 to implement portions of Recommendations 12(b) and 31 of the President's Commission on Heart Disease, Cancer and Stroke. This expansion included: (1) designation of schools of medicine and allied sciences in selected geographical areas of the United States to establish demonstration projects, or to identify problems, resources, and special needs in the medical audiovisual communication field; (2) presentation of seminars, conferences, and resource study projects to develop skills of professional schools in planning and production of medical audiovisual support programs; (3) continued emphasis on the production of multilingual motion pictures, videotapes, television programs, filmstrips, slide series, and radio spot announcements; and (4) distribution of release prints essential to the attainment of national health objectives.

Evaluations which reflect the needs of the biomedical community will be made in 1967 of projects conducted at designated schools of medicine and allied sciences. Based upon these evaluations—contracts with other schools of the health professions will be negotiated to permit development of additional exploratory projects. Conferences and seminars will be conducted to establish categories of communication skills and resources required to bolster health

manpower. Selected meetings, seminars, and lectures will be videotaped and made available for use in this country and for distribution to other countries.

A prototype community television network in the Atlanta area linking Grady Memorial Hospital, Emory University Medical School, the Veterans Administration Hospital, the Georgia State Department of Health and the National Communicable Disease Center will become operational in 1968. Emphasis of the telecasts will be on programming and will include grand rounds, lectures, conferences, and other educational activities relating to the teaching schedule of the medical school. The concentrated level of teaching necessary in medicine from a central source at mutually convenient times will be made available to professional audiences within the network range. Medical schools and hospitals in other areas of the United States will be encouraged to observe and study the results of the programs transmitted under this system. Consultation, existing program materials and selected assistance will be made available to them. The experience gained in this prototype project will provide valuable material for extending the program through similar installations throughout the United States.

The decrease of $3,000 is due to one less day of pay in 1968.

	1967 estimate		1968 estimate		Increase or decrease	
	Positions	Amount	Positions	Amount	Positions	Amount
Community immunization services	68	$873,500	68	$871,500	.....	−$2,000

Immunization Activities, in implementation of the intent of the Vaccination Assistance Act, as amended, are directed toward providing:

(1) Effective leadership and central coordination of State and local efforts leading toward improvement of immunization levels.

(2) Development and evaluation of new or improved techniques of immunology, community organization, surveillance and project operation.

(3) Expeditious application of accepted practices and new or improved methods of operation in the States and communities.

(4) Operational analyses and consultative services upon request.

While grant funds may be used for epidemiological and laboratory surveillance, the activities supported with direct funds, through the contract mechanism, are broader in scope and depth, and will produce results with broad applicability for program purposes. Contractual studies are responsive to the need for developing information for program purposes and directly lend mission support.

Following the revision and extension of the Vaccination Assistance Act, primary emphasis was placed during 1966 on the implementation of the nationwide program against measles. The Center is now providing leadership and assistance to States and communities in (1) establishing the use of measles vaccines as an integral part of official and private immunization services, (2) conducting effective promotion and motivation programs to convert public apathy into action regarding the seriousness of measles and the need for immunization against the disease, and (3) continuing close surveillance of the immunization status of the population.

Particular attention will be given to the encouragement of local efforts in the areas of motivation and public information. Using competencies that exist at the Center, prototype materials will continue to be developed for local use.

Also technical assistance will be provided in the development and effectuation of plans for achieving public response and programming for low income and hard-core groups.

There has been a moderate decline in the reported incidence of measles since the availability of vaccine, and although public acceptance of measles vaccine is improving, continued intensive public information and education activities will be needed to achieve full realization of the legislative intent of the Vaccination Assistance Act.

In 1968, the third year of the expanded immunization grant program, emphasis will continue to be placed on the same areas of program activity, but with a more even balance of program effort. While the Center will continue to provide support on a national basis to State and local motivational efforts, greater

attention will be given to improved organization and operation of comprehensive immunization programs. More support will be provided for intensive measles programs and more emphasis will be placed on epidemiologic surveillance of disease. Support will be provided for continued cooperative research studies under separate contractual agreements with independent groups. Analysis and evaluation will be made of new or different methods of program operation which will be passed on to State or local health department personnel through existing channels of communication, training courses, and direct consultation and assistance.

These efforts will be continued overall but will be adjusted to mesh with individual project needs as they go through the transitional phase from an intensive to a maintenance program. While new vaccines are under development, much is being learned about the interactions of existing vaccines and revised methods for their usage. Continuing efforts are under way through a variety of mechanisms to insure that developments concerning new vaccines are properly evaluated in terms of their application in public health programs. Constructive action on the basis of these evaluations will continue to be performed, recommended and promoted by the Communicable Disease Center.

The decrease of $2,000 is due to one less day of pay in 1968.

Tuberculosis

	1967 estimate		1968 estimate		Increase or decrease	
	Positions	Amount	Positions	Amount	Positions	Amount
Tuberculosis	230	$3,617,000	230	$3,669,000	.....	+$52,000

Research

Future cases of tuberculosis are dependent on disease developing in persons previously infected and on recent infections proceeding rapidly to disease. Information on risk of becoming infected with tuberculosis and of infection progressing to clinical disease is being obtained from the continued observations of populations that have participated in extensive prophylaxis trials, from skin testing 100,000 Naval recruits every year, and from animal experiments. The tuberculin test is widely used to determine who has been infected with tubercle bacilli. However, individuals infected with mycobacteria other than tubercle bacilli may also react to the test. It is essential to identify those who are truly infected with tubercle bacilli from those infected with other mycobacteria. Accumulated data indicate that this can be accomplished by a battery of tests. New skin testing products for improving the diagnosis of both tuberculous and closely related infections are being prepared and will be standardized in animals and man. Tests will be carried out to select the most efficient products. The products selected can then be prepared in large biological lots for distribution to health agencies and physicians throughout the country.

Evidence now becoming available indicates that "true" tuberculosis infection has a high risk of producing crippling, even fatal, tuberculosis. This is of vital importance since three-fourths of all new cases of tuberculosis develop from old infections. The mathematical model to rate BCG vaccine and other mycobacterial infections, developed during 1966, demonstrated that BCG can make only a minute contribution to tuberculosis control in this country while isoniazid chemoprophylaxis properly utilized provides assurance of mass reduction of the disease. The administration of isoniazid to high risk groups has been demonstrated to be markedly effective in preventing the development of disease. As the next step, the efficacy of a short course (three months) of isoniazid prophylaxis in preventing disease will be compared to the known value of a one-year course. The characteristics such as occupation, other illnesses, sex and age, and drug resistance, which contribute to increasing the risk of active disease, will be investigated through long-term observation of large groups of infected persons. Currently, studies of newly discovered "natural vaccination" effects of infection with organisms that resemble the tubercule bacillus are being intensified in both laboratory and human populations.

Technical services and training

To make significant progress against tuberculosis special efforts must be continued to improve the skills of professional workers and recruit and train highly motivated individuals for tuberculosis control activities. A number of special programs specifically aimed at improving the skills of these professional workers are now being carried out. They include a series of 3-day symposia and nursing workshops for physicians and nurses, a professional education program for the clinical management of tuberculosis, the preparation of a series of professional automatic film projectibles covering all aspects of tuberculosis for all the Nations' medical schools, and the selection and training of highly competent individuals to work at the management level.

By the end of 1966, approximately 950 physicians had participated in the 3-day symposia. An additional 600 physicians are attending these symposia in 1967 and 600 are expected to participate in 1968. The nursing workshops held in 1966 enabled 175 nurses to update their knowledge of tuberculosis. An additional 200 nurses are participating in this in 1967 and 200 are expected to participate in 1968. In continuing the professional education program to provide physicians and nurses with the most recent developments in tuberculosis treatment and research, the programs at Denver, Colorado, and Rome, Georgia, provided intensive training in tuberculosis for 300 persons in 1966. In 1967 and 1968, 300 persons are expected to participate in this program.

Twelve professional automatic film projectibles covering various aspects of tuberculosis were prepared and distributed to the Nation's medical schools in 1966 along with automatic projectors to improve the quality of undergraduate training in tuberculosis. An additional 8 films will be completed and distributed in 1967 and 6 more are planned for 1968.

During 1966, 3 physicians participated in a special clinical associate program in tuberculosis for a one-year period. This program to preserve professional competency in tuberculosis education was expanded to include 6 such physicians in 1967 and is expected to provide similar opportunities for 6 physicians in 1968.

Special studies are being made into the motivational aspects of patient care—cooperation and response, as well as clinic functions and management. The studies and their applicability will be continued to obtain better patient-staff rapprochement in the clinic-oriented medical management of tuberculosis patients.

The increased grant activity and overall program activities will of necessity create additional demands on staff resources. The Program will continue to be readily responsive to State and local requests for project and program consultation, evaluation and planning and for routine record consultation and review. This continues to be a particularly pressing problem when State and local programs undertake additional activities and require review and reanalysis of program standards and objectives.

At the end of 1966, approximately 50 persons had been recruited, trained, and assigned to State and local health departments under the project grant activity to assist tuberculosis controllers both in the administrative and managerial phases of their program. An additional 25 such individuals will be added to this cadre in 1967 and 25 more are expected to be recruited and trained in 1968.

A number of procedures are needed to establish a diagnosis of tuberculosis and to maintain accurate surveillance of the patient both during his period of treatment and for the 5 years thereafter when he is at highest risk of relapse. The case register is the record of these procedures, and through continuous review and analysis of the case register the needed surveillance during this crucial period is maintained. A computerized tuberculosis case register service which was field tested and placed in operation in two areas in 1966 will be provided to five additional areas in 1967. In 1968 this service will be offered to additional areas having special project grants.

The increase of $52,000 in the tuberculosis program is composed of an increase of $59,000 for mandatory items offset by a decrease of $7,000 for one less day's pay in 1968.

	1967 estimate		1968 estimate		Increase or decrease	
	Positions	Amount	Positions	Amount	Positions	Amount
Venereal diseases	353	$4,329,000	353	$4,366,000	.....	+$37,000

The National Communicable Disease Center provides assistance to States and local health departments in the conduct of venereal disease control programs and for developmental activities in the areas of venereal disease education and behavioral research. The objective is to assist States in achieving the most effective utilization of their venereal disease control resources and to develop improved control techniques. Trained personnel assigned to State and local health departments will continue to assist State and local health officials in the conduct and evaluation of the syphilis eradication effort within specific geographic areas.

In the area of education, a continuing effort is being made to reestablish syphilology as an important phase of medical education by carrying out syphilis teaching programs in 23 medical schools where clinical case material is available for student-intern-resident teaching conferences.

Venereal Disease public information-awareness programs have been established in 14 areas for the purpose of awakening and maintaining community interest in the venereal disease problem. Significant progress has been made in stimulating interest by community and civic organizations in venereal disease awareness activity and the receptivity of the mass media to venereal disease control efforts. Almost every general interest magazine of importance has devoted one or more aricles to the venereal disease problem and two of the three major television networks have televised venereal disease programs in prime time.

Continuing efforts have been made to incorporate venereal disease education into the schools. The recently developed "Student's Manual on Venereal Disease" and the accompanying "Teacher's Handbook on Venereal Disease Education" are being introduced in the school systems. These texts have been received enthusiastically in most areas where they have been introduced and are supported by the American Medical Association, the National Education Association, and the National Parent-Teacher Association.

Behavioral science research to improve interviewing-investigation technique and to study population groups which may be potential reservoirs of the venereal diseases is now under way with definitive results anticipated and program implementation developed by 1968.

Buildup of military strength related to the Vietnam conflict, with an increasing percentage of military personnel deployed in venereal disease high incidence areas, calls for greater cooperation between the Public Health Service and the armed services. Some assistance will be provided in instituting venereal disease control measures for both civilian and military personnel in limited areas.

Syphilis research and services

One of the primary objectives of this activity is to conduct research leading to the development of a vaccine for syphilis and the improvement of therapeutic and diagnostic procedures. Studies on primates have demonstrated the practicality of the use of these animals as experimental models for humans because the natural course of syphilis in the infected apes seems to parallel closely that observed in human beings. Successful infection of apes with *T. pallidum* and *T. cuniculi* suggest that the chimpanzee will prove a successful experimental animal in which to test other possible immunity producing agents.

An international bank for treponemal strains is being established to accumulate and maintain isolates of *T. pallidum* and other agents causing other forms of treponematoses for use in laboratories for research. It is hoped that from among the strains one suitable for the ultimate development of a syphilis vaccine will be found. Refrigeration and other equipment needed to maintain the strains has been obtained and the collection of strains from throughout the world is actively under way.

The fundamental problem of cultivation and attenuation of *T. pallidum* or related organisms has never been comprehensively attacked. It is proposed to create and support the required competence within the National Communicable Disease Center to further research on this problem.

Other objectives of this activity are development of serologic tests for syphilis; and provision of laboratory consultation services, training courses for State laboratory personnel, and reagent check testing services on commercially produced products.

Nontreponemal research and services

The increasing seriousness of gonorrhea in the United States is demonstrated by the fact that, with the exception of 1962, reported cases of gonorrhea have

increased every year since 1957 when 216,476 cases were reported. During fiscal year 1965, (the last year for which complete statistics are available) 310,155 cases of gonorrhea were reported by health officials. Provisional data indicates that gonorrhea cases reported will increase by approximately 18,000 in fiscal year 1966.

Control of the disease is hampered by the lack of completely adequate methods of detection, treatment and prevention. Research at the National Communicable Disease Center is being conducted along these three lines of inquiry.

In 1968, research directed toward the development of a vaccine and the evaluation of rapid screening tests for disease detection will be continued. Two tests which detect antibodies in the blood of patients known to have gonorrheal infection have been developed by the Venereal Disease Research Laboratory. These tests will be critically evaluated to determine both their effectiveness and their practicality as public health measures since lack of a rapid screening test has been an obstacle to public health programs.

Several studies concerned with the isolation, purification and characterization of the antigens contained in or on the surface of *N. gonorrhoeae* are currently under way. Studies of these factions may lead to the development of new sensitive diagnostic tests for gonorrhea. Furthermore, it is hoped that these studies will lead to the identification of those antigens capable of stimulating protective antibodies against subsequent challenge with virulent *N. gonorrhoeae* and thus form the basis for a successful vaccine.

A recent field evaluation of four therapy schedules for the treatment of gonorrhea in the female has been completed, and new therapy recommendations have been made. Throughout the country the new therapy schedules are being widely used in the treatment of gonorrhea in the female.

The increase of $37,000 in the venereal diseases program is composed of an increase of $48,000 for mandatory items offset by a decrease of $11,000 for one less day's pay in 1968.

Pesticides

	1967 estimate		1968 estimate		Increase or decrease	
	Positions	Amount	Positions	Amount	Positions	Amount
Pesticides	137	$7,234,000	156	$7,572,000	+19	+$338,000

The pesticides program plans and directs a national program for the detection, assessment, control and reduction of potentially harmful exposure of man to pesticides. The program is carried out through (1) community studies consisting of epidemiological and ecological investigations on the level of pesticides in the human population; (2) State services, including the Pesticides Intelligence System; (3) registration, consisting of the review of pesticide applications for human health implications prior to issuance of registration certificates by the Department of Agriculture; and (4) research and development. From these efforts it is hoped to gain a better understanding of the safe and effective use of pesticides.

Community studies

Community studies on levels of pesticides in the human population and the environment are conducted under contractual arrangements with State or local health departments, and with academic institutions and medical schools servicing these communities. The studies activated and continued in 1966 are located in Arizona, California, Colorado, Florida, Hawaii, Illinois, Iowa, Louisiana, Michigan, New Jersey, Texas, and Washington. A number of areas are now being studied for the purpose of establishing four new community studies in 1967.

In 1966 the ecological aspects of the communities under study were evaluated as to amounts and classes of pesticides used, the types of individuals handling these toxic chemicals, and the methods of application. Data were correlated with the measurement of environmental exposure from air, water, soil, and diet. These then were related to residue levels in body tissues, fluids and excreta, the metabolic rate and final disposition. These studies are carrying out the Public Health Service responsibility for the determination of pesticide levels in man

under various exposure conditions as recommended by the President's Science Advisory Committee in its report "Use of Pesticides."

In 1968 the community studies will continue at the same level as in 1967.

State services

The Pesticide Intelligence System, in support of recommendations by the President's Science Advisory Committee, has established a comprehensive data-gathering and dissemination mechanism which functions as a national clearing house for all available epidemiological, toxicological and pharmacological research information pertaining to the toxic effects of chemical pesticides on human health. In addition, this System functions as the focal point for a broad, national monitoring network to continuously survey and assess levels of pesticides and their metabolic by-products in a large and statistically valid segment of the general population to obtain a clear understanding of the manner in which these chemicals are absorbed and distributed in the human body.

In 1966, the System increased its repository of basic research information on human exposures to pesticides and their toxicological and pharmacological effects in man and animals by more than 30 percent. It accumulated a total of 37,000 research citations and documents. Feasibility studies were completed and development commenced to implement automated procedures to maintain surveillance of the world literature and collect, translate as necessary, store, retrieve and rapidly disseminate pesticide research and monitoring information and data. Employing interim manual methods, approximately 50 percent of the collected information has been indexed and catalogued for use. Special research information studies have been conducted, covering more than 3,000 documents, in direct response to scientists engaged in human health pesticides research.

Preliminary studies to develop a comprehensive data-gathering mechanism to assess pesticide levels in a broad sample of the general population were also completed in 1966.

Automatic selective dissemination of data is programmed to begin in 1967, and epidemiological and related criteria are also being established to implement a nationwide network to monitor pesticide levels in human beings. A nucleus of 12 sampling stations and standardized procedures for collecting, handling and analyzing human tissue and body fluid samples will be completed and operational in the first part of 1968.

The problem of collecting, interpreting, and disseminating information on both acute and chronic disease capability attending the increasing annual use and build up of pesticides in the American environment will require additional resources. An automated system of receipt, cataloging, and dissemination of published data and special reports to the audiences of concern will be on a routine basis in 1968.

State and local health departments lack competence in epidemiology as it applies to the field of pesticides and health and in analytical chemistry to enable accurate and rapid detection of chemicals and their metabolites in the body and in the environment. In 1966, technical assistance was given to various State health departments and community studies contractors. In addition, training was given to pesticides chemists who work on community studies contracts for State health departments and other non-profit university medical centers. In 1967 and 1968 continued technical assistance to increase the competence of the States and the training of pesticide chemists in a common methodology for the analysis of pesticide residues will continue.

An increase of 17 positions and $299,000 is requested to carry out and advance the State services activities and meet the need to understand and assess the total impact of pesticide exposure upon human health.

Registration

The public Health Service, under an Inter-departmental agreement with the Departments of Agriculture and Interior, is charged with the responsibility of reviewing pesticide applications for human health implications prior to the issuance of a registration certificate by the Department of Agriculture. During 1966 the registration staff processed 12,774 registration applications for scientific evaluations on human health. Of these, over 60 percent were returned to USDA with comments of public health implications. However, an in-depth evaluation was given on only a small number of compounds because of limited staff.

The registration staff will review an estimated 20,000 submissions during 1967 and it is anticipated that this level will be maintained during 1968. These re-

views will involve a more sophisticated and critical evaluation of certain compounds, such as, lindane, mercury, piperonyl, butoxide, and diazanon.

Research and development

Public health action to prevent undue exposure to pesticides must be based on validated laboratory procedures and confirmed data. Broad spectrum programs have already been initiated in toxicology and chemistry. Specifically involved are long-term chronic toxicity studies of pesticides on primates. The principal classes of pesticides involved in these studies are the chlorinated hydrocarbons, organophosphorous compounds, and the carbamates.

Investigations are underway and will be continued for improving analytical methods for new and old pesticides to permit more refined residue analysis, in man, animals, and environmental media. Such information will permit medical and public health laboratories to make more rapid and accurate diagnosis of poisoning in man. The magnitude of this effort is exemplified by the fact that there are over 40 classes of pesticide compounds covering 500 formulations that are of public health significance and for which adequate toxicological data are extremely limited or non-existent. Much of the present toxicology data is based on short-term studies of acute toxicity levels. Many well-known pesticides, however, have not been investigated for possible chronic effects which reasonably could occur from low-level exposure over a long period of time. The toxicological evaluation of such compounds requires the investigation of their breakdown in the human body and their final disposition. Such studies embody a determination of the physiologic and pathologic manifestations that may accompany their use. New and effective pesticidal chemicals are continually being produced and their safe use depends completely upon a toxicological evaluation.

Federal Committee on Pest Control

The Pesticides program provides the permanent Secretariat of the Federal Committee on Pest Control. The Secretariat and its subcommittee on information, research, and monitoring coordinate the increasing efforts of various Federal agencies in the development, study, and use of pesticides. Increasing demands will be placed on this interdepartmental staff in 1968 for review and analytical work on all aspects of pesticides. For this workload an increase of 2 positions and $39,000 is requested in 1968.

Foreign Quarantine

	1967 estimate		1968 estimate		Increase or decrease	
	Positions	Amount	Positions	Amount	Positions	Amount
Foreign quarantine	677	$8,181,000	643	$8,175,000	−34	−$6,000

The Foreign Quarantine Program: (1) Plans, directs, and conducts the national program to protect the United States against the introduction of communicable diseases from foreign countries; (2) provides epidemiological data on world-wide communicable disease prevalence; (3) implements the provisions of the International Sanitary Regulations, and (4) identifies medically under existing laws, visa applicants who have mental and/or physical defects by conducting and supervising visa medical examinations abroad.

The six quarantinable diseases presently prescribed by the International Sanitary Regulations are cholera, plague, louse-borne relapsing fever, smallpox, louse-borne typhus and yellow fever. In addition to these the Quarantine Program is concerned with the protection of the United States against other "dangerous" diseases. The latter includes exotic infections which presently do not exist in this country, and infections, both rare and fairly common, which do exist, but which may become more important if additional infections are introduced. Recent outbreaks of these diseases in other parts of the world, particularly in the Far East involving or exposing U.S. citizens points up the great danger to our population should we relax our vigilance at ports of entry.

Smallpox continues to be endemic in countries of Asia, Africa, and a few countries of South America. Its potential spread into international traffic is a

great threat to this country. The United Kingdom has been experiencing an epidemic in the Midlands since February 1966 with 61 cases reported to date. The World Health Organization announces that a total of 42 nations reported 50,557 cases of smallpox to them in calendar year 1965. An outbreak of yellow fever occurred in Senegal in December which threatened the international port of Dakar. Plague has been widespread in Viet-Nam, including the ports of Saigon, Dalat, Nhatrang, and Danang. There were 1,946 plague cases reported from January 1 through July 23, 1966.

To support and carry out its responsibilities the program performs health inspections of international travelers, ships and airplanes, and certain imports at U.S. ports of entry. When necessary, the program applies health controls to prevent the importation or spread of disease in the United States, i.e. encourages the periodic vaccination of people most likely to come in contact with an infected traveler, and informs travelers about health requirements for foreign travel.

In addition, the program conducts medical examinations of visa applicants at U.S. consulates abroad and medical inspections of aliens at ports of entry to detect diseases and conditions specified as excludable in immigration law.

The program also directs an entomology program, as it relates to the introduction of entomological vectors of disease through international traffic; controls the admission of certain animals and etiologic agents; and conducts a sanitation program to prevent the entrance of any disease that might be transmitted by water, food, or other environmental factors.

Examination of aliens and quarantine inspections at U.S. ports

Domestic operations of this program include quarantine functions at over 400 continental and insular locations in the United States and its possessions.

The following table reflects selected major workloads at U.S. ports of entry.

	Actual, 1966	Estimate, 1967	Estimate, 1968
Persons inspected, total	130,114,591	136,781,000	143,801,000
Arriving persons, total	130,113,605	136,780,000	143,800,000
U.S. citizens	52,668,118	55,396,000	58,239,000
Aliens	77,445,487	81,384,000	85,561,000
Arrivals by vessel:			
Vessels cleared	37,169	37,500	38,000
Persons inspected	2,242,509	2,280,000	2,300,000
Arrivals by aircraft:			
Aircraft cleared	90,755	97,500	107,000
Persons inspected	5,204,520	6,000,000	7,000,000
Arrivals by land: [1] Persons inspected	122,666,576	128,500,000	134,500,000
Warrant and adjustment of status cases	986	1,000	1,000
Persons medically examined for communicable diseases	17,838	19,500	21,000
Diagnosed positive	10,172	11,500	12,000
Vaccinations for smallpox	966,936	1,025,000	1,093,000
X-rays taken (Mexican border)	350,166	367,000	385,000
Quarantine detentions	19	50	50
Importations inspected [1] (certain animals and etiological shipments)	227,170	238,000	250,000

[1] Includes inspections performed by FQ, Immigration, Customs, and Agriculture at the Mexican border under the joint primary inspection program.

Within the framework of the domestic operation, the Program expects expanded workload and will continue to function to the best of its ability in meeting its program requirements. These are: (1) quarantine inspection of persons at ports of entry, (2) application of measures to prevent the introduction into the country of dangerous communicable diseases and their vectors from abroad, (3) medical inspection of aliens to prevent entrance into this country of any alien with a disease or medical condition excludable by law, and (4) epidemiological communication operations with the collection, analysis, and dissemination of information on epidemic disease areas throughout the world to quarantine stations and appropriate agencies.

These elements involve a broad span of complex operations, such as the application of epidemiological communication operations to direct health procedures on persons at the ports of entry and a sophisticated network of notification, surveillance, and quarantine of those persons suspected of having a dangerous communicable disease. These operations are carried out in cooperation with

international, national, state, and local health organizations through a continuous program of intercommunication. The strength of this program lies in its potential to meet its obligations for immediate action under all conditions and circumstances.

Beginning in 1967, greater emphasis will be placed on surveillance rather than inspectional activities. This program redirection will permit a reduction in the level of staffing requirements. It is anticipated that 34 fewer positions will be needed for the streamlined operations. The net decrease of $6,000 is due to mandatory adjustments.

Examination of visa applicants in foreign countries

Medical examinations of certain visa applicants are provided in accordance with the provisions of the Immigration and Nationality Act and the Public Health Service Act.

Immigrants and certain other visa applicants are required to submit to a medical examination as a step in the legal procedure for obtaining a visa. About 40 percent of these examinations are now being conducted by panels of local private physicians who are designated by consular offices by the Department of State. These physicians perform medical examinations of certain visa applicants and are paid for by the applicant. In certain localities, and to the extent possible, the consular officers and the local physicians are given advice and consultation by Public Health Service physicians.

The Public Health Service and the Bureau of Security and Consular Affairs, Department of State, have recognized the need for increased participation of the Foreign Quarantine program in the medical examination of visa applicants. As a result of this recognition the Department of State and the Public Health Service agreed to the following in 1963:

1. Public Health Service American physicians abroad will serve primarily in a supervisory and consultative capacity on a regional basis, rather than in the routine medical examination of applicants.
2. Insofar as practicable and consistent with efficiency of the total operation, panel physicians will be replaced gradually by contract location doctors supervised by regional Public Health Service physicians.
3. Until panel physicians can be replaced by contract location physicians or where for some reasons the Public Health Service or the Chief of the Mission considers it advisable not to replace them, the Public Health Service regional physician will continue to offer consultative advice to the Department of State with respect to the work of panel physicians.

The long-range plans of the Foreign Quarantine program, which have been approved in principle by the Department of State and the Bureau of Budget, call for (1) the conversion of some existing PHS examining units to contract locations; (2) area supervision and consultation to contract locations and panel physicians and (3) an increase in the number of contractual arrangements for medical examinations in lieu of the present panel of physicians.

Fees are charged for each medical examination of a visa applicant performed by a physician employed or contracted for by the Public Health Service (except non-immigrants under U.S. Government sponsorship and refugees or escapees). It is estimated that the total fees collected in 1968, approximating $2,424,000 will more than offset the cost of administering the visa medical examination program estimated at $2,134,000.

Basic data 1960 through 1968

	Examinations	Medical notifications [1]	Obligations	Fee collections
1960 actual	173,402	44,059	[2]	[2]
1961 actual	185,142	53,333	[2]	[2]
1962 actual	189,192	62,955	[2]	[2]
1963 actual	187,166	62,301	[2]	[2]
1964 actual	170,074	55,242	$1,299,925	$1,348,700
1965 actual	190,699	69,756	1,374,905	1,876,816
1966 actual	212,325	82,013	1,841,261	2,242,557
1967 estimate	252,000	97,000	2,114,500	2,331,000
1968 estimate	254,000	101,000	2,134,000	2,424,000

[1] Medical notifications are the number of physical and mental conditions found following the medical examination of aliens for visa purposes. These findings are reported to the consular office and may result in the refusal of a visa to the applicant.

[2] Information not available.

Implementation of the policy objective of changing panel physician locations to contract locations has been accomplished at Glasgow, Scotland; Madrid, Spain; Bogota, Colombia; Buenos Aires, Argentina; Genoa, Italy; Tel Aviv, Israel; Guadalajara, Mexico and Santo Domingo, Dominican Republic. In fiscal year 1967, conversion of panel location to contract location will be accomplished at Calgary, Canada; Guayaquil, Ecuador; Lima, Peru; Caracas, Venezuela, and Oslo, Norway.

New contract locations will be developed in 1968 to the extent that the examinations can be accomplished within funding levels available and subject to the following:

1. Availability of adequate local medical personnel willing to assume responsibility for visa medical examinations.
2. Availability of space for medical examination purposes at the consulate or embassy.
3. Availability of adequate physical facilities (including laboratory and X-ray capability) in reasonable proximity to the consulate or embassy.
4. Cost.

Aedes Aegypti Eradication

	1967 estimate		1968 estimate		Increase or decrease	
	Positions	Amount	Positions	Amount	Positions	Amount
Aedes aegypti eradication	349	$14,679,000	349	$16,691,000	.....	+$2,012,000

The program for the eradication of *Aedes aegypti* from the United States (10 southeastern States and Hawaii) and its possessions (Pureto Rico and the Virgin Islands) was approved and funds appropriated in 1964 to fulfill our international commitment with the Pan American Health Organization and to remove the continually potential threat of introducing certain diseases into the United States. Illustrative of this potential threat was the dengue fever epidemic in 1963 throughout the Carribbean. This epidemic involved more than 30,000 cases of dengue fever and some 28 cases that were introduced in the United States.

To date, activities have consisted of (1) extensive surveys to delineate areas of infestation; (2) operations in the Virgin Islands, Puerto Rico, Hawaii and some 39 heavily infested areas of Texas, Florida, Georgia, Alabama, and South Carolina representing approximately one-third of the population residing within the yellow fever receptive area; (3) laboratory and field investigations to improve the efficiency and economy of operations; and (4) seasonal operations in areas of limited infestations (Louisiana, Arkansas, and Tennessee).

The increase in 1968 is required to extend on-going programs into contiguous areas that will help protect States in which eradication has been achieved from reinfestation; to attain greater public and private assistance through emphasis provided to the scope and role of informational and educational activities; and to initiate eradication procedures in a few critical additional areas of focal infestations contributing to intra-project, interstate, and international transport of *Aedes aegypti*. Peripheral expansion is necessary to achieve programmed curtailment of surveillance forces which otherwise would be required to prevent reinfestation. With emphasis on informational and educational activities provided in some areas, the objectives of eradication can be made less costly through citizens efforts directed toward community betterment, and through assistance from existing State and local agencies. Because of possible reinfestation of all *Aedes aegypti* free areas by transport of insect eggs through commercial traffic in used tires, scrap appliances and automobiles, the large sites located in several States and used for collection and distribution of these materials must be subjected to eradication procedures and surveillance.

The increase of $2,012,000 will support peripheral expansion of on-going programs of prevent prolongation of the eradication program, reduce total costs, and decrease threats to successful accomplishments posed by possible development of resistance of the *Aedes aegypti* to available insecticides.

New positions requested, fiscal year 1968

	Grade	Annual salary
Communicable diseases:		
Medical officer	GS–16	$20,075
Scientist	GS–15	17,550
Medical officer	GS–15	18,157
Scientist (2)	GS–14	30,212
Public health program specialist	GS–14	15,106
Scientist	GS–13	12,873
Public health program specialist	GS–13	12,873
Scientist (2)	GS–12	21,854
Statistician	GS–12	10,927
Scientist (3)	GS–9	25,437
Scientist (5)	GS–7	38,645
Statistician	GS–7	6,451
Scientist (5)	GS–5	30,879
Clerical assistants (3)	GS–5	15,993
Laboratory technician (2)	GS–2	7,850
Total (30)		284,882
Pesticides:		
Scientist	GS–14	17,198
Scientist	GS–13	15,561
Public health program specialist	GS–13	12,873
Medical officer	GS–12	13,201
Engineer	GS–12	10,927
Statistician	GS–12	10,927
Information specialist	GS–12	10,927
Public health program specialist	GS–12	10,927
Scientist	GS–11	9,536
Public health program specialist	GS–11	9,221
Statistician	GS–9	7,696
Program publications specialists (3)	GS–9	23,088
Clerical assistant (2)	GS–5	10,662
Program publications specialist	GS–5	5,331
Clerical assistant (2)	GS–4	9,552
Total (19)		177,627
Total new positions, all activities (49)		462,509
Positions eliminated: Inspectors (34)	GS–9	208,340

AIR POLLUTION

WITNESSES

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ROBERT PERMAN, EXECUTIVE OFFICER, NATIONAL CENTER FOR AIR POLLUTION CONTROL
DR. RICHARD A. PRINDLE, DIRECTOR, BUREAU OF DISEASE PREVENTION AND ENVIRONMENTAL CONTROL
VERNON G. MacKENZIE, DEPUTY DIRECTOR, BUREAU OF DISEASE PREVENTION AND ENVIRONMENTAL CONTROL
PETER J. BERSANO, FINANCIAL MANAGEMENT OFFICER FOR DISEASE PREVENTION AND ENVIRONMENTAL CONTROL PROGRAMS
DR. WILLIAM H. STEWART, SURGEON GENERAL
G. R. CLAGUE, ACTING CHIEF FINANCE OFFICER
JAMES B. CARDWELL, DEPUTY ASSISTANT SECRETARY, BUDGET

Object classification

[In thousands of dollars]

		1966 actual	1967 estimate	1968 estimate
	Personnel compensation:			
11.1	Permanent positions	4,954	6,543	9,052
11.3	Positions other than permanent	132	166	235
11.5	Other personnel compensation	24	35	50
	Total personnel compensation	5,100	6,744	9,337
12.0	Personnel benefits	577	707	957
21.0	Travel and transportation of persons	491	715	1,310
22.0	Transportation of things	78	267	545
23.0	Rent, communications, and utilities	391	496	773
24.0	Printing and reproduction	163	267	333
25.1	Other services	352	822	937
	Project contracts	1,871	2,744	9,949
25.2	Services of other agencies	1,476	1,820	2,000
25.3	Payment to "Public Health Service management fund"	331	433	582
	Payment to "National Institutes of Health management fund"	60	74	97
26.0	Supplies and materials	573	620	773
31.0	Equipment	1,265	1,104	2,323
32.0	Lands and structures	3	66	251
41.0	Grants, subsidies, and contributions	13,837	17,686	34,018
99.0	Total obligations	26,578	34,565	64,185

Personnel summary

	1966 actual	1967 estimate	1968 estimate
Total number of permanent positions	697	847	1,116
Full-time equivalent of other positions	28	35	47
Average number of all employees	630	746	1,021
Average GS grade	8.0	8.1	8.2
Average GS salary	$8,181	$8,619	$8,756

Program and financing

[In thousands of dollars]

	1966 actual	1967 estimate	1968 estimate
Program by activities:			
1. Grants:			
(a) Research	5,339	6,218	8,600
(b) Fellowships	373	468	468
(c) Training	1,309	2,000	2,691
(d) Control programs	4,966	7,000	20,259
(e) Survey and demonstration	1,850	2,000	2,000
2. Direct operations	11,557	16,879	30,167
Total program costs funded [1]	25,394	34,565	64,185
Change in selected resources [2]	1,184		
10 Total obligations	26,578	34,565	64,185
Financing:			
25 Unobligated balance lapsing	44	996	
New obligational authority	26,622	35,561	64,185
New obligational authority:			
40 Appropriation	26,662	35,561	64,185
41 Transferred to:			
"Operating expenses, Public Buildings Service," General Services Administration (79 Stat. 531)	−29		
"Office of the Surgeon General, salaries and expenses" (42 U.S.C. 226)	−10		
43 Appropriation (adjusted)	26,622	35,561	64,185
Relation of obligation to expenditures:			
71 Total obligations (affecting expenditures)	26,578	34,565	64,185
72 Obligated balance, start of year	7,387	12,960	21,462
74 Obligated balance, end of year	−12,960	−21,462	−39,306
77 Adjustments in expired accounts	−146		
90 Expenditures	20,859	26,063	46,341

[1] Includes capital outlay as follows: 1966, $567,000; 1967, $1,170,000; 1968, $2,574,000.
[2] Selected resources as of June 30 are as follows: Unpaid undelivered orders, 1965, $1,183 (1966 adjustments, −$146,000; 1966, $2,221,000; 1967, $2,221,000; 1968, $2,221,000.

Mr. FLOOD. We now will hear from Dr. John T. Middleton, Director of the National Center for Air Pollution Control of the Public Health Service.

BIOGRAPHICAL SKETCH OF PRINCIPAL WITNESS

We have a biographical sketch of Dr. Middleton which we shall insert at this point in the record.

(Sketch follows:)

Name: John T. Middleton.

Position: Director, National Center for Air Pollution Control.

Birthplace and date: Chicago, Ill.; September 15, 1912.

Education: B. S. University of California, Berkeley, 1936; Ph.D. University of Missouri, Columbia, 1940.

Experience:

1962–1967: Director, Statewide Air Pollution Research Center, Riverside. Responsible for program development and execution of broad scale biomedical, chemical, legislative, and socio-economic air pollution research and training activity on the several campuses of the University.

1960–1967: Chairman and Member, California Motor Vehicle Pollution Control Board.

1957–1963: Professor and Chairman, Department of Plant Pathology, Los Angeles and Riverside.

1939–1957: University of California, Riverside. Successive positions as Plant Pathologist with emphasis on air pollution as a factor in agricultural production.

1936–1939: University of Missouri, Columbia. Teaching assistant in general botany.

1935–1936: University of California, Berkeley. Assistant in plant pathology research projects.

Association memberships:

Professional: Air Pollution Control Association; Alpha Zeta (hon.); American Geographical Society; American Institute of Biological Sciences; American Phytopathological Society; Gamma Alpha; International Association of Plant Taxonomy; Mycological Society of America; Nederlandse Planteziektenkundige Vereniging; Sigma Xi; Torrey Botanical Club.

Civic: Various civic associations including Los Angeles Chamber of Commerce, Clean Air Committee; Regional Plan Association of Southern California; Riverside Planning Forum (Board).

Special awards, citations, or publications: Clean Air Award, Los Angeles Air Pollution Control Board, Mycological Society of America. Various articles including 176 publications between 1938 and 1966.

General Statement

Mr. Flood. Dr. Middleton, I see you have a statement. I suppose you would like to read it?

Dr. Middleton. At your pleasure.

Mr. Flood. Proceed.

Dr. Middleton. The budget proposal before you, Mr. Chairman, is the first one of the newly organized National Center for Air Pollution Control of the Public Health Service. The Center is charged with the same basic responsibilities as its predecessor, the Division of Air Pollution. However, it has been organized to provide an improved capability of carrying out functions as these have been broadened and expanded by the several successive amendments to the Clean Air Act. The Center has been organized in such a manner as to place emphasis on three primary program areas (1) abatement and control activities, (2) control technology research and development, and (3) criteria and standards research and development. This budget includes the first full year of implementation of the new grant authority under the Clean Air Act Amendments of 1966. This is my first appearance before the committee since my appointment as Director of the Center last January 1. I feel a deep sense of responsibility and challenge in this new role, in meeting the serious national problems of air pollution and building on the excellent work and leadership of my predecessor, Vernon G. MacKenzie.

In December 1966, the Department of Health, Education, and Welfare sponsored a National Conference on Air Pollution here in Washington. I participated in this Conference as a professor at the University of California and member of the California Motor Vehicle Pollution Control Board, not yet having assumed my present position. It was a particularly successful Conference, in my view, in that I sensed an ever widening consensus on three important points: First, air pollution is now a serious nationwide problem; second, greatly accelerated public and private effort is needed to attack the problem; and, third, while we continue to seek the answers to remaining technical problems, the considerable knowledge which is now available to us should be put to practical application with a minimum of delay. When one considers the serious threats to the public health which air pollution poses, the detrimental effects to our economy, measured in billions of dollars annually, and the disfigurement of our natural environment, these conclusions by a Conference broadly representative of government, industry, and other segments of society are not sur-

prising. The Conference theme was "Control Now for Clean Air." I propose to emphasize the word "now" in the operations of the National Center and our budget request is geared to this sense of urgency.

The budget request before you will permit us (*a*) to increase our assistance, both financial and technical, in extending the coverage and improving the effectiveness of State and local air pollution control programs, (*b*) to increase our Federal abatement activity in interstate air pollution and control of motor vehicle pollution, and (*c*) to improve our technical ability to cope more effectively and economically with air pollution problems. I will comment briefly on some of the major items of the proposed program.

CONTROL PROGRAM GRANTS

The program of matching Federal grants-in-aid to State, local, and regional control agencies, inaugurated in 1965 has proved useful in stimulating much needed improvements in control activity. Since the program began, we have been oversubscribed, in that all eligible applications could not be totally funded. The 1966 Amendments to the Clean Air Act broadened the program grant authority. Thus, in addition to the previously authorized grants for stimulatory purposes and for limited periods, grants are now authorized for up to one-half of the cost of maintaining ongoing State and local government control programs, and up to three-fifths of the cost for regional programs.

Mr. FLOOD. You really have a regional problem, probably equaled only by water pollution. Perhaps it is not as bad as water pollution but it is more a regional problem than local.

Dr. MIDDLETON. A regional problem far exceeding that of water. One has to remember, Mr. Flood, that air is a moving resource. As it moves it moves about in a much greater area than that of a geographically contained water basin.

For 1968, we are requesting $20,259,000 for this grant program, an increase of $10,559,000 over 1967. This increased Federal assistance will accelerate the progress in State, local, and regional government activities in controlling air pollution.

ABATEMENT ACTIVITIES

The Department of Health, Education, and Welfare is committed to a vigorous and effective Federal air pollution abatement program.

I might add, Mr. Chairman, that this vital element in our program is one to which I personally give very high priority. I view the mission of the National Center for Air Pollution Control as one to protect the health and welfare of the country through actual abatement and prevention of air pollution. All we do must be directed toward this fundamental and primary objective.

Direct Federal abatement activity under the Clean Air Act is aimed primarily at those types of pollution problems which do not readily lend themselves to effective State and local action. These types of pollution problems include interstate and international air pollution and pollution from Federal facilities.

Mr. FLOOD. I have heard it said that certain types of air pollution recently originated in certain areas of New England and have been discovered as far south as southern Pennsylvania.

Dr. MIDDLETON. It is not surprising when one considers that the regional airshed in the eastern Atlantic coast extends basically from about Boston, Mass., to Norfolk, Va. The industrial and urban complex which exists there under certain weather conditions produces foul air which moves from one community to another. That mid-Atlantic airshed is a very good example of the mobility of polluted air and the regional aspect of the air pollution problem.

Since initiation of the program in 1965, nine interstate pollution actions have been undertaken affecting 19,539,000 people. These include the New York City metropolitan area; Ticonderoga, N.Y., on the New York-Vermont border; Selbyville, Del., on the Maryland-Delaware border; three interstate areas in the Ohio River Valley; Kansas City, Mo.; Lewiston-Clarkston on the Washington-Idaho border; and the Washington, D.C. area. Much more remains to be done and we are actively preparing to expand the scope of this program.

The increase requested for 1968 will permit faster progress toward a major goal of successfully abating air pollution in all 72 urban interstate areas having potential problems.

MOTOR VEHICLE POLLUTION CONTROL

The committee members are aware of the special pollution problems associated with automotive vehicles. These vehicles, which continue to grow in number, constitute in the aggregate the greatest single source of air pollution in virtually every section of the country.

Technical staff of the Center, in our automotive test laboratory near Detroit, are currently testing 1968 model vehicles for conformance to Federal emission standards, promulgated as regulations under the Clean Air Act. Under this regulatory program, the manufacturers submit prototype models for testing to confirm data supplied by the companies, and when these meet the Federal standards, a certificate of compliance is issued for each model, by the Secretary of Health, Education, and Welfare. This involves separate certification of about 370 different engine-transmission combinations which represent the preponderant majority of the millions of vehicles sold annually in the United States by domestic and foreign manufacturers. Surveillance testing will also be carried out on selected production models to insure that the vehicles in use continue to comply with the standards. The budget proposal contains $1,445,000 to carry out these required regulatory activities.

The motor vehicle pollution problem is sufficiently serious, and growing, that all feasible reductions in pollutant emissions from new vehicles must be obtained as these actions become possible. However, it must be recognized that the control technology that is anticipated over the next decade may not provide a permanent solution. Over the next 15 to 20 years, a gradual and significant reduction in pollutant emissions from motor vehicles should be obtainable by application of current technology and expected improvements. After that time, however, if the automobile population increases as now estimated, the sheer number of vehicles is expected to overcome the improvements we

now believe possible in emission control technology and the automotive vehicle pollution situation will again deteriorate. More fundamental, longer range solutions involving vehicle propulsion systems having low pollution potential will ultimately be required. Along with the regulatory program, therefore, our research program provides for a beginning of activities directed toward such longer range solutions.

CONTROL OF SULFUR OXIDE POLLUTION

The problem of sulfur oxide pollution is second only to automotive vehicle pollution in national significance with respect to its scope and impact. This sulfurous pollution results primarily from combustion of sulfur-bearing coal and oil.

Mr. FLOOD. You realize this does not include anthracite coal?

Dr. MIDDLETON. You called my attention to this earlier, sir—happily.

Mr. FLOOD. This is for the purpose of emphasis.

Dr. MIDDLETON. I hope in the interim the sale of your product has been accelerated.

Mr. FLOOD. I hope you get your hope.

Dr. MIDDLETON. Vast increases in electric power generation are projected in the years ahead with similar increases in coal and oil consumption. Unless controls which can cope with this anticipated growth are developed and applied, this trend will intensify a problem already posing a serious threat to the public health. We are convinced that such controls are achievable by the intensive research and development actions we have already initiated. There are several promising approaches under development. It is important that these leads be exploited with a minimum of delay. In 1967, we have underway a program of preliminary planning for pilot-scale evaluation of several possibilities for control. The 1968 budget contains funds for bringing two of these approaches to pilot-scale evaluation.

In summary, the budget request submitted for 1968 will enable the Department to carry out its air pollution programs to the full extent authorized by the Clean Air Act. We are requesting an appropriation of $64,185,000, an increase of $24,720,000 over 1967. Of this increase, $8,046,000 is for research activities, $1,416,000 is for training, $10,559,000 is for control program grants, $2,089,000 is for abatement and motor vehicle regulatory activities, and $2,610,000 is for technical services. Under the provisions of the 1966 amendments a supplemental budget request for 1967 is being submitted in the amount of $3,904,000 to which $996,000 released from reserve is being added for a total program increase of $4,900,000.

I have touched briefly on some of the major items in the budget proposal for 1968. The programs in the proposed budget will provide us with an improved capability to deal with these serious national problems.

I will be happy to answer any questions you may have.

PUBLIC AWARENESS OF AIR POLLUTION PROGRAM

Mr. FLOOD. I have news for you. In the opinion of the public you have done and are doing nothing. The average man in the street, to

all intents and purposes, is totally unaware of this program, its purposes, its intent, and of your statement. What do you think you can do about that? Is that a public information officer job, a public relations job, or your job? You go on the main street in my hometown and they dont know a word about this.

Dr. MIDDLETON. I find that is news and not generally the fact. I find that the public in general is much more aware of air pollution as a problem——

Mr. FLOOD. I am not talking about that. Of that there is no question. Finally the public has come around to that awareness and that is a very good thing. At least that is one point you have made. There is a public awareness of it.

What I am talking about is that the public is not aware of your program, what you have done, and what you have told me you propose to do.

They know all about the problem and recognize it, thank goodness. However, they are unaware of this program.

Dr. MIDDLETON. I think since the Federal Government has only recently entered into air pollution control in a rather significant way, that the public attitude you express is an understandable position. It denies the fact that there are elements in the public who are aware of what is going on. For instance, those in New York and New Jersey recognize that already activities undertaken by the Secretary of Health, Education, and Welfare, and the resultant conference report, have stimulated and obliged industry to comply with sulfur restrictions, and that this action has shown we are bringing about an air quality improvement. I agree with you that the attitude, by and large, is one of not recognizing progress in this area, but there are elements which begin to understand that there is action and that the Federal Government, at last, has been put in the position of taking a proper posture of being aggressive in trying to control air pollution, which has not been so in the past.

You might be interested, Mr. Chairman, in the results of the public opinion survey of Louis Harris, published in the Washington Post, April 3, 1967, especially as it relates to air pollution.

(The information follows:)

[From the Washington Post, Monday, Apr. 3, 1967]

THE HARRIS SURVEY—DOMESTIC PROGRAMS RETAIN FAVOR BUT GREAT SOCIETY SLIPS

(By Louis Harris)

Public sentiment for cutting back President Johnson's Great Society programs has risen in the past year, but a majority of Americans still want to maintain or expand domestic programs despite the cost of waging war in Vietnam.

In-depth probing of the views of a carefully drawn cross-section of the adult population reveals a highly selective mood about which programs should be expanded, kept or cut back. The results reveal a new priority of domestic issues.

Public mandate on domestic programs.

EXPAND

- Program to curb air pollution
- Program to curb water pollution
- Aid to set up mental health clinics

- Federal scholarships to needy college students
- Federal aid to education
- Medicare for the aged

KEEP AS IS

- Federal housing for low income families
- The head-start program
- Federal aid in building highways
- The war on poverty

WANT CUTBACK

- Aid for welfare and relief payments
- Aid to cities
- Aid to provide for adequate commuter trains
- The space program
- Subsidy payments for farmers

The cutback list includes some new and some old sacred cows. The old New Deal standbys of aid for welfare and relief and subsidy payments to farmers have lost much of their luster. The new programs to aid to cities and commuter transportation simply do not yet command majority support. And the space program support appears to be fading.

In place of these areas, the people lay heavy stress on resource and environment conservation (curbing air and water pollution), education (Federal aid and an expanded college scholarship program) and health (more Medicare and mental health clinics).

In each of the six expansion areas, the college-educated and higher income people are far more in favor of expanding Federal commitments than lower income, less well-educated people.

A year ago and in the latest Harris Survey, cross sections of the public were asked:

"In general, because of Vietnam, do you think President Johnson should reduce the size of his programs at home, such as education, poverty, and health, or do you feel these programs should not be reduced?

Great society program at home

[In percent]

	1967	1966
Don't reduce	54	72
Reduce	35	22
Not sure	11	6

The cross-section of people in 1600 homes was asked:

"Besides providing for the military security of the country, the Federal Government conducts a number of programs in many different areas. I want to run down some of these programs. For each, tell me if you think it should be expanded, kept as is, or cut back?"

(In the following table, the key to the groupings of the areas is the relationship between the number wanting to expand or cut back the program.)

Specific domestic programs

[In percent]

	Expand	Keep as is	Cut back	Not sure
Expand:				
Program to curb air pollution	50	31	9	10
Program to curb water pollution	50	35	5	10
Aid to set up mental health clinics	47	39	5	9
Federal scholarships for needy college students	47	38	9	6
Federal aid to education	45	42	10	3
Medicare for the aged	35	51	8	6
Keep as is:				
Federal housing for low-income families	25	48	19	8
The Headstart program	26	33	21	23
Federal aid in highway building	22	51	19	8
The war on poverty	23	37	31	9
Cut back:				
Aid for welfare and relief payments	16	46	31	7
Aid to cities	15	43	26	16
Aid to care for adequate commuter trains	14	24	29	33
The space program	13	38	42	7
Subsidy paymentsf or farmers	12	34	37	17

ABATEMENT AND ENFORCEMENT BY THE STATES

Mr. FLOOD. The average citizen believes that there are some, if not adequate, at least reasonably good State laws on the books of the several States regarding this subject. There have been for some time, but they are not enforced for political reasons, reasons of corporate influence, or whatever those reasons might be.

Are you aware of this state of mind of the average citizen? He is aware now of the problem. Maybe he is aware that you are getting into the act, which is good. But he is absolutely convinced that the several States could have done a great deal about this in years past and could do it today but they are not enforcing their own State laws for various unfortunate reasons.

Dr. MIDDLETON. You recognize a very significant part of our budget is directed toward trying to give the backbone and financial support to the State and local governments so that they can proceed with effective control actions. Many States lack appropriate legislation, apart from the fact of lacking an attitude toward trying to do something about air pollution control. Part of our total activity is to try and develop the fact that there is a need to give impetus to State and local efforts in this regard.

PHS ASSISTANCE TO STATES AND LOCALITIES FOR ABATEMENT AND ENFORCEMENT ACTIVITIES

Mr. FLOOD. What is the procedure under the law to give such aid, first, to the State and, next, to the local community for abatement and enforcement? What is the procedure?

Dr. MIDDLETON. Through the grants program we have had the opportunity, in conjunction with our technical assistance group, of meeting with local people, municipalities, counties, and discussing with them the air pollution problem.

Mr. FLOOD. Have you been invited in or do you solicit invitations?

Dr. MIDDLETON. We are sometimes invited in. Very often the regional program director, a part of our total directorate, knows of

local interests in municipalities and counties and advises us of them. They will invite our staff members to meet with interested citizens' groups as well as government agencies for the purpose of establishing program grants aimed at air pollution control.

Mr. FLOOD. Are you empowered to make grants of moneys to local groups bypassing State authority?

Dr. MIDDLETON. We do not bypass State authority but rather have the petitions prepared by the agency or group wishing to have program support. This request is reviewed by the regional program directors and then is discussed with the State people for the purpose of their concurrence or endorsement.

Mr. FLOOD. What regional program directors?

Dr. MIDDLETON. The people that the Public Health Service have established in the nine regions throughout the Nation, our center people located in the regions. They are the people who go to the local and State government people.

Mr. FLOOD. You have an air pollution man in the Department of Health, Education, and Welfare regional office. Is that it?

Dr. MIDDLETON. In each of the nine regions we have at least one regional program director, and in many we have two, whose role it is to follow up on the point that you are very well making, namely, that local governments require some assistance in understanding the problem and meeting their needs through developing appropriate legislation, appropriate action programs, such that local and State money may be matched with Federal grant money and an activity be begun.

SUMMARY OF BUDGET REQUEST FOR AIR POLLUTION

Mr. FLOOD. If the proposed supplemental appropriation is included with this, the 1967 appropriation is $40,461,000. The request for 1968 is $64,185,000. That is an increase of $23,724,000.

RESERVE

If this program is as important as you have just knocked yourself out for 10 minutes to convince us it is, why in the world do you have $996,000 of the appropriation placed in reserve. How do you add those two things together?

Mr. BERSANO. This reserve has been released by the Bureau of the Budget and the funds are now available to the air pollution program.

RESEARCH GRANTS

Mr. FLOOD. It is a relatively small increase for research grants from $6,218,000 to $8,600,000. What in particular are you emphasizing in this part of your program?

Dr. MIDDLETON. Under the research grants program we are attempting to stimulate the investigator to help gather the information.

Mr. FLOOD. What investigator?

Dr. MIDDLETON. The investigator in the university, college, institute, or other such nonprofit arrangement, whereby he may carry on research that is directed toward the purposes of the National Center for Air Pollution Control, so that we may know the impacts of air pollution, the effect on public health, effect on materials, reactions of chemicals

upon life systems, which will enable us to establish criteria which become the guides to show the relationship between pollutants and effects and local and State governments may then employ these criteria as the standards of ambient air quality within their particular jurisdiction.

EXPEDITIONS TO GREENLAND AND ANTARCTIC

Mr. FLOOD. On page 195 of your justifications you say "Expeditions were made to Greenland in 1965 and to the Antarctic in 1966 to collect samples of ice."

What knowledge of any value would you gain from an expedition like that? Why didn't you just go to the refrigerator?

Dr. MIDDLETON. The basis for this excellent study by Dr. Patterson is to determine what the natural lead levels and other enumerated toxicants may be in a remote area so that we can determine the impact of the use of lead and other derived contaminants which are added to the background levels of pollutants in our urban and rural areas in the populated parts of the United States.

Some interesting discoveries were made which show that the addition of lead to gasoline, a motor vehicle fuel, has in fact added to the total lead burden of the earth; the knowledge gained with this kind of a research project is aimed at establishing a reference base such that we may decide what to do about lead as a factor affecting public health.

Mr. FLOOD. Have I seen a gasoline advertised which says it does not contain lead?

Dr. MIDDLETON. There is a gasoline company that is able to produce an aromatic fuel which meets most octane requirements without the addition of lead.

Mr. FLOOD. Aromatic?

Dr. MIDDLETON. That is a name, not for fragrance, but for a particular type of hydrocarbon constituent in fuel.

Unfortunately, most of these fuel constituents are not readily produced by petroleum manufacturers.

CONTROL PROGRAM GRANTS

Mr. FLOOD. The largest increase is $10,559,000. This would more than double the amount for control program grants and would make four times as much available as was used for this purpose in 1966. Why do you need four times as much in 1968 as you had in 1966?

Dr. MIDDLETON. I view this as an appropriately modest sum of money to further stimulate the State, county, municipal, and local governments to truly rise to the occasion which faces them and so that they may seize this opportunity to develop a proper air pollution control program, so that the pollution in their regions, in their areas, their locations, may be effectively combated by them.

Mr. FLOOD. Four times as much.

Mr. MACKENZIE. The progress which has been made under the stimulatory program grants in developing and improving State and local regulatory control programs in the air pollution field has been very encouraging to us.

Since the first appropriations were made for this purpose in 1965 an expansion of over 60 percent has occurred as measured by budget in the activities conducted by State and local governments for control of air pollution.

In spite of this increase both State and local levels of government still have a long way to go.

We estimate that totally the activities now being conducted are at a level of about 25 percent of what they should be in order for proper control of pollution to be carried on at these levels of government.

The increases that are pending before you in the 1968 budget request would, in our opinion, expand further the capability of State and local governments to the extent that they would then be operating at approximately 60 percent of what we would consider to be an appropriate and satisfactory level of activity to be conducted by them if air pollution is to be controlled in their areas of jurisdiction.

We still have a long way to go, Mr. Chairman.

Mr. FLOOD. All right.

Dr. PRINDLE. For the record, I'd like to point out that Mr. MacKenzie did head up one of those organizations, Mr. Chairman, as you so well know; namely, the old Division of Air Pollution before the reorganization.

Dr. MIDDLETON. The increase would allow a shift from 164 control programs to 275, or allow 111 more to be added.

BURNING COAL MINE WASTE PILES

Mr. FLOOD. On survey and demonstration grants you say emphasis in 1966 and 1967 has been on the problem of burning coal mine waste piles in the Appalachian area. Now you are talking of one of my really big problems. What have you accomplished in that time? Where did you accomplish it? Where do we go from here?

Dr. MIDDLETON. Fortunately the grant made in 1966 effected in your county a project jointly funded by Pennsylvania and the Federal Government for a total of $259,125. I can report that the project is 100 percent complete.

Mr. FLOOD. What does that mean?

Dr. MIDDLETON. It means they have finished their work but have not yet rendered a report of what they achieved.

Mr. FLOOD. When will they file a report?

Dr. MIDDLETON. Mr. C. D. Yaffe, in charge of this program, at my request is attempting to find out when we may expect to file a report.

Mr. FLOOD. Last night was too late. Do you know how long that bank has been burning? It's been a long time.

You talk about achievement and accomplishment. There is exhibit A. As of now it is a millstone around your neck. You have spent x dollars and the State of Pennsylvania has spent y dollars on this particular project and we still don't know the answer.

Dr. MIDDLETON. This work in part is continuing with another grant funded with 1967 funds, not in Luzerne County, which is directed toward finding ways of combating this burning system, using the talents in Pennsylvania in your Department of Mines and Minerals, so that State resources may exploit ways of putting out these coal fires.

Mr. FLOOD. Don't you know how to put them out?

Dr. MIDDLETON. I personally do not.

Mr. FLOOD. I don't mean you, personally, but you really don't know what to do about them, do you?

Dr. MIDDLETON. If I understand correctly, we don't have the technology at hand to make a specific recommendation for these fires to be controlled. It is for this purpose we are making available substantial funds for these specific State demonstrations.

Mr. FLOOD. Between the Federal Government and the State government we have spent nearly $1 million on what we call a Culm bank to find out what to do, and we are still spending more to find out what to do. This goes on and on with research and development When are we going to put out the fire? Or are you just an R. & D. man?

Dr. MIDDLETON. I am not an R. & D. man.

Mr. FLOOD. When do we go to work?

Dr. MIDDLETON. As a Californian and natural gas user I personally am not acquainted with the R. & D. development in this area.

Mr. FLOOD. This doesn't apply just to this one bank in my city but it applies to the soft coal as well. It is spread over at least 15 States.

Mr. MACKENZIE. It is a very difficult problem to deal with.

Mr. FLOOD. You have just restated the question. That is no answer.

Mr. MACKENZIE. There are many hundreds of these waste coal mine piles that have been on fire, some lasting for 25 years or more. The volume of material to be handled is in the millions of tons. In fact, in some piles individually——

Mr. FLOOD. Mine is over 8 million cubic yards. It is the biggest in the country.

Mr. MACKENZIE. The only feasible way which has been discovered of preventing fires is by appropriate resealing of these things to prevent air entrance into the material.

Mr. FLOOD. You can scrap that one now. This thing is a volcano inside, a Vesuvius.

Mr. MACKENZIE. Once they have gotten on fire nobody has up to now developed a reasonably economical method of extinguishing such a fire.

Mr. FLOOD. That is what I just said.

Mr. MACKENZIE. We are supporting currently about 10 projects that are investigating various means of economically extinguishing the fires that are the problem. The various approaches include: Physically digging the material out and putting it under water, spraying water continuously on these piles, using various materials to seal the surface and prevent air from getting into them, injecting——

Mr. FLOOD. As far as the people in the area adjacent and contiguous to the burning bank are concerned the cure is worse than the disease. The pollution resulting from many of these efforts have turned out to be worse for the short haul than the fire itself.

Mr. MACKENZIE. For the short haul, yes. This may well be.

Mr. FLOOD. It is.

Mr. MACKENZIE. Certainly this is true when one digs out the material and throws it into water with resulting large clouds of material coming out from such an operation.

Mr. FLOOD. What are you going to do? Are you going to get a wand and wave it away?

Mr. MACKENZIE. I know of no wand to take care of this. The only approach we know that may be successful, and none of us can guarantee it, is to try the various methods under test and use whatever ingenuity can be uncovered to deal with the problem and hopefully come up with a solution which can be applied in an economical manner.

Mr. FLOOD. That was ring around the rosie. That is where I came in.

Mr. MACKENZIE. I wish I had a solution for you.

Mr. FLOOD. I certainly wish so, too. It is obvious that you do not. It seems all I have to do is to hope that we live long enough to see this effectively done. That is about where we are, isn't it?

Mr. MACKENZIE. We have been soliciting whatever ideas can be obtained from individuals that are knowledgeable of this problem, including the ideas of our own staff people as well as those in official departments in the several States where this problem exists.

Mr. FLOOD. What you are saying is that we should have started this 20 years ago or 50 years ago.

Mr. MACKENZIE. We certainly would be better off now if we had.

DIRECT OPERATIONS RESEARCH

Mr. FLOOD. Under direct operations you have a big research program which you want to make bigger. It is from $12,636,000 and 500 positions to $18,300,000 and 545 positions for 1968.

We know about the general problem here but suppose you be specific and tell us why such an increase is needed. What harm would be done if you kept this to the 1967 level?

Dr. MIDDLETON. These programs involve not only direct operations research of people within the Public Health Service but importantly those outside the Public Health Service.

Mr. FLOOD. Why not keep it at the 1967 level? You are going no place in a hurry here, are you?

Dr. MIDDLETON. This is something we need desperately to mount, and mount promptly, because of the need to have the kinds of control technology that are required to slow down quickly, and effectively, the enormous quantities of motor vehicle pollutants released; and particularly the sulfur oxide pollutants.

If you will notice in the budget there is this item I mentioned earlier, the adaptation of our pilot operations leading to pilot plant operations in 1968, such that, with the collaboration of the Tennessee Valley Authority we can take the two best systems that are being evolved for sulfur oxide control and try them out on a very significant power plant of the sort TVA has available.

This pattern, then, would be one that might be applicable to other large power generation systems which in fact do produce a very significant amount of the total sulfur pollution in our country.

Mr. FLOOD. I am sure that is true; but you want 545 people. You already have 500 people and $12,636,000. Are mere bodies and dollars going to do this?

Dr. MIDDLETON. More people with ideas and the facilities and resources of other institutions on contract must be pressed into play so that we can meet the criticism that you first so well pointed out to

me—that the people see nothing happening as a result of our action program.

By mounting this kind of effort we begin to meet the dilemma that you say we are confronted with; namely, people see nothing happening to correct our serious national air pollution problem. To have something happen we have to have a greater effort, and a coordination of the several efforts, so that we can begin to curtail, slow down, cut back; so that we can begin to restore the quality of our air required for healthful living. It takes at least this kind of an effort to achieve the initial restoration of air quality. This research effort is limited by the imposed budget ceiling.

Mr. FLOOD. I can imagine some Members saying: "For $12 million you gave us nothing. Now for $6 million more you will show us what, the first act?"

Dr. MIDDLETON. For $12 million I am sure we didn't give you nothing.

Mr. FLOOD. What will you do if you get this additional $6 million?

Dr. MIDDLETON. We will begin to have the required impact through the control of motor vehicle pollution for the first time on the 1968 cars to be sold late this year. Had we not had the funds we had earlier requested we would not have been able to mount at a national level the very significant effort dedicated to control of motor vehicle exhaust.

The research funds requested will enable us to proceed with doing something about buses, trucks, and diesels. Without this additional research support we will have to stay at our present level of activity and fail to control exhausts from heavy vehicles which people identify as obnoxious.

The Secretary has established standards of motor vehicle compliance to insure that motor vehicles actually meet them and that surveillance in the States assures their continued performance. These funds are, therefore, required to protect the health and welfare from the poisonous fumes of automotive vehicles.

This is a considerable national effort and it requires significant additional funding to assure the air quality goal established by the Secretary.

ABATEMENT ACTIVITIES

Mr. FLOOD. For abatement activities you are requesting $3,804,000 and 197 positions. That is an increase of $1,877,000 and 66 positions. This is abatement. What actually has been accomplished under this activity?

Dr. MIDDLETON. At the present time we have begun nine abatement activities. The one that you are perhaps most familiar with is the one called for the New York-New Jersey interstate area in which the Secretary of Health, Education, and Welfare, at the request of the Governor of New York and the Governor of New Jersey, invoked a conference to discuss the problem. It was limited to a discussion of sulfur oxides——

Mr. FLOOD. Where was the abatement?

Dr. MIDDLETON. The abatement process involves several steps. May I ask Mr. MacKenzie to explain this?

Mr. FLOOD. First we have a conference, then a study, then a meeting, and here we go.

Dr. MIDDLETON. Because of his experience he could give you a clearer picture than I.

Mr. MACKENZIE. Without going into the details of the process, I think we can point to some actual results that are now coming about.

Mr. FLOOD. I am a lawyer. Abatement to me means only one thing, not two.

Mr. MACKENZIE. The conference there was concerned primarily with control of sulfurous pollution and carbon monoxide.

With respect to sulfur——

Mr. FLOOD. By "there" you mean New York-New Jersey.

Mr. MACKENZIE. That is right. There has already been action taken to implement recommendations that were agreed upon at this conference with respect to cutting back on emissions of sulfur in the area. Most importantly perhaps this was done by utilities. Consolidated Edison Co. in New York City——

Mr. FLOOD. Using a fuel with less than 1 percent of sulfur content, which would be anthracite.

Mr. MACKENZIE. They have announced their ability to obtain fuels which would conform with the recommendations, and to do so in one case 2 years earlier than the schedule and the other in conformity with the schedule.

Similar actions are being taken by utilities in the northern New Jersey area.

BUILT-IN COST INCREASES

Mr. FLOOD. Place in the record by activity what the so-called built-in cost increases are for 1968.

(Information follows:)

"Built-in" cost increases

Direct operations:	*Total*
Research	$319,000
Abatement	216,000
Motor vehicle pollution control	158,000
Technical services	186,000
Training	22,000
Total	901,000

Mr. FLOOD. Mr. Casey?

INDUSTRIAL POLLUTION

Mr. CASEY. Mr. Middleton, I think air pollution is something that everyone is highly conscious of now. All they need to do is to look out the window where it is present. As the chairman said they are looking now for action.

About 12 or 14 years ago I put in the first pollution control program in Houston.

The local officials get into this dilemma—how can they control pollution from plants that are furnishing the lifeblood of the economic life?

We in Houston made some progress. Some plants were very cooperative. Some of the papermills put in platinum screens which cost them considerable sums of money, and they put in an electrolysis process which takes some of the pollutants out of their smokestacks.

Some of the fertilizer plants put in dust collectors. One said the dust collector paid for itself because they found out they were losing more than what the equipment cost them. The material they salvaged they sacked up and sold. That was one idea which paid off.

Houston is flat. We have no moutains. When we get an inversion it sits right over the city. Anyone driving into town can see it. They see it because they cannot see the skyline coming in on the freeway.

Do you have any research program in conjunction with these industries to try to figure out what can be done to cure this problem? The immediate cure is to shut down the plant, of course. We cannot do that.

Do we have a program going on to assist in bringing about a cure so far as haze and smoke emitted from industrial plants are concerned?

Dr. MIDDLETON. First of all I would like to make a comment in principle if I may, and that is that there is no reason that productivity and energy development are not incompatible with good air quality.

The programs that we have conducted in concert with industry are several. One is with the automobile industry itself in which the development of improvements in engines results from their research and our research, so that the two are put together and the motor vehicles produced for sale are improved from a pollution aspect.

Other examples of joint industry studies are those performed with the American Petroleum Institute, the petroleum industry, much of it in your State of Texas, wherein the study of gasoline composition upon exhaust gas composition is studied.

Some of the prototype pilot plants being considered for the control of sulfur oxides may, in fact, yield elemental sulfur which would be a resource asset; a further example of the interest area you enunciate—namely, that dust collection for air pollution control has some economic advantages.

These examples are but a few of those in our program established for the purpose of controlling air pollution.

I could give you others if you wish them.

Mr. CASEY. Suppose at this point in the record you give any other examples that you have, specifically any work that your department actually is granting money for in the way of research, where you have cooperative effort with industry, State and local governments, and so on, concerning methods of control. That is what I am interested in.

(The requested information follows:)

PUBLIC HEALTH SERVICE COOPERATIVE ACTIVITIES IN CONTROL TECHNOLOGY RESEARCH

I. MOTOR VEHICLE EMISSIONS CONTROL RESEARCH AND DEVELOPMENT

Current research activities encompass improved methods of dealing with the problem, the development of systems or techniques for dealing with portions of the problem as yet untouched, and investigations to improve the understanding of the overall vehicular air pollution problem, in order to permit the promulgation of standards which can be met and which will adequately control the quality of our air.

The majority of the automotive programs being conducted by the National Center in its laboratories in Cincinnati are related to the extension of standards for uncontrolled emission sources and to the development of a more judicious set of standards to control exhaust hydrocarbon and carbon monoxide from the vehicles which are subject to the 1968 regulations as well as the promulgation of nitrogen oxide standards.

A. Exhaust sampling techniques and additives

The National Center is working closely with California officials to develop a passenger-car test cycle which will simulate operating parameters and exhaust emissions characteristic of passenger-type vehicles operating during peak traffic periods in Los Angeles. The State of California, following a survey of a number of commuter type routes in Los Angeles County, has established a test course which can be used routinely for examining commuter-type driving. The Public Health Service, working with the State of California, has conducted extensive tests during vehicle operation on this test course and has developed exhaust emission data and vehicle operating patterns which have been transferred to Cincinnati for further examination and test cycle development.

The National Center, through a contract with a private laboratory, is examining closely the operation of commercial vehicles in metropolitan areas. This program is one of a series of studies which initially delineated truck operating patterns in Detroit, Los Angeles, and San Francisco.

The Center also is increasingly concerned with additives being utilized in motor vehicle fuels. This includes barium used in diesel fuel for smoke elimination, the variety of additives in gasoline that serve as purges for the end products from the combustion of tetraethyl and tetramethyl lead, and the variety of gum, sludge, and varnish solvents. The Public Health Service is contemplating detailed research in this field, to be conducted by appropriate staff elements and under contract to qualified organizations.

B. Engines

Attention is being given to the probable influence of certain internal combustion engines of less conventional design on exhaust emissions. Among these are several spark ignition piston engines embodying the "stratified charge" principle, in which the fuel is injected by pressure atomization directly into the combustion chamber in a manner such that the local fuel-to-air ratio in the vicinity of the spark plug is always within the ignitable range while the overall fuel-air ratio may be quite lean. By this means, the need for throttling the air flow in order to control overall fuel-air ratio is obviated and power output is controlled by varying fuel flow alone, as with diesel engines.

One such engine whose development is being followed by the National Center uses the "Texaco Combustion Process," in which fuel is injected tangentially into swirling combustion chamber air which carries it past the spark plug where ignition takes place. Low exhaust emissions have been claimed for this type of engine and development of a prototype for suitable vehicle propulsion is being supported by the Army Tank Automotive Center. Arrangements have been made for National Center engineers to test this engine in order to establish its exhaust emission characteristics when it becomes available.

Another engine of this type utilizes the "Witsky" principle in which the fuel is injected across swirling combustion chamber air, where the spark plug is located. This engine too is being developed for military vehicle applications with the support of the Army Tank Automotive Center. A current National Center contract with Pennsylvania State University has the objective of determining the exhaust emission characteristics of an engine of this type.

A third stratified charge engine receiving some degree of attention is the "Meurer FM" engine, which is being evaluated in this country by Continental Aviation and Engineering Corporation. Here the fuel is injected into a spherical chamber in the piston and conducted by air circulation to the circumference of the combustion chamber, where a spark plug is located.

Another type of unconventional engine often mentioned in the technical press is the "Wankel" rotary engine, licensed in the United States to Curtiss-Wright Corporation. Preliminary evidence has shown exhaust emissions with this engine somewhat higher than conventional engines.

The Center also has followed closely the development of fuel injection systems which introduce the fuel into the intake manifold or intake valve port, rather than directly into the combustion chamber, since these are inherently much cheaper than the high pressure cylinder injection systems required by diesel engines or by the previously mentioned stratified charge engines.

C. Fuel cells

A power source which has received considerable attention in the past few years, especially in the space program, is the fuel cell. It has been estimated that over $100 million is being spent annually in fuel cell research. However, very little of this is directed at developing fuel cells specifically for vehicle propulsion.

Most of the fuel cells developed to date share common problems. Fluid hydrocarbon cells must operate at elevated temperatures—sometimes over 500 F., or at high pressures, or both, to produce electrochemically active materials. Also, noble metals, such as platinum, gold, or silver, are the only known effective catalysts. Noble metals and necessarily large surface areas of electrodes and electrolytes create many obstacles—excessive bulk, weight and cost—which the designer of a fossil-fuel cell must overcome for successful use in vehicles. In addition, a start-up time of from 15 to 30 minutes is needed for all indirect cells, requiring an auxiliary power source.

While it is conceded that practical fuel cells may be 5 to 10 years away, many companies and several government agencies are proceding with developmental work as fast as new ideas appear.

D. Electric vehicles

Electric vehicle research activity at the Army Tank Automative Command in Warren, Michigan, is predominantly concerned with vehicle drive components. They are searching for improved utilization of available power, improvements in fuel economy, improvements in traction, and other logistic considerations. Vehicles with AC and DC drive systems utilizing engine driven generators as the power supply have been under development by industry sources under contract to ATAC for several years.

Most government supported electric car research is being done under the auspices of the Military Services. Close communication and good working relationship have been established between the NCAPC and the groups supporting this research.

Since 1962, the Power Equipment Division of Lear Siegler, Inc., Cleveland, Ohio, has developed a 2½ ton truck with an AC electric drive system with the energy supplied by a gasoline driven generator (alternator). This vehicle has successfully completed over 7,000 miles of highway and cross-country tests.

Lear Siegler is also developing a solid state frequency modulation control device. Their cycloconverter frequency changer, utilizing silicon-controlled rectifiers, appears to be a major step forward in the development of smooth, uninterrupted, efficient application of power for vehicles.

A new DC brushless motor under development for ATAC by Delco-Remy is reported to have better torque characteristics than either conventional DC or AC motors alone, being capable of delivering maximum torque throughout its entire speed range. The motor is so designed that direct current is inverted to AC within the motor, eliminating the need for the conventional DC motor commutator and brushes.

Lastly, Cornell Aeronautical Laboratory in Buffalo, New York has presented a report entitled "Elements of a Future Integrated Highway System Concept" to the Department of Commerce. The components of the system they propose are: (1) high speed passenger trucks by-passing cities; (2) special truckways skirting cities; and (3) electric vehicles which can operate either on their own power or on an urban rail system.

E. Batteries

Many organizations are looking into newer forms of cells, especially metal-air combinations. These cells are particularly attractive because of their low weight. The Army, ERDL, has contracted with General Motors-Allison to develop a rechargeable Lithium Chlorine cell for vehicle propulsion, and with Leesona Moos Laboratories to develop a rechargeable zinc-air cell for vehicle propulsion. It is generally conceded that zinc-air power sources will be useful for many classes of vehicles including delivery vans, buses, taxicabs and possibly town cars but will not replace the internal combustion engine as the primary vehicle power source.

II. SULFUR DIOXIDE EMISSIONS CONTROL RESEARCH AND DEVELOPMENT

A. Control of sulfur oxides

1. *Limestone process.*—The U.S. Public Health Service is involved in a rapidly expanding program to study the use of limestone as a means of controlling SO_2

emissions to the atmosphere. A limestone process appears feasible because of low raw material costs and low capital investment.

In January, 1966, the U.S. Public Health Service worked with Florida Power Corporation on a field study of limited dolomite injection into an operating boiler. Battelle Memorial Institute completed a $10,000 six-month contract of the chemical reaction thermodynamics. Technical conclusions of this contract indicate that limestone processes have great potential and warrant further study.

Current in-house research is being conducted cooperatively with Bituminous Coal Research on a large number of naturally occurring limestones and has been designed for minimum overlap of effort.

2. *Alkalized alumina process.*—The screening of SO_2 control methods was initiated at the U.S. Bureau of Mines in June, 1956 under an exchange of funds agreement with the U.S. Public Health Service. The Bureau of Mines has been working with alkalized alumina, an activated SO_2 sorbent containing sodium and aluminum oxides. Bench scale and small pilot scale work was completed to develop a process which could utilize alkalized alumina and a larger pilot unit (920 cfm at 628° F.) built, which is awaiting start-up pending solution of technical problems.

To bring the scale-up of the alkalized alumina process to a more rapid and logical pace, the National Center for Air Pollution Control contracted with Avco Space Systems Division to determine the optimum economic gas-solids contactor for reacting alkalized alumina with the flue gas from a large power plant. Discussions with the Central Electricity Generating Board in England indicated that the transport reactor chosen by the Bureau of Mines was probably not the best choice. Avco has also been concerned with the sorption and regeneration kinetics of alkalized alumina necessary for reactor modeling.

The economic success or failure of the alkalized alumina SO_2 control process hinges closely on maximizing sorptivity, regenerability, attrition resistance and resistance to activity loss of the sorbent. A little work had been done by the Bureau of Mines on these critical areas: the Davison Division of W. R. Grace and Company has been chosen as a contractor by the NCAPC to do intensive studies to optimize the above mentioned critical properties. Two-hundred fifty-thousand dollars will be spent on the nine-month project, which includes three phases: life testing, physical development, and chemical development.

B. Desulfurization of residual fuel oil

Technology is now available for removal of sulfur from high sulfur residual fuels which are burned in power plants. Available methods are partially destructive in that they upgrade portions of the treated residual fuel to more valuable products such as distillate fuels and gasoline. Because of this, the actual cost of desulfurization in a typical refinery is difficult to predict. Because of the need to better understand the relationship between refinery process options and cost of desulfurization of fuels, the Public Health Service contracted with Bechtel to do process optimization studies which predicted costs of desulfurization in domestic refineries. Because of the usefulnes of these data a follow-up study was planned for "crudes" being processed in the Carribean areas. Because of the great interest in this study in the petroleum industry, the American Petroleum Institute volunteered to fund the contract and made the results available to the Public Health Service. We accepted this invitation and are now participating in a joint review of the first results.

C. Pyritic sulfur

1. *Retrieval of pyrite from coal.*—Since the pyritic sulfur fraction of coal is potentially removable by physical methods, this program was initiated to determine the feasibility of this type of desulfurization and the potential degree of sulfur reduction that might be obtained.

In 1965, a contract ($28,000) was negotiated with the Paul Weir Company of Chicago to determine commercial and potential methods of removing the pyritic sulfur, the economics and feasibility of recovering the rejected pyritic material, and its conversion into acid, heat and a useable ash. This study clearly demonstrated that there were insufficient data available to make a firm evaluation of the above factors.

To obtain this needed information, the following contracts have been or are being negotiated:

a. Bureau of Mines: A study which calls for obtaining raw coal samples from high sulfur mines that are major suppliers to the power generating

industry; for evaluation of types and levels of sulfur, and the potential for pyritic sulfur separation by float-sink testing.

b. Illinois Geological Survey: A contract for $30,000 has been negotiated as a cooperative effort for the study of the major coal beds in Illinois.

c. Bituminous Coal Research, Inc.: A cooperative effort with Commercial Testing and Engineering Company of Chicago on the development of a potential process that would be capable of removing pyritic sulfur at the power generating station. BCR is also interested in a cooperative effort to establish a coal cleaning pilot plant for the evaluation of wet processes for the separation of pyrite from coal and the applicability of these processes to various coals.

d. Research grant to Dr. Glushoter of the University of Illinois with the Illinois Geological Survey for $75,346 for the study of mineral matter in coal. This study is based on a low temperature oxidation method that does not cause a chemical change in the mineral matter.

e. Research grant to Barringer Research Limited of Canada for $15,300 to determine the applicability of their radio frequency adsorption method to the determination of sulfur levels and types in coal.

2. *Utilization of a pyrite/coal mixture.*—The effectiveness of presently available equipment for cleaning coal is limited by its inability to separate pyrite without rejecting excessive amounts of the coal. In order to eliminate this economic barrier to removing more pyrite, the Public Health Service is developing a process which would utilize the coal and pyrite rejected by coal cleaning processes to produce recoverable heat, sulfuric acid and iron values. The NCAPC has contracts with Bechtel Corporation, Dorr-Oliver, Stanford Research Institute, Arthur D. Little, Inc., Commercial Testing Company, and the Illinois Geological Survey. In addition we are cooperating closely with Bituminous Coal Research, the Ohio Geological Survey, the West Virginia Coal Research Board and over thirty coal producers in this work. This program is expected to make low sulfur fuels available in areas where air pollution is most critical.

III. REFUSE DISPOSAL

A. Municipal incinerators

As part of an overall program to determine how operating variables could be manipulated to minimize air pollutant emissions from incinerators, field tests on two municipal incinerators were made to verify findings that were derived from a 2-ton/day experimental incinerator at the National Center for Air Pollution Control Laboratories. One test series was run on a 50-ton/day multiple chamber incinerator in Winchester, Kentucky. Another test series was made on a 250-ton/day incinerator at the New York City South Shore Incinerator Plant. Complete data and conclusions with regard to the best set of operating conditions to minimize pollutants were furnished to both cities.

The City of Chicago received from the U.S. Public Health Service a demonstration grant of $89,000 in the Fall of 1966 for the purpose of studying flue fed incinerator control devices.

The objective of the study is threefold: first, to obtain reliable capital and operating cost figures on the various types of control equipment on flue fed incinerators; second, to check efficiencies of various types of control equipment in flue fed incinerators; and third, to report on the "cost-efficiency" of various flue fed incinerator air pollution control devices as tested over a period of one year.

Basically, three devices will be evaluated: (1) DeSeversky Hydro-Precipitrol manufactured by Electronatom Corp., (2) Peabody scrubber manufactured by Peabody Engineering Corp., and (3) Leckenby self inducted spray type scrubber, manufactured by the Leckenby Co. These three devices are felt to represent a range of efficiencies, initial cost, and complexity which will be indicative of the overall economics of various degrees of control. The National Center for Air Pollution Control's role in this project is that of supplying funds and technical consulting services such as sampling techniques, design data, etc. to the City of Chicago.

B. Apartment house incinerators

A project was established in July 1966 by the Public Health Service to determine the air pollution aspects of direct-fed multiple chamber and flue fed incinerators with capacities of less than 2000 pounds per hour refuse. The ob-

jectives of the study have been to provide reliable information on the type and quantity of emissions, incinerator design and operating parameters, and performance of commonly employed control systems.

Comprehensive field testing of 30 different types and sizes of incinerators is being conducted under contract by private consultants funded by the Public Health Service. In-House testing of 15 incinerators is being conducted by six Public Health Service engineers and technicians. Local air pollution control agencies in seven metropolitan areas have cooperated in providing emission data or in locating incinerators suitable for testing and making arrangements for stack testing. The local agencies in turn receive copies of test data for incinerators tested in their areas of jurisdiction.

When field testing is completed, the data will be used to prepare "Guides to Good Practice" for direct-fed multiple chamber and flue fed incinerators used in both Federal and private facilities. The project should be completed by November 1967 at an estimated cost of $150,000.

The National Center for Air Pollution Control contributed extensively to a report on apartment house incinerators as part of a Special Advisory Committee to the Building Research Advisory Board of the National Academy of Science. Emphasis was placed on performance requirements and evaluative procedures for apartment house incinerators consistent with reducing air pollution to a minimum and adaption of existing or development of new incinerator designs which will meet the designated performance requirements.

C. Industrial incinerators

In conjunction with the University of California, the U.S. Public Health Service designed a special tower for monitoring the burning of agricultural wastes from orchards, grain fields, and range lands, and developed sampling techniques for determining emission data from the open burning tests.

In an effort to reduce smoke and cinders discharged to the atmosphere from tepee type wood waste burners, Oregon State College conducted a study of burning practices and the emissions resulting from these incinerators. The U. S. Public Health Service cooperated in the study and awarded a grant to support the project.

Since E.I. duPont de Nemours & Company introduced the open-pit incinerator method for the disposal of high BTU, low ash wastes, many inquiries have been made to the U. S. Public Health Service as to the suitability of the incinerator for the disposal of many types of waste products. Specifically inquiries have been received recently from the U. S. Army Corps of Engineers and Malcom Pirnie Engineers regarding harbor debris disposal, Peter F. Loftus Corp. regarding coke-oven by product wastes, State of Illinois regarding cellulose trade wastes, explosives wastes, and oil refining wastes and from the U. S. Army Environmental Hygiene Agency.

D. Scrubbers for incinerators

The Public Health Service is engaged in an applied scrubber research program to improve the effectiveness of scrubbers for the control of incinerator emissions. The U. S. Public Health Service is cooperating with the Industrial Gas Cleaning Institutes Technical Advisory Committee which is functioning as technical consultants to this program.

The I.G.C.I. Technical Advisory Committee was consulted in the preparation of the current test program and test equipment design.

IV. ATMOSPHERIC EMISSIONS FROM SELECTED CHEMICAL MANUFACTURING PROCESSES

A. Cooperative studies

1. *Manufacturing Chemists' Association.*—A cooperative program was established on October 29, 1962 between the Manufacturing Chemists' Association and the Public Health Service to study emissions from selected chemical manufacturing processes and publish information about them in a form helpful to air pollution control and planning agencies and to chemical industry management. The objectives of the studies have been to determine (1) the range of concentrations of specific emissions to the atmosphere, (2) process operating factors effecting emissions, and (3) performance of abatement equipment normally employed. Detailed reports accomplishing these objectives have been published on atmospheric emissions from nitric acid and sulfuric acid manufacturing processes.

Field Studies have been completed for similar reports on phosphoric acid manufacture by the thermal and the wet process. Other studies in progress

include chlorine and caustic, hydrochloric acid, and phosphate fertilizer manufacturing processes. All of these studies should be completed and reports published by December 1967.

The Manufacturing Chemists' Association and the Public Health Service have each contributed the part-time services of six engineers as investigators for the studies and principal authors for the reports. The major portion of the emission and operating data were supplied from the files of industrial plants. The services of the Public Health Service stack testing team, however, have resulted in detailed emission data that are often not available from the files of industrial plants. The contribution of the Public Health Service to date has cost approximately $65,000 in personnel and source sampling equipment.

2. *Bronze Ingot Institute.*—A cooperative project was recently initiated between the Brass and Bronze Ingot Institute and the Public Health Service to conduct a study of atmospheric emissions from brass and bronze refining plants. The industry trade association requested the Public Health Service to assist them in studying the air pollution problems of their industry.

The report of the study will provide information on (1) types and concentrations of atmospheric emissions, (2) process operating factors which effect emissions and (3) performance of normally employed abatement equipment used in controlling emissions. The published information will be of assistance to technical representatives of the 60 operating plants and to state and local air pollution control agencies that are responsible for enforcing emission regulations. Copies of the report should be available by December 1967.

3. *National Council for Stream Improvement.*—In response to a request from the Executive Secretary of the National Council for Stream Improvement, a cooperative project has recently been initiated with the Public Health Service to conduct a study of atmospheric emissions from pulp and paper manufacturing plants.

A report will be prepared to provide information on processes and equipment involved, the nature and range of atmospheric emissions from various operations, and the performance and operation of commonly employed abatement systems used in controlling emissions. The published information will be of assistance to technical representatives of pulp and paper plants and to state and local air pollution control agencies that are responsible for enforcing emission regulations.

B. Petroleum refineries

The Joint District, Federal and State Project for the Evaluation of Refinery Emissions was activated in September, 1955. The participating agencies were: Los Angeles County Air Pollution Control District, Community Air Pollution Program, State of California; Western Oil and Gas Association, Air Pollution Control Committee, representing the petroleum industry and the U.S. Public Health Service. The committee established as its overall objectives the determination of the quantity and nature of contaminants being emitted as a consequence of petroleum refining operations. The program to obtain these objectives included: a study of all refinery operations with respect to equipment, products, operating conditions, and points of possible emission to the atmosphere, development of analytical and sampling methods, field testing and evaluations of test results.

C. Glass making

The Anchor Hocking Glass Corporation's increased interest in air pollution resulted in personnel from their Development Center in Lancaster, Ohio visiting the National Center for Air Pollution Control to discuss both stack and ambient air sampling for pollutants. At this time, tentative agreement was reached on a joint Anchor Hocking Glass Corp-Public Health Service study on atmospheric emissions from glass making. Permission was received to go ahead with the joint study. A NCAPC sampling team obtained stack samples of the effluents from end-fired and side-fired melt tanks.

D. Cotton ginning

In response to requests from various state and local air pollution control agencies located in the south and southwest sections of the United States, the Public Health Service and the Department of Agriculture sponsored a symposium on "Control and Disposal of Cotton Ginning Wastes" which was held in Dallas, Texas on May 3 and 4, 1966. Only one other similar symposium had been held in 1955.

Assistance in organizing and in participation in the symposium was provided by representatives of cotton ginning associations, state and local air pollution control agencies, and manufacturers and operators of abatement equipment for cotton gins. The published proceedings of the symposium provided needed information on (1) cotton ginning processes and practices, (2) effective methods and equipment for trash and lint collection and trash disposal, and (3) areas of needed research and further investigation.

E. Alfalfa dehydration

The U.S. Public Health was requested by the Kansas State Board of Health to conduct a study of air pollution arising from alfalfa dehydrating mills.

The planning for this study was done by a committee composed of resperesentatives from: American Dehydrators Association, Nebraska Dept. of Health, Colorado Dept. of Public Health, South Dakota State Dept. of Health, Kansas State Board of Health, U.S. Dept. Agriculture, and the U.S. Public Health Service. Emphasis was placed on the dust problem. Information was gathered to determine the effectiveness of control equipment already in use, as well as the nature and amount of dust being discharged by uncontrolled stages of the dehydrating operation.

V. PARTICULATE EMISSIONS

A. Cooperation with the Air Pollution Control Association

Working cooperatively with the Air Pollution Control Association Technical Committee, the Public Health Service has been active in the generation of research ideas for extension of the state-of-the-art in both the areas of particulate and gaseous control.

B. Sampling and measurement of particulates

1. *Particle size analysis.*—The Public Health Service has engaged in providing assistance to organizations such as the West Virginia Pulp and Paper Comany, Government of Western Australia, and the City of Cincinnati in the selection of a standard calibration dust and the development of standard methods for particle size analyses as well as conducting comparisons of various particle size analytical methods.

2. *Standard calibration dust.*—At the request of the American Society of Mechanical Engineers Power Test Code 28 Committee, the U.S. Public Health Service developed a standard calibration dust of limestone whiting for the Bahco Microparticle size analyzer. Material has received national acceptance by equipment manufacturers as a standard material for particle size instrument calibration and as an inexpensive material which is readily available in large quantities for efficiency determinations of particular collection equipment.

C. Fabric filters

Because of the need to understand how cloth construction affects the suitability of fabrics for use in the cloth filters used for control of particulates from industrial operations, we participated in a fabric testing program which was coperative with J. P. Stevens, Inc. and Hess-Goldsmith. These companies, two of the foremost producers of filter fabrics, donated custom built fabrics which were tested in the unique facilities which are available in Public Health Service laboratories. The testing produced data of significant value in better understanding the filtration process.

In 1963 a cooperative study was undertaken at an operating baghouse of Southwestern Portland Cement Company at their Victorville, California cement plant. The project was supported by the U.S. Public Health Service cooperatively with the Southwestern Portland Cement Company, E. I. Dupont de Nemours, Menardi and Company, and Western Precipitation, a Division of the Joy Manufacturing Company.

The cooperative study was to provide a realistic evaluation of filter fabrics under actual operating conditions and to generate information which would be used to improve fabric endurance and performance.

Research conducted by the Public Health Service to investigate factors which affect the endurance of glass fabric filters resulted in the development of an accelerated endurance test device capable of exposing test fabric to accelerated failure under realistic filtering conditions. The Public Health Service has repeatedly functioned as consultants to organizations such as Owens Corning Fiber Glass Corporation, American Air Filter, Fuller Company, Draco Division,

E. I. Dupont and Societe du verre textile, who are seeking to develop a test method for evaluation of high temperature filter medium.

There is a need to develop better finishes in order to extend the service life of fabrics; in this connection the Public Health Service supported a contract with Arthur D. Little, Inc. under which graphite finishes were tested and shown to have some potential for prolonging the life of fabrics. After supplemental tests in unique facilities within the Public Health Service these results were confirmed and methods for evaluation in the field were developed.

Field investigations to evaluate the application of fabric filters to the control of fly ash emissions from coal-fired power plants have been carried out over the past year. This work is being done at a pilot filterhouse constructed and operated by the Air Preheater Company, Inc., as a cooperative research program with the Air Preheater and the Mercer generating station of the Public Service Electric and Gas Company of New Jersey. This program is designed to employ technology and concepts developed in the laboratories of the U.S. Public Health Service to evaluate the use of fabric filter in the control of power plant fly ash.

The U.S. Public Health Service and the Bureau of Mines conducted a joint study funded by P.H.S. of the emissions from large coal-fired power plants. The overall study included a comprehensive evaluation of the effects of method of operation, type of boiler furnace and auxiliaries, and the type of coal on concentrations of gaseous and particulate pollutants in the products of combustion.

D. Small oil-burning units

A project was established in July 1966 by the Public Health Service to determine the air pollution aspects of domestic and commercial oil-burning units. The initial phase of the study has been to determine the effect of various types of oil-burning equipment and burner operation and maintenance practices on smoke emissions. The field testing for this phase has been conducted by commercial oil burner dealers through contractual arrangements funded by the Public Health Service. The National Fuel Oil Institute (NFOI) has cooperated in the project by locating oil-burning units suitable for testing and by suggesting qualified oil burner dealers to conduct the field tests.

The second phase of the study will require more sophisticated sampling and analytical procedures to define significant emissions from the major types of oil burners operating at various fuel-air ratios; oil temperatures and oil-burning rates. Testing of these units will be conducted by private consulting firms funded by the Public Health Service. When completed, the information will be used to prepare a "Guide to Good Practice" for the operation and maintenance of domestic and commercial oil-burning units used in both Federal and private facilities. The project should be completed by December 1967.

E. Smoke observers' training unit

Beginning in 1963 by consultation with the air pollution control agencies of Los Angeles County and the San Francisco Bay Area, a portable smoke observers' training unit was designed and constructed. The City of Chicago Air Pollution Control Department leased the unit in late 1963 and has continued to use it to train and qualify smoke inspectors. Modifications were made to the Public Health Service machine based upon operating experience in Chicago; and, design specifications and detailed construction drawings for a portable smoke observers' training unit were prepared by the Public Health Service and made available to 33 interested Air Pollution Control Agencies in 1964.

Interest in the use of visual observation as a practical and inexpensive control method has been aroused by this project. This has resulted in a commercial smoke observers' training unit being offered for sale which is an outgrowth of the Public Health Service design. The commercial unit is compact, portable and available at a cost within the financial reach of many air pollution control agencies. The total cost of this project to date has been $10,000.

Mr. CASEY. I believe that is all, Mr. Chairman.

Mr. FLOOD. Thank you, Doctor.

JUSTIFICATION MATERIAL

Air Pollution

Amounts available for obligation

	1967	1968
Appropriation	$35,561,000	$64,185,000
Proposed program supplemental	4,900,000	
Total	40,461,000	64,185,000

Obligations by activity

	1967 estimate		1968 estimate		Increase (+) or decrease (−)	
	Positions	Amount	Positions	Amount	Positions	Amount
Grants		$20,386,000		$34,018,000		$+13,632,000
Research		6,218,000		8,600,000		+2,382,000
Fellowships		468,000		468,000		
Training		2,000,000		2,691,000		+691,000
Control programs		9,700,000		20,259,000		+10,559,000
Survey and demonstration		2,000,000		2,000,000		
Direct operations	888	19,079,000	1,116	30,167,000	+228	+11,088,000
Research	500	12,636,000	545	18,300,000	+45	+5,664,000
Abatement activities	131	1,927,000	197	3,804,000	+66	+1,877,000
Motor vehicle pollution control	48	1,233,000	73	1,445,000	+25	+212,000
Technical services	158	2,598,000	220	5,208,000	+62	+2,610,000
Training	51	685,000	81	1,410,000	+30	+725,000
Total obligations	888	39,465,000	1,116	64,185,000	+228	+24,720,000
Unobligated balance, reserve		996,000				−996,000
Total obligations and balance	888	40,461,000	1,116	64,185,000	+228	+23,724,000

Obligations by activity

		1967 estimate	1968 estimate	Increase or decrease
	Total number of permanent positions	888	1,116	+228
	Full-time equivalent of all other positions	37	47	+10
	Average number of all employees	756	1,033	+277
11	Personnel compensation:			
	Permanent positions	$6,620,000	$9,001,000	+$2,381,000
	Positions other than permanent	176,000	235,000	+59,000
	Other personnel compensation	35,000	50,000	+15,000
	Total personnel compensation	6,831,000	9,286,000	+2,455,000
12	Personnel benefits	713,000	953,000	+240,000
21	Travel and transportation of persons	845,000	1,310,000	+465,000
22	Transportation of things	288,000	545,000	+257,000
23	Rent, communications, and utilities	511,000	773,000	+262,000
24	Printing and reproduction	273,000	333,000	+60,000
25	Other services	842,000	992,000	+150,000
	Project contracts	4,202,000	9,949,000	+5,747,000
	Services of other agencies	1,820,000	2,000,000	+180,000
	Payment to:			
	Public Health Service management fund	433,000	582,000	+149,000
	National Institutes of Health management fund	74,000	97,000	+23,000
26	Supplies and materials	642,000	773,000	+131,000
31	Equipment	1,539,000	2,323,000	+784,000
32	Lands and structures	66,000	251,000	+185,000
41	Grants, subsidies, and contributions	20,386,000	34,018,000	+13,632,000
	Total obligations by object	39,465,000	64,185,000	+24,720,000

Summary of changes

1967 enacted appropriation	$35,561,000
Proposed program supplemental	4,900,000
Unobligated balance, reserve	−996,000
1967 total estimated obligations	39,465,000
1968 estimated obligations	64,185,000
Total change	+24,720,000

	Base		Changes from base	
	Positions	Amount	Positions	Amount
Increases:				
A. Built-in:				
1. Annualization of 166 new positions authorized in 1967				$594,000
2. Annualization of 41 new positions requested in proposed supplemental				307,000
B. Program:				
1. Research grants		$6,218,000		2,382,000
2. Training grants		2,000,000		691,000
3. Control program grants		9,700,000		10,559,000
4. Expansion of research	500	12,636,000	45	5,312,000
5. Expansion of abatement activities	131	1,927,000	66	1,661,000
6. Expansion of motor vehicle pollution control	48	1,233,000	25	66,000
7. Expansion of technical services	158	2,598,000	62	2,411,000
8. Expansion of training	51	685,000	30	698,000
9. Increase in pro rata share of the Public Health Service management fund		433,000		149,000
Total program increases			228	23,929,000
Decreases:				
A. Nonrecurring requirements for equipment				−85,000
B. 1 less day of pay (261 days in 1967; 260 days in 1968)				−25,000
Total decreases				−110,000
Total net change requested			+228	+24,720,000

EXPLANATION OF CHANGES

Research grants

An increase of $2,382,000 is requested for 1968 to support 134 continuing grants and 86 new awards as compared to 104 continuing grants and 67 new awards in 1967. Emphasis will be given to projects relating to the more critical gap areas in air pollution knowledge. These include oxides of sulfur pollution, control technology development, and health and economic effects data for further coverage of air quality criteria for the important pollutants.

Training grants

An increase of $691,000 is requested to fund a total of 13 additional grants to universities above the 1967 level of 33 grants. The increase will provide for additional development of graduate level teaching curricula and assistance to graduate students. Increased emphasis will be given to the manpower needs of State and local control agencies in the design of special curricula.

Control program grants

An increase of $10,559,000 is requested to fund 111 additional grants for a total of 275 grants to assist State and local air pollution control agencies in initiating, improving, and maintaining their air pollution control programs. This will be the first full year of operation of the newly authorized grants for maintenance of on-going control programs. Emphasis will continue to be given to regional program development.

Expansion of research

A net increase of $5,312,000 and 45 positions is requested. The program will emphasize three areas: (a) solution of major technical problems related to pol-

lutant emissions from automotive vehicles; (b) development and demonstration of the technical and economic feasibility of promising approaches for controlling sulfurous pollution resulting from fossil fuel combustion; and (c) further development of air quality criteria to assist in the regulatory control of air pollution.

Expansion of abatement activities

A net increase of $1,661,000 and 66 positions is requested for acceleration of all abatement activities. In 1968 it is estimated that nineteen abatement consultations and conferences will be held and related field investigations will be conducted toward a goal of complete coverage of all 72 urban interstate problem areas. This activity also provides for implementing the Executive Order. and ensuing regulations, relating to control of air pollution from Federal facilities. Consultative and liaison services to Federal agencies are provided.

Expansion of motor vehicle pollution control

A net increase of $66,000 and 25 positions is requested for acceleration of and improvement in the testing of automotive vehicles, and for related phases of this regulatory activity. The testing is required to insure conformance with the Federal regulations published March 30, 1966.

Expansion of technical services

A net increase of $2,411,000 and 62 positions is requested to provide additional technical support and guidance to States and communities as they establish their control programs; to develop technical manuals and guides for the management of air pollution control programs; to develop codes of good air pollution control practice; to support review and approval of expanded grant programs; and to expand the Technical Information Center.

Expansion of training

A net increase of $698,000 and 30 positions is requested to provide for approximately two additional technical courses at Cincinnati and eight other field courses.

AUTHORIZING LEGISLATION

Public Law 88-206, as amended:

SEC. 103. (a) The Secretary shall establish a national research and development program for the prevention and control of air pollution and as part of such program shall—

(1) conduct, and promote the coordination and acceleration of, research, investigations, experiments, training, demonstrations, surveys, and studies relating to the causes, effects, extent, prevention, and control of air pollution;

* * * * * * *

(b) In carrying out the provisions of the preceding subsection the Secretary is authorized to—

* * * * * * *

(3) make grants to air pollution control agencies, to other public or nonprofit private agencies, institutions, and organizations, and to individuals, for purposes stated in subsection (a) (1) of this section;

* * * * * * *

SEC. 104. (a) The Secretary is authorized to make grants to air pollution control agencies in an amount up to two-thirds of the cost of developing, establishing, or improving, and grants to such agencies in an amount up to one-half of the cost of maintaining, programs for the prevention and control of air pollution: *Provided*, That the Secretary is authorized to make grants to intermunicipal or interstate air pollution control agencies . . . in an amount up to three-fourths of the cost of developing, establishing, or improving, and up to three-fifths of the cost of maintaining, regional air pollution control programs. * * *

* * * * * * *

SEC. 306. There are hereby authorized to be appropriated to carry out this Act, $46,000,000 for the fiscal year ending June 30, 1967, $66,000,000 for the fiscal year ending June 30, 1968, and $74,000,000 for the fiscal year ending June 30, 1969.

INTRODUCTION

The air pollution program proposed for 1968, the first full year of activity under the Clean Air Amendments of 1966, represents an important segment of a

coordinated, long-range plan to restore the vital air resource of this country to a desirable quality and to prevent future contamination. A supplemental budget request for 1967 is proposed for separate transmittal to implement the provisions of the 1966 amendments to the act. This overall plan falls broadly into two major areas of activity: (a) the solution of critical technical problems through research and (b) the application of air pollution prevention and control technology to obtain and maintain air quality necessary to protect human health and welfare. This will be done through promoting and assisting the development of a viable structure of State and local air pollution control enforcement machinery and by increasingly accelerated direct Federal enforcement programs. More detailed long-range goals are provided below as they relate to specific program elements proposed for 1968.

	1967 estimate		1968 estimate		Increase or decrease	
	Number	Amount	Number	Amount	Number	Amount
Grants:						
Research		$6,218,000		$8,600,000		+$2,382,000
Fellowships		468,000		468,000		
Training		2,000,000		2,691,000		+691,000
Control programs		9,700,000		20,259,000		+10,559,000
Survey and demonstration		2,000,000		2,000,000		
Total, grants		20,386,000		34,018,000		+13,632,000
Research grants:						
1. Noncompeting continuations	104	3,474,000	134	5,116,000	+30	+1,642,000
2. New grants	67	2,544,000	86	3,284,000	+19	+740,000
3. Supplementals	(13)	200,000	(13)	200,000		
Total	171	6,218,000	220	8,600,000	+49	+2,382,000

The research grant program is an important tool which makes use of the scientific expertise and imagination of investigators in universities, and other nonprofit research institutions, for the attainment of air pollution research goals. Awareness of the challenging technical problems requiring resolution and the increased national interest in abating air pollution problems are resulting in a continued increase in the rate of applications for research grant support. The research proposals submitted by investigators are reviewed by advisory panels of non-Federal experts and grant awards are made on the basis of their recommendations.

Emphasis in 1968 will be placed on areas of special research needs associated with the resolution of critical technical air pollution problems. These areas include the several aspects of air pollution from the oxides of sulfur and clinical and epidemiological data needed for air quality criteria. In addition, research grants will include nearly all other aspects of air pollution problems ranging from the analysis of pollutants, pollutant behavior in the atmosphere, sources of pollutants, their biological effects, economic impact of pollution, and improvement in means for control.

Several examples of research grant projects which are now in process are the following: Dr. Clair Patterson of the California Institute of Technology is carrying out the project "Measurement of Common Lead in the Earth's Hydrosphere." Expeditions were made to Greenland in 1965 and to the Antarctic in 1966 to collect samples of ice. The ages of the ice varied from 4000 B.C. to the present. Analyses of the ice samples are being conducted for the following elements: lead, chlorine, sulfur, sodium, potassium, silicon, vanadium, calcium, magnesium, and aluminum. It is expected that this study will give quantitative data on the global increase in lead pollution as a result of the use of leaded gasoline and industrial activity.

Dr. Harold J. Gluskoter, University of Illinois, Urbana, Illinois, in his study, "Mineral Matter in Coal," is investigating the mineral matter in coal, principally the sulfide and clay minerals. This study is especially applicable to air pollution since these mineral groups comprise the major contributors to both sulfur dioxide and fine-grained, respirable, particulate matter emitted into the atmosphere during the burning of coal. A knowledge of the origin, distribution, and character of pyrite in coal is invaluable in making informed decisions concerning

choice of coals for individual installations and possible sulfur removal from coal.

Dr. Robert E. Snell, Children's Convalescent Hospital, Washington, D.C., in his study, "Atmospheric Pollution and Respiratory Disease," is obtaining quantitative information on the hazards of atmospheric contaminants on the health of asthmatic children, using a completely controlled atmospheric chamber called a "Climatron." It is expected that this study will contribute to an understanding of the pathophysiology of asthma and define the relationships between atmospheric pollutants and that disease.

The $8,600,000 requested for 1968 is to fund 86 new grants to institutions and individuals, and to support 134 noncompeting continuations. There will be continued emphasis in 1968, through the review and approval process, on concentrating new research projects in the high priority research areas associated with the need to resolve technical problems which hinder practical control of air pollution.

Fellowships

1967 estimate:	
Number	71
Amount	$468,000
1968 estimate:	
Number	71
Amount	$468,000
Increase or decrease:	
Number	----------
Amount	----------

The shortage of technically trained air pollution personnel is especially serious in view of increased activity in research, teaching, and control activity by public agencies and by industry. The fellowship program, in providing financial assistance to individuals for full-time, graduate-level training, is one of the important program components aimed at alleviating this shortage and permitting the general acceleration of air pollution activity to move ahead as rapidly as possible.

This support has developed highly trained individuals who are now serving in important air pollution capacities. Two of these are Dr. Sigmund Jaffe, Professor of Chemistry, California State College at Los Angeles, and Dr. Valentine Vitols, Assistant Professor, Department of Industrial Health, University of Michigan.

The 1968 request of $468,000, the same level of support as is provided in 1967, will provide graduate-level training to 71 individuals to prepare them for careers in areas of air pollution research, teaching, and control.

Training grants

	1967 estimate		1968 estimate		Increase or decrease	
	Number	Amount	Number	Amount	Number	Amount
Continuations	20	$1,409,000	33	$2,100,000	+13	+$691,000
New projects	13	591,000	13	591,000	----------	----------
Total	33	2,000,000	46	2,691,000	+13	+691,000

There is continued evidence of obstacles to development of air pollution activity by public agencies, industry, and universities because of the manpower factor. The shortage problem is being attacked through several approaches, including the fellowship activity, the provision of short-term training directly by the Public Health Service, and the training grants activity. This activity is aimed at assisting in the development of a university-based training structure to help provide the additional trained manpower needed for expanding research activity, for State and local regulatory control programs, and for industrial control programs. Training grant awards are made to universities to assist primarily in the development of graduate-level teaching curricula and to provide assistance to graduate students. The curricula development activity includes support for faculty and specialized teaching aids.

A special innovation in the program designed to meet currently emerging manpower problems was the development of a curriculum for air pollution control administrators at the University of Southern California in 1966 and, in 1967, a curriculum for administrators and technicians under the guidance of Dr. Seymour Calvert of the Air Environment Center, Pennsylvania State University. Under this latter grant-supported activity, air pollution administrators attend a ten-week course covering the engineering, physical science, biomedical, economic, and political aspects of air pollution. The technicians attend an intensive seven-week program in instrumentation, theory, operation, and repair.

The $2,691,000 requested for 1968 will fund 33 continuations and 13 new grants to universities. Approximately 266 students are expected to be trained under this program in 1968. This compares with 197 persons trained in 1967 and 147 in 1966.

Control program grants

1967 estimate:	
Number	164
Amount	$9,700,000
1968 estimate:	
Number	275
Amount	$20,259,000
Increase or decrease:	
Number	+111
Amount	+$10,559,000

In recognition of the absence of and serious deficiences in State and local regulatory control machinery and programs, and in view of the financial problems encountered in attempting to establish or improve such programs, the Congress provided, in the Clean Air Act of 1963, authorization for Federal matching grants-in-aid on a project basis to States and communities for the initiation, development, or improvement of regulatory control programs.

This grant program is a principal means, through stimulatory financial assistance, toward meeting an ultimate goal of a sound structure of effective State and local enforcement machinery which would protect the more than 100 million people living in areas with air pollution problems. Under this program, applications for grant assistance are considered on the merits of the specific project proposed. Such projects may encompass a wide variety of program activities, provided they are for the purpose of protecting and improving the quality of the air resource of the community, State, or region. Applicants must submit a "workable program" which will describe the type of program to be conducted and indicate the possession of, or the schedule for obtaining: (a) survey data as evidence of scope of program need; (b) adequate legal authority for control of air pollution; and (c) suitable personnel, equipment, facilities, and other necessary resources. For purposes of stimulating new or improved projects, Federal grant funds can be used to match only the amounts of non-Federal funds furnished in excess of the amount spent by the applicant in the year prior to inauguration of the grant-supported project. Grants to State and local air pollution control agencies are made in amounts up to two-thirds of the cost of developing, establishing, or improving the project or, in the case of regional air pollution programs, up to three-fourths of the cost of the project.

The Clean Air Act Amendments of 1966 authorize grants to State and local agencies for up to one-half of the cost of maintaining programs for the prevention and control of air pollution, and up to three-fifths of the cost for regional programs. A supplemental budget request for 1967 is proposed for separate transmittal to provide $2,700,000 for this new grant authority. These maintenance grants will provide continuing Federal participation in restoring and maintaining desirable air quality throughout the Nation. The review of the project applications for maintenance grants, as in the case of the stimulatory grants, takes into consideration the feasibility of the project in the light of resources to be made available and the nature of the air pollution problem, the necessity for the project, the estimated cost of the project, the probable accomplishments of the project, and its relationship to other elements of the "workable program" of the applicant agency.

There has been widespread interest on the part of the States and communities in this grant program since its authorization in the Clean Air Act of 1963 and the results to date are very encouraging. Despite the inability to fund all eligible applicants, the initial progress which has been made warrants optimism

for the potential of financial assistance programs. For example, budgets for State and local air pollution control programs nationally have increased by over 60 percent between October 1964 and June 1966.

The 1968 request of $20,259,000, an increase of 111 grants and $10,559,000 over 1967, will fund an estimated 275 new and continuation grants. Continued emphasis will be given to requests for assistance from regional control agencies.

Survey and demonstration grants

1967 estimate:	
Number	27
Amount	$2,000,000
1968 estimate:	
Number	24
Amount	$2,000,000
Increase or decrease:	
Number	−3
Amount	

Survey and demonstration grants are an important complement to control program grants in meeting the goal of more effective State and local enforcement machinery. They serve the purpose of assessment and definition of the air pollution problems of States and communities, as a preliminary to additional action to be taken, and they test out new techniques for control. Initial surveys for problem assessment are intended to provide a sound technical basis upon which realistic long-range regulatory control programs can be formulated and implemented with a higher potential for success.

The survey grant program represents a promising device for stimulating initial activity by agencies on a multijurisdictional or regional basis, or by planning or economic development agencies, in cases where control program grant requirements do not apply. For example, in 1966, survey grants were awarded to the Metropolitan Washington Council of Governments; the Metropolitan Planning Commission of Knoxville and Knox County, Tennessee; the Capitol Region Planning Agency, Hartford, Connecticut; the Regional Conference of Elected Officials, Philadelphia, Pennsylvania; and the City-County Office of Economic Development, Onondaga County, New York. The 1968 survey grant program will continue the stimulation of air pollution activity on the broadest front possible, with regional programs being especially important. In 1966 and 1967 emphasis in the demonstration grant program has been on the problem of burning coal mine waste piles in the Appalachian area. Ten such demonstration projects have been awarded. In 1968, depending on the progress of the projects now underway, additional applications for work in this area may be anticipated. However, it is expected that demonstration project activity in 1968 will emphasize new control techniques which are of broader significance nationally.

The $2,000,000 requested in 1968 will fund an estimated 24 new and continuation grants.

Direct operations

	1967 estimate		1968 estimate		Increase or decrease	
	Positions	Amount	Positions	Amount	Positions	Amount
Personnel compensation and benefits	888	$7,544,000	1,116	$10,239,000	+228	+$2,695,000
Other expenses		11,535,000		19,928,000		+8,393,000
Total	888	19,079,000	1,116	30,167,000	+228	+11,088,000

Summary of program

	1967 estimate		1968 estimate		Increase or decrease	
	Positions	Amount	Positions	Amount	Positions	Amount
Research	500	$12,636,000	545	$18,300,000	+45	+$5,664,000
Analysis, identification, measurement, and control of air pollution	257	8,381,000	288	13,181,000	+31	+4,800,000
Determination of the effects of air pollution:						
Medical and biological studies	141	2,656,000	148	3,096,000	+7	+440,000
Community and other field studies	102	1,599,000	109	2,023,000	+7	+424,000
Abatement activities	131	1,927,000	197	3,804,000	+66	+1,877,000
Motor vehicle pollution control	48	1,233,000	73	1,445,000	+25	+212,000
Technical services	158	2,598,000	220	5,208,000	+62	+2,610,000
Training	51	685,000	81	1,410,000	+30	+725,000
Total	888	19,079,000	1,116	30,167,000	+228	+11,088,000

Research

The overall air pollution research program includes the program of grant-supported projects in universities noted previously and directed research carried out by Public Health Service staff and by contract. The directed research includes activities in the physical and engineering sciences, and in the clinical, biological, and epidemiological areas. The 1968 program will emphasize: (1) solution of major technical problems related to pollutant emissions from automotive vehicles; (2) development and demonstration of the technical and economic feasibility of various approaches for controlling sulfurous air pollution resulting from fossil fuel combustion; and (3) development of air quality criteria to assist in the regulatory control of air pollutant emissions.

(1) Analysis, identification, measurement, and control of air pollution

1967 estimate	$8,381,000
1968 estimate	13,181,000
Increase or decrease	+4,800,000

This activity includes the engineering, chemical, meteorological, and related physical science aspects of air pollution research. In addition to work conducted directly by the Public Health Service, the program will continue to use, through contracts, the best available technical resources of universities, Federal agencies, and other organizations.

The major portions of the increase in this activity are for the following study areas:

(a) *Automotive emissions research.*—The contribution of automotive emissions to air pollution remains a serious and increasing phenomenon. The number of motor vehicles is increasing at the rate of about 5 percent a year. Concurrently, the quantity of emissions contributed by vehicle exhausts, crankcases, carburetors, and fuel tanks grows with the expanding number and use of vehicles. The implementation of the Federal motor vehicle emission regulatory program for 1968 model vehicles will be an important step toward reversing the deterioration of the atmosphere resulting from pollution by vehicle emissions. However, the initial steps now being taken to reduce vehicle emissions will not provide a permanent solution to the problem. There is need to broaden the regulatory coverage to additional classes of vehicles (trucks and buses) and to develop more stringent emission requirements for passenger cars. Further, the long-term increase expected in the number of vehicles will far outweigh the partial reductions in emissions which can be expected from application of present technology. Thus, the automotive emissions research program is designed to provide the necessary support to the motor vehicle pollution regulatory control activity through seeking extension and improvement of present standards and control techniques and through a simultaneous effort to stimulate the development of a more fundamental corrective through alternatives to the current internal combustion engine.

Highest priority activity in this area for 1968 is concerned with the development of improved procedures and standards, standards with broader application, and improved systems for testing emissions.

Present regulations relate only to the exhaust hydrocarbon and carbon monoxide emissions from passenger cars and light commercial vehicles, and the crankcase blowby emissions from all gasoline-powered vehicles. Although these comprise the largest sources of emissions of hydrocarbons and carbon monoxide to the atmosphere from motor vehicles, emissions from gasoline-powered vehicles of larger gross-weight ratings and from diesels, as well as the emissions of oxide of nitrogen, must also be reduced. In view of the foreseeable need for more restrictive regulations, the research program will give special attention to the development of chassis dynamometer test cycles which will simulate road operation of passenger cars, trucks, and buses; to fuel evaporative losses; and to analytical techniques. Research will be carried out on setting standards for the oxides of nitrogen, not now regulated. Studies will be continued to better define the diesel emissions problem and to develop objective methods of measurement which will permit the promulgation of effective diesel emission regulations. Special attention will also be given to the factor of lead as a contaminant, as well as carbon monoxide.

In 1968, there will be increased activity in projects directed at stimulation of promising alternatives to the internal combustion engine, i.e., "pollution free" methods for the propulsion of vehicles. In 1967, a contract study is being undertaken to determine the most fruitful avenue of approach to this problem. There are several approaches, with varying degrees of promise including the development and construction of prototypes of turbine engines, stratified charge engines, battery- and fuel cell-operated vehicles, and others. The program will concentrate on stimulating development of those promising the highest likelihood of success for a fundamental solution ready to be put to use within about fifteen years.

(b) *Control of sulfurous air pollution.*—The problem of sulfur oxide emissions from the combustion of fossil fuels is national in scope and is increasing. The Clean Air Act and its amendments gave special attention to this problem in directing work toward its resolution. Accordingly, the program is geared toward the goal of (a) establishing the technical and economic feasibility of various approaches for controlling sulfurous emissions resulting from combustion of fossil fuels and (b) effecting policies aimed at reducing sulfurous pollution generally and designed specifically to prevent further increase in sulfur oxide concentrations in the atmospheres of critical urban areas. The urgency of this research program was specifically noted by the President in signing Executive Order 11282, "Control of Air Pollution Originating from Federal Installations," May 26, 1966. Accordingly, a target date of 1970–1972 has been established to meet the above goal. The program has been developed in close cooperation with the Bureau of Mines, Department of the Interior, which is performing some of the work under contract.

A major effort is being initiated in 1967 through a systems program for the preliminary work, design, and planning for several large-scale pilot plants to test promising laboratory techniques in a field setting. The planning and design work is being carried out by contract for subsequent construction in cooperation with the Tennessee Valley Authority at their power-generating facilities.

This initial developmental activity will be continued in 1968 toward moving the more promising processes for removal of oxides of sulfur from flue gases to the pilot plant stage. In 1968, it is planned to place contracts for construction of two of the potential control techniques. Approximately $2,500,000 of the increase requested for this activity will be used for this purpose.

Simultaneously with the studies concerned with cleaning flue gases, accelerated attention will be given to reducing the amounts of sulfur in fuel oil and coal which give rise to sulfurous emissions upon combustion. In addition to flue gas cleaning and desulfurization research, special attention will be given to other alternatives, such as the use of taller stacks, siting of fuel-burning sources outside of urban areas, allocation of fuel systems to minimize sulfurous pollution, allocation of power load, and other approaches.

In addition to the research programs on automotive emissions and sulfurous pollution, work will be continued on the fundamental chemistry of air pollutants, meteorological factors governing the transport and diffusion of air pollutants, the development of control devices, and national air sampling activities.

An increase of 31 positions and $4,800,000 is requested to provide approximately $620,000 for automotive emissions research; $220,000 for other engineering and physical sciences research and development; and $3,960,000 for sulfur oxides research, of which $2,500,000 is for construction of two pilot plants.

(2) Determination of the effects of air pollution: (a) Medical and biological studies

1967 estimate	$2,656,000
1968 estimate	3,096,000
Increase or decrease	+440,000

This research program, along with the community and other field studies activity below, is closely geared to the goal of producing air quality criteria for all major air pollutants known to be harmful to man, animals, plants, and materials. The programs includes studies of the health effects of air pollution through laboratory and clinical studies on animals and humans, and studies concerned with the effects of air pollution on agricultural products. In 1968, emphasis will continue to be placed on the development of air quality criteria and on clinical research to determine the physiological and behavioral response to low concentrations of pollutants. Investigations of the health effects of human exposure to oxides of sulfur, as recommended in the Clear Air Act, also will receive increased emphasis. These will include research on acute and chronic effects of the inhalation of oxides of sulfur, singly and in combination with various particulates, and studies of the toxicologic effects of various combinations of airborne contaminants. Clinical studies of the effects of low concentrations of air pollution, in both ambient and filtered atmospheres, on humans and on animals, are planned for continuation. Such pollutants as oxides of nitrogen and carbon monoxide, in addition to oxides of sulfur, will be intensively investigated, simulating as accurately as possible the complex of pollutants to which man is generally subjected. Work on oxides of nitrogen and carbon monoxide is also closely coordinated with the engineering research on these aspects of automotive emissions, with the aim of tightening Federal automotive emission standards. The work on sulfur oxides effects on humans and other biological systems is in support of the need for refinement of SO_2 criteria, to be published in 1967, and also the need for emission standards.

In addition to the use of health effects data for regulatory standards and criteria, studies will also be evaluated in a continuing attempt to elucidate effects from the disease category viewpoint. Evidence accumulated to date indicates an association of air pollutants with lung cancer, emphysema, and other pulmonary and respiratory afflictions. These associations will be further examined. Studies from the disease category viewpoint are conducted after discussions and collaboration with the appropriate research institutes at the National Institutes of Health.

Research on the effects of air pollution on agriculture, conducted in cooperation with the Department of Agriculture, will continue to emphasize the mechanisms of damage to plants and the use of plants as indicators of air pollution. The widespread evidence of substantial damage to trees by air pollution will be explored in greater detail through studies conducted in cooperation with the Forest Service.

An increase of 7 positions and $440,000 is requested for 1968 to provide continued emphasis on the development of air quality criteria and on clinical research concerning health effects of exposure to various pollutants.

(b) Community and other field studies

1967 estimate	$1,599,000
1968 estimate	2,023,000
Increase or decrease	+424,000

This activity is principally concerned with epidemiological and statistical studies conducted in the field, aimed at clarifying the effects of air pollution on man and designed to provide data for air quality criteria. Studies designed to elucidate the health effects of oxides of sulfur will receive special emphasis. The program also includes studies concerned with the effects of pollution on materials.

Existing studies which are scheduled for continuation in 1968 include the Alabama study of air pollution-emphysema relationships, the relationship of air pollution and upper respiratory infection, air pollution asthma in New

Orleans, and relationships between air pollution and industrial absenteeism. A project concerned with atmospheric lead and carbon monoxide in Cincinnati is coordinated with the major problem of tightenting automotive emission standards. A study of trace elements in the atmospheres, and their effects, is closely related to increasing concern about the health hazards associated with cadmium, zinc, beryllium, lead, and others. The epidemiology study of the "Tokyo-Yokohama Asthma" continues to offer a unique opportunity to study the etiology of chronic respiratory disease inasmuch as the conditions in Japan develop in the course of a few months in contrast to several years in the United States and England.

Work will continue in 1968 on the retrospective survey of the effect of air pollution on human health through statistical analysis of Social Security disability records, Veterans Administration records, and insurance records.

There will also be intensified examination of mortality data from our largest cities to determine if excess mortality, previously unrecognized, is associated with peak periods of air pollution. As urban areas develop their knowledge of pollution levels, opportunity to determine correlations with disease patterns is offered. Chicago is one area where such studies will be expanded.

In addition to the health effects studies a small portion of this activity is concerned with the nonbiological effects of air pollution. The role of air pollutants in the deterioration of materials of many types is an important one, one which has great economic significance and is not adequately understood or documented. A study of materials deterioration, under carefully controlled conditions, has been initiated and will be continued in 1968.

An increase of 7 positions and $424,000 is requested in 1968 principally to provide for epidemiological and statistical studies concerning effects of air pollution on man.

Abatement activities

1967 estimate	$1,927,000
1968 estimate	3,804,000
Increase or decrease	+1,877,000

The Department of Health, Education, and Welfare is committed to a vigorous Federal abatement program as a complement to its goal of developing effective State and local enforcement machinery. Under the Clean Air Act as amended, Federal abatement authority and programs relate to interstate pollution; to pollution within a State if requested by State officials; to international pollution where reciprocal legislation is enacted by the foreign country involved; to potential pollution which threatens health and welfare; and to prevention of air pollution from Federal facilities.

To date, nine interstate pollution abatement actions have been initiated. These include the New York City Metropolitan Area; Ticonderoga, New York, on the New York-Vermont border; Selbyville, Delaware, on the Maryland-Delware border; three interstate areas in the Ohio River Valley; Kansas City, Missouri; Lewiston-Clarkston on the Washington-Idaho border; and the Washington, D.C. area.

Approximately 72 urban interstate areas have been under surveillance to provide the technical basis for a vigorous program of needed abatement actions initiated by the Department. The 1968 estimate is principally to cover the costs of implementing a national abatement program as quickly as possible, consistent with sound technical and judicious action.

Crucial to the success of abatement procedures is the gathering of pertinent technical information on the scope and effect of pollution in specific problem areas. Accordingly, in addition to the initial field surveillance activities, specific follow-up field work will be required for each action. This is an extensive undertaking involving teams of engineers, meteorologists, and other scientists to secure these necessary data.

In addition to the general interstate abatement program for existing pollution, conferences to prevent potential air pollution may be called by the Secretary of Health, Education, and Welfare, if in his judgment, an air pollution problem of substantial significance may result from discharges into the atmosphere. The findings and recommendations resulting from such a conference, which would be held in or near places where such discharges are occurring or may occur, are advisory only. This preventive abatement provision will be used, beginning in 1967 and increasingly in 1968, primarily with respect to large proposed industrial and power-generating facilities.

This activity also includes the program for preventing air pollution from Federal facilities. An Executive Order and implementing regulations have been issued toward this end. Consultative and liaison services to Federal agencies are being provided.

The 1968 budget estimate of $3,804,000 will support and estimated seven abatement conferences, five abatement hearings resulting from conferences undertaken in prior years, two conferences which will take place as a result of the requirements of the international authority, five preventive air pollution conferences, and the associated field investigations necessary to this activity. This estimate will also permit the continued development of an air pollution source inventory, with respect to Federal facilities, and the provision of technical guidance and consultation to Federal agencies operating facilities.

An increase of 66 positions and $1,877,000 is requested in 1968 to provide for a growing number of Federal abatement actions, related field investigations, and consultation to Federal agencies.

Motor vehicle pollution control

1967 estimate	$1,233,000
1968 estimate	1,445,000
Increase or decrease	+212,000

In view of the evidence that motor vehicles are a major source of air pollution in practically all sections of the country, a major effort is underway aimed at achieving a 25% reduction in pollutant emissions from automotive vehicles by 1975, a 40% reduction by 1985, and the introduction, through an intensive research effort, of a "pollution free" automotive propulsion system as soon as possible thereafter.

The establishment of controls on new vehicles is being carried out by a vigorous implementation of the Motor Vehicle Air Pollution Control Act, which became part of the Clean Air Act Amendments in 1965.

Regulations have been published which establish the limits for emissions from the exhaust and crankcase of motor vehicles, and set up exhaust emission test procedures. Procedures have been developed whereby the manufacturers of motor vehicles can apply for certification that their products comply with Federal standards and therefore will be eligible for sale in the United States. A Federal motor vehicle compliance laboratory has been established in the Detroit area. This facility not only provides for confirmation and surveillance testing but will also be capable of developing or evaluating new instrumentation and test techniques. The research program of the Public Health Service, in a coordinated effort with the regulatory program, is being oriented toward the development of improved test procedures and possible revisions in the standards for future application.

The regulations, published on March 30, 1966, in the Federal Register, require for 1968 and subsequent automobile models the complete control of crankcase emissions from all gasoline-powered vehicles and reduced emissions of exhaust hydrocarbons and carbon monoxide from passenger cars and light commercial vehicles. Federal precertification testing of vehicles has begun for the 1968 model automobiles. Regulations governing the importation of foreign vehicles are being developed jointly with the Department of the Treasury. Emission standards and requirements for certification and confirmatory testing for foreign vehicles are the same as for domestic vehicles.

The program for 1968 will be the first full year of testing operations in a Federal laboratory. The program will provide for improvements in the precertification activity based on 1967 experience; continually strengthened compliance and surveillance testing of vehicles off the production lines; evaluation and development of emission control requirements, in coordination with the research program; improvement of test procedures and methods development; and liaison activities with States and localities on coordinating inspection programs necessary to maintain effectiveness of controls.

An increase of 25 positions and $212,000 is requested for 1968 to provide for developing emission control requirements, improving test procedures, and conducting liaison activities with States and localities.

Technical services

	1967 estimate	1968 estimate	Increase or decrease
Technical assistance	$1,692,000	$3,586,000	+$1,894,000
Review and approval:			
Research and training grants and fellowships	384,000	416,000	+32,000
Survey, demonstration, and control program grants	222,000	306,000	+84,000
Technical Information Center	300,000	900,000	+600,000
Total	2,598,000	5,208,000	+2,610,000

Technical assistance

In accordance with provisions of the Clean Air Act, the overall 1968 air pollution program is placing increasing emphasis on the application of knowledge, that is, translating research findings as quickly as possible into control activity which will abate or prevent pollution. The technical assistance activity is a significant element in this effort.

Technical staff provide, upon request and within resources available, short-term asistance and consultation to States, communities, and industries on air pollution problems. The demand for such services continue to exceed the capacity to meet it, and will further accelerate as a result of the stimulatory efforts of the Clean Air Act. The need for expanded and improved technical support and guidance to help the States and communities as they establish their control programs remains urgent. As a means of dealing with the need for assistance in a more effective way, in addition to individual consultation to specific areas, emphasis will continue to be placed on development of technical manuals and guides, such as improved methodologies for the technical management of air pollution programs.

An area of great need, to which a major portion of the requested increase will be allocated, is the development of codes of good air pollution control practice for the more common industrial processes. Initiated in 1967, a comprehensive program of developing such guides will be continued in 1968. The contract mechanism will be used where feasible in an effort to reduce the time needed to prepare these guides. These guides will be valuable tools for use by State and local regulatory agencies in their enforcement programs, and should also prove useful to those industries which develop their own internal industrial air pollution control programs. The development of these guides involves a major effort which initially involves bringing present knowledge together on a current basis, and subsequently will require incorporating changes and innovations in industrial technology, with a minimum of lag time. The increase will also provide for additional air pollution staff engineers to provide the increased volume of technical consultation. This consultative staff will be based in Cincinnati and in the nine regional offices to maximize the provision of assistance. Special assignments to State and local control programs will also be made where such assignments have the potential of broader benefits accruing for programs through the country generally.

An increase of 46 positions and $1,894,000 is requested for 1968 to provide for the development of codes of good practice for the more common industrial processes and to provide increased technical consultation to States, communities, and industries.

Review and approval of research and training grants and fellowships

This activity includes processing applications, preparation of applications for review by non-Federal study section and advisory committees, executive secretariat services to such advisory groups, and site visits to grantees and applicants as required by grant management procedures or by advisory committee recommendations. The increase of 2 positions and $32,000 will provide the necessary resources for adequate review and approval of new grants and fellowships.

Review and approval of survey, demonstration, and control program grants

Applications are reviewed by Public Health Service staff who are responsible for determining approvals or disapprovals, under policy guidance by an advisory committee. The control program grant activity will be significantly increased in

1968, with a newly authorized control grant through revision of Section 104 in the 1966 Amendments to the Act. The increase of 6 positions and $84,000 will support the expanded workload and insure program followup of grantee activity and performance.

Air Pollution Technical Information Center

In 1964 the Director, Office of Science and Technology, designated the Department of Health, Education, and Welfare as the agency responsible for providing on a national basis technical information on air pollution. The Clean Air Act also specifically authorizes the collection and dissemination of information. A technical information center was started to accomplish this activity. Becoming operational in 1967, this center will serve as a clearinghouse for all air pollution information and coordinate the collection and dissemination of a wide variety of technical information. Services include indexing, abstracting, translating, and evaluating information and preparing bibliographies and reports.

Initial professional and clerical staff to plan the center have been recruited and contractual services have been secured to provide assistance in the development of suitable techniques for collecting, indexing, coding, storing, and retrieving information, and to provide expansion of translating services. Reproduction, distribution services, translation, and related activities will require increased support. The proposed operational staff will include scientists, documentation specialists, and supporting clerical and library-type personnel. The Air Pollution Technical Information Center will function in close cooperation with related information centers, as appropriate, such as the Medical Literature Analysis and Retrieval System (MEDLARS) of the National Library of Medicine.

The increase of 8 positions and $600,000 will permit strengthening of the center in 1968. The contract mechanism will be utilized to provide additional abstracting, translating, and publishing services.

Training

1967 estimate	$685,000
1968 estimate	1,410,000
Increase or decrease	+725,000

The Public Health Service conducts a training activity consisting of short-term, intensive technical courses for State, local, and industrial personnel concerned with air pollution control actvities. This activity, as in the case of the graduate training offered through the training grants and fellowship programs, is aimed at helping to meet the shortage of trained air pollution technical personnel. The courses are offered in Cincinnati, Ohio, and at other field locations. They include training in techniques for sampling and identification of pollutants, survey techniques, control devices, meteorology, the medical aspects of pollutants, and other aspects of air pollution. Improved training techniques, such as programmed instruction and the use of training films, will be utilized as far as possible as a means of deriving maximum benefit from the training program.

The increase requested in 1968 will permit alleviation of the serious shortage of trained personnel for State and local control programs. In 1968 this activity will be stepped up to provide increased faculty, greater use of visual aids and programmed teaching, and sharply increased field training to permit greater availability to students.

There is currently a lack of capacity in this program to meet all the demands for training being requested by States, localities, industry, and others. It is important that this backlog be eliminated and that all appropriate requests for training be met. The 1968 request is aimed at eliminating the backlog and permitting accommodation of anticipated increased training demands. A new aspect in training will be initiated in 1968. The program is planning to prepare a "training kit" for use of State and local air pollution programs to train on-the-job personnel; it is estimated 250 individuals will be trained by this mechanism. In addition, this request will permit the presentation of an estimated 32 technical courses at Cincinnati and approximately 33 other field courses. It is estimated 2100 individuals will be trained through these direct presentations in 1968. This compares with 1600 in 1967 and 1300 in 1966.

The increase of 30 positions and $725,000 includes approximately $250,000 for preparation and distribution of training kits for use of State and local air pollution programs.

New positions requested, fiscal year 1968

	Grade	Annual salary
Direct operations:		
Economist	GS-15	$17,550
Engineer (6)	GS-15	105,300
Medical officer	GS-15	17,550
Scientist (3)	GS-15	52,650
Statistician	GS-15	17,550
Engineer (6)	GS-14	90,636
Medical officer	GS-14	15,106
Public Health program specialist (8)	GS-14	120,848
Scientist (5)	GS-14	75,530
Statistician (3)	GS-14	45,318
Engineer (7)	GS-13	90,111
Scientist (6)	GS-13	78,134
Public health program specialist (3)	GS-13	38,619
Statistician (2)	GS-13	25,746
Engineer (7)	GS-12	76,489
Scientist (6)	GS-12	65,562
Public health program specialist (3)	GS-12	32,781
Medical staff assistant (2)	GS-12	21,854
Scientist (6)	GS-11	57,216
Engineer (5)	GS-11	47,680
Public health program specialist (7)	GS-11	64,547
Administrative staff assistant (3)	GS-11	27,663
Engineer (6)	GS-9	50,874
Engineering technician	GS-9	7,696
Scientist (6)	GS-9	50,874
Public Health program specialist (5)	GS-9	38,480
Mathematical statistican	GS-9	8,479
Research technician (3)	GS-9	23,088
Engineer (7)	GS-7	54,103
Physical science technician	GS-7	6,451
Scientist (6)	GS-7	46,374
Laboratory technician (2)	GS-7	12,902
Public health program specialist (3)	GS-7	19,353
Public health program specialist (3)	GS-6	17,601
Clerical assistant (6)	GS-6	35,202
Secretary-stenographer (4)	GS-6	23,468
Engineer (3)	GS-5	19,161
Engineering technician (2)	GS-5	10,662
Scientist (2)	GS-5	12,774
Statistician (2)	GS-5	10,662
Statistical clerk	GS-5	5,331
Laboratory technician (5)	GS-5	26,655
Physical science aid (2)	GS-5	10,662
Secretary-stenographer (10)	GS-5	53,310
Research technician (6)	GS-4	28,656
Laboratory technician (5)	GS-4	23,880
Physical science aid	GS-4	4,776
Administrative staff assistant (2)	GS-4	9,552
Clerical assistant (14)	GS-3	59,766
Physical science aid (2)	GS-3	8,538
Commissioned officers:		
Director grade (4)		58,953
Senior grade (9)		106,547
Full grade (4)		32,792
Senior assistant grade (8)		62,266
Total new positions (228)		2,124,328

TUESDAY, APRIL 4, 1967.

RADIOLOGICAL HEALTH

WITNESSES

JAMES G. TERRILL, JR., DIRECTOR, NATIONAL CENTER FOR RADIOLOGICAL HEALTH

ROBERT R. HARWICK, EXECUTIVE OFFICER, NATIONAL CENTER FOR RADIOLOGICAL HEALTH

DR. RICHARD A. PRINDLE, DIRECTOR, BUREAU OF DISEASE PREVENTION AND ENVIRONMENTAL CONTROL

VERNON G. MacKENZIE, DEPUTY DIRECTOR, BUREAU OF DISEASE PREVENTION AND ENVIRONMENTAL CONTROL

PETER J. BERSANO, FINANCIAL MANAGEMENT OFFICER FOR DISEASE PREVENTION AND ENVIRONMENTAL CONTROL PROGRAMS
DR. WILLIAM H. STEWART, SURGEON GENERAL
G. C. CLAGUE, ACTING CHIEF FINANCE OFFICER
JAMES B. CARDWELL, DEPUTY ASSISTANT SECRETARY, BUDGET

Object classification

[In thousands of dollars]

		1966 actual	1967 estimate	1968 estimate
	Personnel compensation:			
11.1	Permanent positions	5,630	6,015	6,059
11.3	Positions other than permanent	249	225	236
11.5	Other personnel compensation	54	55	55
	Total personnel compensation	5,933	6,295	6,350
12.0	Personnel benefits	862	913	921
21.0	Travel and transportation of persons	495	549	570
22.0	Transportation of things	135	171	151
23.0	Rent, communications, and utilities	403	654	654
24.0	Printing and reproduction	100	116	116
25.1	Other services	632	560	561
	Project contracts	2,224	2,376	2,292
25.2	Services of other agencies	60	62	62
25.3	Payment to:			
	"Public Health Service management fund"	496	381	381
	"National Institutes of Health management fund"	25	25	28
26.0	Supplies and materials	638	646	646
31.0	Equipment	1,221	574	624
32.0	Lands and structures	2	68	2
41.0	Grants, subsidies, and contributions	2,546	2,332	2,328
42.0	Insurance claims and indemnities	1	1	1
99.0	Total obligations	15,773	15,723	15,687

Personnel summary

	1966 actual	1967 estimate	1968 estimate
Total number of permanent positions	814	814	814
Full-time equivalent of other positions	33	24	24
Average number of all employees	796	792	797
Average GS grade	8	8.1	8.2
Average GS salary	$8,181	$8,619	$8,756

Program and financing

[In thousands of dollars]

		1966 actual	1967 estimate	1968 estimate
	Program by activities:			
	1. Research grants	2,546	2,332	2,328
	2. Direct operations	12,279	13,391	13,359
	Total program costs, funded [1]	14,825	15,723	15,687
	Change in selected resources [2]	948		
10	Total obligations	15,773	15,723	15,687
	Financing:			
16	Comparative transfers to other accounts	4,788	5,000	
25	Unobligated balance lapsing	367	172	
	New obligational authority	20,928	20,895	15,687
	New obligational authority:			
40	Appropriation	21,044	20,895	15,687
41	Transferred to—			
	"Office of the Surgeon General, salaries and expenses" (42 U.S.C. 226)	−6		
	"Operating expenses, Public Buildings Service," General Services Administration (79 Stat. 531)	−110		
43	Appropriation (adjusted)	20,928	20,895	15,687
	Relation of obligations to expenditures:			
10	Total obligations	15,773	15,723	15,687
70	Receipts and other offsets (items 11-17)	4,788	5,000	
71	Obligations affecting expenditures	20,561	20,723	15,687
72	Obligated balance, start of year	6,721	8,606	8,385
74	Obligated balance, end of year	−8,606	−8,385	−8,356
77	Adjustments in expired accounts	−109		
90	Expenditures	18,567	20,944	15,716

[1] Includes capital outlay as follows: 1966, $1,223,000; 1967, $642,000; 1968, $626,000.
[2] Selected resources as of June 30 are as follows: Unpaid undelivered orders 1965, $2,642,000 (1966 adjustments, $2,000); 1966, $3,592,000; 1967, $3,592,000; 1968, $3,592,000.

Mr. FLOOD. We have with us Mr. James G. Terrill, Jr., Director of the National Center for Radiological Health.

BIOGRAPHICAL SKETCH OF PRINCIPAL WITNESS

This is a matter which has been of great national concern in recent years. You have a statement, Doctor, I see. We have a biographical sketch of you which will be inserted at this point in the record.

(The sketch follows:)

Name: James G. Terrill, Jr.

Position: Director, National Center for Radiological Health.

Birthplace and date: Cincinnati, Ohio, October 25, 1914.

Education: University of California, Berkeley, California, Master of Bioradiology, 1949–1951; Massachusetts Institute of Technology, Cambridge, Massachusetts (needs thesis for Doctor of Science), 1938–1941; University of Cincinnati, Cincinnati, Ohio, Civil Engineering, 1932–1937.

Experience: Director, National Center for Radiological Health, Rockville, Maryland, January 1, 1967, to present; Deputy Chief, Division of Radiological Health, Washington, D.C., July 1958–December 1966; Chief, Radiological Health Branch, Division of Sanitary Engineers, Washington, D.C., 1954–1958; Engineer Radiological Health Unit, Division of Engineer Resources, Chief: 1952–1954, Acting Chief, 1951–1952; Division of Commissioned Officers, Washington, D.C., 1947–1949; Malaria Control War Area, Atlanta, Georgia, 1944–1947; Public Health Service District #5, San Francisco, California, 1943–1944; States Relations Division, Sanitary Engineering, Clermont County, Ohio, 1937–1938; Engineering Aide, Bureau of Public Roads, Roanoke, Virginia, 1935–1936.

Association memberships: American Board of Health Physics; American Board of Industrial Hygiene; American Conference of Governmental Industrial Hygienists; Environmental Engineering Intersociety Board; American Public Health Association; Board of Directors, Health Physics Society; Conference on Radiological Health; American Society of Civil Engineers; American Public Works Association; Conference of Federal Sanitary Engineers; American Hospital Association; National Committee on Radiation Protection; American Standards Association; Expert Advisory Panel on Radiation, World Health Organization; Savannah River Advisory Board.

Special awards, citations, or publications: Public Health Service Commendation Medal (October 26, 1962). "Public Health Radiation Surveillance", Health Physics, *11*, 917–33, September 1965; "Collaboration between Public Health and Other Agencies in the United States," *in* Agricultural and Public Health Aspects of Radioactive Contamination in Normal and Emergency Situations, Rome Food and Agriculture Organization of the United Nations, 379–82, 1964; The Public Health Service Role in Radiological Health," Industrial Medicine and Surgery, *33*, 497, July 1964; "Ingestion of Radioactive Materials," American Journal of Public Health, *50*, 989–994, July 1960; "Future Estimates and Economics of Waste Disposal Summary and Evaluation of Environmental Factors," *in* Hearings before The Subcommittee on Radiation of the Joint Committee on Atomic Energy, 86th Congress, 1st Session on Industrial Radioactive Waste Disposal, *3* 2395–2410, 1959; "Public Health Implications of Short Term Hazards," *in* The Shorter Term Biological Hazards of a Fallout Field: Gordon M. Dunning, U.S. Atomic Energy Commission, and John A. Hilcken, U.S. Department of Defense, eds., Washington, D.C., GPO, 219–221, 1958; "Radioactive Waste Discharges Form Nuclear Reactors," Sewage and Industrial Wastes, *30*, 270–282, March 1958; "Some Public Health Aspects of Radioactive Wastes," Bulletin of the Atomic Scientists, *14*, 44–45, January, 1958; "Power Reactor Accidents—Role of the Public Health Service," AMA Archives of Industrial Health, *13*, 446–447, May 1956.

General Statement

Mr. Flood. If you wish, you may read your statement.

Mr. Terrill. Thank you, Mr. Chairman.

Throughout history, mankind has been exposed to a wide variety of hazardous factors in his environment, to many of which, over thousands of years, he has been able to make successful adjustment. In recent years, the hazards of ionizing radiation have caused particular anxiety because of the variety of malignant and other changes that may follow irradiation. However, proper emphasis must also be given to the beneficial aspects of many procedures that involve radiation exposure. The fact is well established that the benefits of the appropriate medical use of radiation far outweigh the hazards and that, given adequate protective measures, the uses of radioactive materials and the peaceful employment of nuclear energy represent great technological advances.

There are an estimated 210,000 X-ray units used in the healing arts. At this time they constitute one of the major manmade sources of radiation exposure to the general population. The 1964 Public Health Service survey found that there were over 143 million X-ray visits yearly—50 million dental and 93 million medical. This represents a 7.6 million increase over the previous reporting period in 1961.

In order that X-rays may be used with optimal efficiency while at the same time reducing patient exposure to a minimum, our program is directed to the objectives that (1) all equipment meets recommended standards, and (2) the most advanced techniques are employed by competent operators.

Examples of steps being taken toward meeting these objectives include a continuing effort to develop standards for X-ray equipment for

application by the State health agencies and possible ultimate use as Federal standards. In the training area, both through contract projects and Center sponsored meetings, our training program is undergoing modifications to more adequately meet training needs that will result in better techniques and maximum effectiveness in the utilization of this equipment.

TRAINING

In the professional training area, we have contracts designed to develop model curricula for the training of engineers, scientists, and physicians who will work with X-rays. In the technician area, this past year a National Conference on X-ray Technician Training was held as a first step toward developing a model training program for personnel below the professional level.

ENVIRONMENTAL RADIOACTIVITY

With respect to environmental radioactivity, the projected increase in construction and utilization of nuclear power facilities will result in a progressively increased demand for technical review and surveillance of such facilities and other applications of atomic energy. The National Center for Radiological Health is emphasizing its program for the analysis of the potential and actual effects upon the environment and for estimation of human radiation exposure from the operation of these facilities. We feel it is also essential that studies be conducted to determine environmental contamination from nuclear powerplants, so their contamination potential can be compared with conventional power sources. Work in this area has been started. In addition, programs are being carried out to provide data on the extent and character of an accidental release of radioactivity in order to guide planning for necessary protective actions.

The genetic exposure from all manmade radiation sources now represents a substantial fraction of natural radiation background. For a number of years a manmade dose less than natural background has been considered to be a limiting benchmark for radiation control. However, both the sources of radiation and the opportunities for exposure continue to increase. It is necessary therefore to continually seek to reduce the total exposure from individual X-ray sources.

Our request for $15,687,000 in 1968 provides for maintenance of programs at approximately the same level as for 1967. It will enable us to continue on-going programs such as: (1) maintaining and operating national surveillance networks which provide for continuous monitoring of the environment to detect radiation potentially harmful to the health of the population and to furnish continuous data useful for scienific purposes. The networks provide for detecting and establishing trends in the incidence of radionuclides of public health significance. For example, tritium and carbon 14 are beginning to appear in larger amounts. In addition, it is essential to have in readiness a standby capability which can react to unusual contamination events; (2) providing technical short-course training for radiological health personnel. During 1967 approximately 1,800 persons in Federal, State, and local programs will have received specialized training; (3) conducting radiobiology and epidemiology studies to obtain

more precise information on low-level radiation dosage and its biological effects. The results of these studies provide indices needed to establish and modify radiation exposure guides. For example, our collaborative studies utilizing the dog colony at Colorado State University will give us additional information on the health effects of low-level exposures to ionizing radiation, particularly in establishing the difference in effects of exposure of embryos and young animals as opposed to adult animals; and (4) providing technical assistance and support to State health agencies as a method by which measures to reduce radiation exposure are implemented. For example, in calendar year 1966 assistance was provided to 9 States in the review of the possible environmental and health effects of 14 major nuclear facilities including reactors and fuel reprocessing plants. In calendar year 1967 it is anticipated that a minimum of 37 such facilities located in 19 States will be subjected to technical evaluation from the viewpoint of potential contamination and population exposures.

Another appropriation, "Comprehensive health planning and services," includes grants for the training of radiological health specialists and technicans. Training grants are made to educational institutions to support development and presentation of radiological health curricula and to give financial help to selected students.

I will be happy to answer any questions you may have.

SUMMARY OF BUDGET REQUEST

Mr. FLOOD. If we minus out this "unobligated balance reserve"—this time it is $172,000—your adjusted appropriation for 1967 is $15,723,000, and you are requesting for 1968, $15,687,000. That is a reduction of $36,000.

Mr. TERRILL. Yes, sir.

Mr. FLOOD. Are you getting your problems under control, or are you in Dutch with some of your superiors? What happened to you?

Mr. TERRILL. I presume I am partially always in Dutch with some of my superiors.

Actually, I think the lack of any increase reflects a number of things, probably belief of the administration that we are making progress and perhaps our program in certain areas can be stretched out. I think in many areas we have been successful. We have countermeasures for practically every area.

Mr. FLOOD. You are the first one I have met so far from the administration who thought his program should be stretched out.

REQUEST FOR SURPLUS AIRCRAFT

In the requested language, you want authorization to acquire a surplus aircraft from the Department of Defense. This is something I know something about. What kind of aircraft? Where are you going to get it, and why do you need it? What do you know about aircraft?

Mr. TERRILL. I do not know a great deal about aircraft, but I know what we are going to use the aircraft for.

Mr. FLOOD. What kind are you going to get?

Mr. TERRILL. We would prefer to get an old C–47 but we probably will not end up with that due to the demands of the Defense Depart-

ment at this time for that type of plane. We use these aircraft to monitor tests in the Nevada area, and particularly in connection with work that is underwritten for us by the Atomic Energy Commission. Also I wish to point out that we are not requesting funds for purchasing an aircraft, merely authority to acquire from surplus by tansfer from DOD.

We have to request this authority in our appropriation, even though the operations are funded largely by the AEC.

Mr. FLOOD. Can you not make a deal with the great civilian airlines to have samples of air taken all over the country for you periodically and turned in to you?

Mr. TERRILL. Yes, and we do this when heavy testing is going on, but those are very low levels of radioactivity, and it would be very uneconomical to take a chance on contaminating a civilian aircraft around the Nevada Test Site.

Dr. PRINDLE. It also should be pointed out that because of the amount of equipment that we use, it would be prohibitively expensive even at the Government tourist travel rates. It would occupy a number of seats.

Mr. TERRILL. I do not think we could put our sampling gear in such an airplane.

Mr. FLOOD. It is hard to do that?

Mr. TERRILL. It is not only the quantity, but the aerodynamic balance, and things such as that.

EXPOSURE TO MEDICAL AND DENTAL X-RAY

Mr. FLOOD. One of our projects we have talked about for several years is the unnecessary exposure to medical and dental X-ray. You touched upon that to some extent in your statement. What have you done in the last 5 years?

Mr. TERRILL. First, we inspected and put collimators——

Mr. FLOOD. What is that?

Mr. TERRILL. That is a device to concentrate the X-ray beam just as you might funnel a light through your hand here and make a little circle.

Mr. FLOOD. Is it on the laser principle?

Mr. TERRILL. No, sir. It is just a matter of focusing the beam. Perhaps focusing is a better word, although usually the technical people do not like that word. Most of the dental X-ray machines in the country and a great number of medical X-ray machines have been inspected to meet minimum requirements as a result of our efforts.

Thirdly, we made a survey to determine which procedures were actually exposing people to the greatest degree. We now know what type of procedures these are and which contribute the most significant dose from a genetic standpoint to the population.

We have developed an automatic collimator which can be put on medical machines which will collimate the beam down to the film size.

REDUCTION IN DEGREE OF HAZARD

Mr. FLOOD. I am concerned about the degree of hazard. I am interested in the reduction of hazard from 5 years ago until this afternoon. What have you accomplished in the reduction of hazard?

Mr. TERRILL. In the medical X-ray field?

Mr. FLOOD. Yes, medical and dental.

Mr. TERRILL. We have perhaps reduced unnecessary exposure from dental X-ray by half within the last 5 years.

Dr. PRINDLE. May I suggest, Mr. Chairman, that we could list various actions that have been taken as a result of SURPAK surveys and similar efforts which resulted in decreased exposure, and provide it for the record.

(The information follows:)

EXAMPLES OF ACTIONS TAKEN BY THE NATIONAL CENTER FOR RADIOLOGICAL HEALTH (NCRH) OVER THE PAST FIVE YEARS TO DECREASE POPULATION EXPOSURE FROM IONIZING RADIATION

MEDICAL AND DENTAL X-RAY RADIATION

1. Prior to 1960, approximately 75 percent of the nation's dental X-ray units did not meet recommended standards for beam collimation and filtration. Today over 80 percent of the estimated 98,000 dental X-ray units in the United States meet or exceed these minimal requirements.

As of June 30, 1966, 91,826 dental X-ray units had been inspected at least once by means of either a physical or a Surpak survey.

Of the 20,646 units inspected during FY 1966, 6,342 did not meet minimal requirements. During this same period, however, 5,787 units were corrected to meet minimal standards. By the end of 1966, the National Center for Radiological Health had obtained the results from 54,665 Surpak surveys.

2. By the end of FY 1963, a total of 30,000 medical X-ray units had been inspected. As of June 30, 1966, 80,110 of the estimated 131,000 medical X-ray units in the United States had been inspected.

Of the 30,401 units inspected during FY 1966, 12,970 were found to be below standards. During this same period, 10,053 units were corrected to meet minimal standards.

3. A new methodology for performing diagnostic thyroid scans has been developed which greatly reduces dose to patients' thyroids by using iodine-123 which has a shorter half-life.

4. An epidemiological study of a population treated for thyrotoxicosis with iodine-131 has been underway for several years. One phase of this study required patients, who had been treated in the past for this condition, to be recalled to their treatment centers for examination and evaluation. As the physicians evaluated the results of their treatment, it became apparent that equally good results could be obtained using lower doses of iodine-131. In practice, smaller amounts of I–131 are now being used.

NUCLEAR TESTING AND NUCLEAR POWER

1. Technical reviews have been made of proposed nuclear reactors and fuel reprocessing plants from the public health viewpoint to assure that the exposure to the population in the vicinity of these plants will not exceed the FRC guidelines under normal operating conditions and that the emergency guidelines for contamination of the environment can be met.

2. Commercial scale equipment for the removal of strontium-90 and cesium-137 from milk by ion exchange was successfully tested in the field. Should a milk supply be heavily contaminated, a plant exists which can remove 90% of Cs–137 and Sr–89 and Sr–90 in 100,000 pounds of milk in an 8-hour day.

COOPERATION WITH ATOMIC ENERGY COMMISSION

Mr. FLOOD. Where is the line drawn to determine what research on radiation is your responsibility and what is the responsibility of the Atomic Energy Commission? Where do you draw that line, and how is it drawn, and who draws it?

Mr. TERRILL. We develop it together with the technical people in the AEC, the Division of Biology and Medicine particularly. We try to draw the technical line in this manner. They are responsible for understanding the effect of relatively high levels of radiation exposure of animals and people. We are responsible for understanding health effects of radiation exposure at relatively low levels from environmental contaminants and from X-ray machines.

MEASUREMENT AND SURVEILLANCE

Mr. FLOOD. You are spending at the rate of over $4 million and you have 284 positions for measurement and surveillance.

Mr. TERRILL. Yes.

Mr. FLOOD. Why don't you settle for $2 million? What do you measure and survey that requires $4 million?

Mr. TERRILL. We have operations and personnel in many parts of the country. We have a team right now in Alaska measuring cesium in Eskimos. Every time a rocket-type reactor goes off in Nevada, we may detect an increase in radiation levels in the East. So, our effort is a national effort.

Furthermore, we have reports on a 24-hour basis. We never know when an incident may occur which will increase radiation levels. Our countermeasure program, based on the Federal Radiation Council recommendations, has to be ready to move at any time around the clock. So, our surveillance activities are much more like that of a fire department on a national basis.

Mr. FLOOD. I agree with that. My question was just why you needed $4 million; why it couldn't be done for a little less.

Mr. TERRILL. Sir, we are actually decreasing. There is no increase. With one block of money we are decreasing the total manpower on the national surveillance program through better methodology, while increasing our understanding of X-ray measurements.

EFFECT OF BUDGET REDUCTION

Mr. FLOOD. Let me ask it this way, then: What would happen if you got only $2 million?

Mr. TERRILL. What would happen if we got only $2 million?

Mr. FLOOD. Yes.

Mr. TERRILL. If we got only $2 million, we would no longer be able to carry out our national surveillance program and the country would be right back where it was 5 or 6 years ago, wondering what the radiation levels were.

Dr. PRINDLE. I think it should also be pointed out that not only would it cut back our capability for this year, but the loss then would require an extensive period to build back to the status we are in now, in case testing is resumed or other problems arose again.

LEVELS OF RADIATION

Mr. FLOOD. Have there been any significant changes in the levels of radiation in any parts of the country in the last year?

Mr. TERRILL. During the last year the only significant changes have been due to what we think of as the Chinese tests. Generally speak-

ing, the environmental radiation levels for long-lived radioisotopes have been going down, but the strontium levels in bone, for example, continue to go up a little.

Mr. FLOOD. Was that last Chinese shot an A or H head, do you know, atomic or hydrogen?

Mr. TERRILL. To the best of our knowledge, it was a hydrogen test.

Mr. FLOOD. What was its size?

Mr. TERRILL. The AEC would know better than we. By the time airborne radioactivity gets to the United States, I do not think you can depend on our system alone to determine the size of the test.

Mr. FLOOD. And the air currents, we found out during the war, move this way from the Northwest Pacific.

Mr. TERRILL. Generally speaking, yes, sir.

Mr. FLOOD. They are pretty high, but they move.

Mr. TERRILL. At the levels that we test, the air currents move high and fast.

Mr. FLOOD. I was thinking of those Japanese balloons, do you remember?

Mr. TERRILL. Yes, 90 knots.

Mr. FLOOD. Thank you very much.

JUSTIFICATION MATERIAL

Radiological Health

Amounts Available for Obligation

	1967	1968
Appropriation	$20,895,000	$15,687,000
Comparative transfer to "Comprehensive helath planning and services"	−5,000,000	
Total	15,895,000	15,687,000

Obligations by activity

	1967 estimate		1968 estimate		Increase or decrease	
	Positions	Amount	Positions	Amount	Positions	Amount
Grants: Research		$2,332,000		$2,328,000		−$4,000
Direct operations	814	13,391,000	814	13,359,000		−32,000
Effects of radiation on man	136	3,433,000	136	3,391,000		−42,000
Development of methodology for exposure reduction and control	110	1,949,000	110	1,983,000		+34,000
Training	119	1,587,000	119	1,584,000		−3,000
Measurement and surveillance	284	4,105,000	284	4,088,000		−17,000
Technical assistance	165	2,317,000	165	2,313,000		−4,000
Total obligations	814	15,723,000	814	15,687,000		−36,000
Unobligated balance, reserve		172,000				−172,000
Total obligations and balance	814	15,895,000	814	15,687,000		−208,000

Obligations by object

		1967 estimate	1968 estimate	Increase or decrease
	Total number of permanent positions	814	814	
	Full-time equivalent of all other positions	24	24	
	Average number of all employees	792	797	+5
11	Personnel compensation:			
	Permanent positions	$6,015,000	$6,059,000	+$44,000
	Positions other than permanent	225,000	236,000	+11,000
	Other personnel compensation	55,000	55,000	
	Total personnel compensation	6,295,000	6,350,000	+55,000
12	Personnel benefits	913,000	921,000	+8,000
21	Travel and transportation of persons	549,000	570,000	+21,000
22	Transportation of things	171,000	151,000	−20,000
23	Rent, communications, and utilities	654,000	654,000	
24	Printing and reproduction	116,000	116,000	
25	Other services	560,000	561,000	+1,000
	Project contracts	2,376,000	2,292,000	−84,000
	Services of other agencies	62,000	62,000	
	Payment to:			
	Public Health Service management fund	381,000	381,000	
	National Institutes of Health management fund	25,000	28,000	+3,000
26	Supplies and materials	646,000	646,000	
31	Equipment	574,000	624,000	+50,000
32	Land and structures	68,000	2,000	−66,000
41	Grants, subsidies, and contributions	2,332,000	2,328,000	−4,000
42	Insurance claims and indemnities	1,000	1,000	
	Total obligations by object	15,723,000	15,687,000	−36,000

Summary of changes

1967 enacted appropriation	$20,895,000
Comparative transfer to "Comprehensive health planning and services"	−5,000,000
Unobligated balance, reserve	−172,000
1967 total estimated obligations	15,723,000
1968 estimated obligations	15,687,000
Total change	−36,000

	Base		Changes from base	
	Positions	Amount	Positions	Amount
INCREASES				
A. Built in: 1. Annualization of 8 new positions authorized in 1967				$36,000
DECREASES				
A. Built in:				
1. Nonrecurring cost of fixed equipment				−50,000
2. 1 less day of pay (261 days in 1967; 260 in 1968)				−18,000
B. Program: 1. Research grants		$2,332,000		−4,000
Total net change requested				−36,000

Legislative authorization

The legislative authority in Section 301 of the Public Health Service Act which provides for the award of grants for research is included in the section of the justifications under the tab, "Preamble Paragraph" in Volume V.

Explanation of transfers

	1967 estimate	Purpose
Comparative transfer to "Comprehensive health planning and services."	$5,000,000	Consolidation of all grant programs authorized by Public Law 89-749 into 1 appropriation.

INTRODUCTION

The emergence of atomic energy in public power, the advances in the use of nuclear medicine, and the increased use of X-ray in both diagnosis and treatment are all major trends with a great potential for benefiting the American people but also carrying risks of deleterious effects on health. Federal programs have been and continue to be instrumental in fostering uses of these and other sources of ionizing radiation to obtain the greatest possible health and material benefits for our citizens. The Public Health Service's mission to preserve and improve the health and safety of the population from adverse effects and at the same time enjoy these increased benefits will require extensive effort in the years ahead.

It has been demonstrated that radiation effects are cumulative and that any radiation, even low-level, is potentially harmful, particularly to the young. The Public Health Service has achieved considerable success in eliminating unnecessary and minimizing necessary exposure to doses from ionizing radiation. For example, as of the latest date that final figures are available, June 1965, 80% of the estimated 94,174 dental X-ray units in the United States met or exceeded minimum requirements for filtration and collimation. In addition, in 1965 alone, over 25,000 medical X-ray units were inspected by State and local agencies; of these 11,000 units were found defective and 7,700 corrections completed.

Programs are also underway to advance the understanding of and to prevent

health impairments resulting from exposure. Results from these efforts and from programs measuring and evaluating total radiation exposure to populations require concerted, extensive and long-term research.

Consistent with and parallel to the above programs is the development of procedures, equipment, and techniques to improve current diagnostic and therapeutic application of ionizing radiation, as well as development and evaluation of other uses of ionizing radiations for the betterment of public health and the environment.

The research activity consists of grants and in-house programs dealing with effects of radiation on man and development of methodology for exposure reduction and control. The Public Health Service in-house capability to conduct research has been materially expanded through activation in 1966 of new research facilities at both the Rockville Radiological Health Laboratory and the Southwestern Radiological Health Laboratory. In addition a number of projects, particularly those dealing with equipment design and utilization, are carried out through contracts.

Methods have been developed and are in constant use through which research gains can be exploited with a minimum of delay and with predictable success. Implementation is accomplished by the training and technical assistance programs. The training program consists of developing and encouraging training activities in the radiological health specialties. A specialized short course training program has been utilized to train State and local as well as Federal personnel. Technical assistance provides a means for transmission of the best possible information and techniques directly to State and local agencies for protective and corrective action.

Supporting all activities are the measurement and surveillance networks operating through the regional laboratories located at Winchester, Massachusetts; Montgomery, Alabama; and Las Vagas, Nevada. The networks collect data on population exposures on a continuing basis as well as material for a number of research studies. In addition, the regional laboratories and the facilities at Cincinnati, Ohio, support and maintain both training facilities close to field activities and research projects best suited to specific geographical locations, including that research related to current Atomic Energy Commission activities.

Research grants

	1967 estimate		1968 estimate		Increase or decrease	
	Number	Amount	Number	Amount	Number	Amount
1. Noncompeting continuations	56	$1,448,000	65	$1,444,000	+9	−$4,000
2. New grants	40	820,000	40	820,000	.....	.....
3. Supplementals	(8)	64,000	(8)	64,000	.....	.....
Total	96	2,332,000	105	2,328,000	+9	−4,000

The radiological health program utilizes the competence of outstanding scientists in the radiological field at leading non-governmental research centers throughout the nation to gain full advantage from specialized fields of knowledge and of interest not otherwise obtainable.

As of June 30, 1966, grants totaling $1,692,337 were active on projects concerned with the effects of radiation on man and matter. An example of a grant in this field is a follow-up study on prenatal exposure to radioactive iron after 15 years by Dr. Robert M. Heysell at Vanderbilt University, Nashville, Tennessee.

A total of $443,819 is devoted to studies of X-ray exposures, radionuclide characteristics, environmental pathways, and protective action in environmental contamination. Examples include studies of radiostrontium metabolism and removal in man by Dr. Herta Spencer, Loyola University, Chicago, Illinois, and a study involving the physical and medical considerations in the substitution of Cesium 137 for radium in certain medical applications by Dr. Charles G. Amato and his colleagues at Manhattan College, New York City.

Another major problem area, measurement of radiation exposure and dose, utilizes $166,416; for example, Dr. John Hale at the University of Pennsylvania, Philadelphia, is developing a system for precision dosimetry for use in clinical radiology.

The $2,328,000 requested for 1968 is to support 40 new grants and 65 noncompeting continuations, an increase of 9 projects with a decrease of $4,000.

DIRECT OPERATIONS

	1967 estimate		1968 estimate		Increase or decrease	
	Positions	Amount	Positions	Amount	Positions	Amount
Personnel compensation and benefits	814	$7,208,000	814	$7,271,000	.....	+$63,000
Other expenses	.....	6,183,000	.....	6,088,000	.....	−95,000
Total	814	13,391,000	814	13,359,000	.....	−32,000

Summary of program

	1967 estimate		1968 estimate		Increase or decrease	
	Positions	Amount	Positions	Amount	Positions	Amount
Effects of radiation on man	136	$3,433,000	136	$3,391,000	.....	−$42,000
Development of methodology for exposure reduction and control	110	1,949,000	110	1,983,000	.....	+34,000
Training	119	1,587,000	119	1,584,000	.....	−3,000
Measurement and surveillance	284	4,105,000	284	4,088,000	.....	−17,000
Technical assistance	165	2,317,000	165	2,313,000	.....	−4,000
Total	814	13,391,000	814	13,359,000	.....	−32,000

1. Effects of radiation on man

	1967 estimate		1968 estimate		Increase or decrease	
	Positions	Amount	Positions	Amount	Positions	Amount
1. Effects of radiation on man	136	$3,433,000	136	$3,391,000	.....	−$42,000

Considerable research effort over a period of time is needed to refine understanding of the dose-effect relationship, particularly regarding low-level radiation and its long-term biological effects.

Many extremely important health, economic, and national security benefits now and in generations ahead are dependent on our obtaining more precise information on the long-term effects of radiation on man. This information is needed, so that in an era of continuously expanding use of radiation producing sources, more adequate benefit versus risk judgments can be made by responsible governmental agencies and the health professions.

Human population groups that receive unique and identifiable radiation exposure provide a means of defining major dose-effect phenomena. Epidemiological studies designed to quantify biological effects utilize these sources in a continuing program to establish and modify public health exposure guides. As a result of completion of 2 out of a total of 12 active studies in 1967, investigations will be initiated in 1968 into two primary areas; (1) documented X-ray exposures of groups of children and pregnant women, and (2) exposure of children and adults to radioisotopes used in medical practice.

In the area of medical X-ray exposure, particularly in the diagnostic range, it is difficult to determine significant effect in a population of manageable size. Therefore, feasibility studies will be continued in order to select groups that can best indicate specific biological changes.

A major mission of this program is the identification of radiation-induced biological changes which can be developed into sensitive indices that will be epi-

demiologically useful for the detection and interpretation of biologic damage from low-level radiation exposures.

Illustrative of this type of research is the study of thyroid conditions being conducted among school students in Washington County, Utah, an area known to have received considerable radioactive fallout from tests conducted at the nearby test site in Nevada during the 1950's. This study is part of a larger, long-term study which includes leukemia, bone cancer and congenital malformations.

The possibility of thyroid tumors developing in this group was a matter of concern since Iodine 131, a product of nuclear fission, is known to concentrate in the thyroid gland.

In September 1965, a team of Public Health Service physicians examined the thyroid glands of about 2,000 Utah students and a comparison group of 1,400 students in Graham County, Arizona. A tentative finding of thyroid nodules (small lumps) was reported for 70 of the Utah children and 25 of the Arizona group. A number of abnormalities may be associated with thyroid nodules, including inflammatory disease of the thyroid (thyroiditis), benign or malignant tumors, and goiter.

Three nationally recognized experts on thyroid disease did further studies of the 95 cases with suspected nodular thyroid. The results of the first examination were confirmed for the most part. Hospital study for 16 of the Utah children was recommended. Among this group thyroiditis was subsequently diagnosed specifically in five children and strongly suspected in four others on the basis of thyroid function tests. No cases of thyroid tumor were found.

At the present no association can be drawn between radiation exposure and the thyroid conditions observed in the Utah children. However, a followup study will continue for several more years so that reasonably firm knowledge can be gained as to the effect or lack of effect of environmental exposure of infants and young children to relatively low-levels of radioiodine.

Important investigations of long-term effects at low-level irradiation will continue at the Collaborative Radiological Health Laboratory at Colorado State University. Through use of a colony of beagle hounds, the systematic correlation of biochemical, physiological and morphological aspects of age-related radiation effects is studied. Primary attention has been directed to experiments which have revealed measurable change in the ultra-structure of the eye, reflex development, and brain formations attributable to *in utero* radiation. In 1968 a principal effort of the project will center upon the irradiation effect on the central nervous system.

Laboratory and related field studies are also conducted to provide a firm basis for determining body burdens and radiation doses so that studies of human population groups may yield, as precisely as possible, data on quantitative relationships between radiation dose and effect.

All of the research studies are subject to careful intramural and consultant evaluation. In addition, through the mechanism of regular meetings with the staff of the Atomic Energy Commission's Division of Biology and Medicine, the program of the Public Health Service in this field is coordinated with related work being conducted under the auspices of the Division of Biology and Medicine.

The net decrease of $42,000 is due to non-recurring equipment costs and one less day of pay in 1968.

2. Development of methodology for exposure reduction and control

	1967 estimate		1968 estimate		Increase or decrease	
	Positions	Amount	Positions	Amount	Positions	Amount
2. Development of methodology for exposure reduction and control	110	$1,949,000	110	$1,983,000	.....	+$34,000

Development and evaluation through engineering, physical, chemical and biological research of methods to minimize exposures to ionizing radiations from all environmental sources is the goal of this program area. Until more information is developed on the health effects from low-level exposures to ionizing radiation, the Public Health Service's position must be to adopt prac-

tical means to restrict the level of radiation to which individuals and population groups are subjected. The remarkable growth that has taken place and is predicted for the future in the various uses of ionizing radiation in the health professions and industry requires application of current knowledge toward specific improvements in exposure reduction and control.

In-house work and contracts in research and development on some of the more urgent problems related to increasing the effectiveness with which radiological methods are applied in the health professions, and in the methodology and equipment to be used in eliminating unnecessary radiation exposures from such applications will continue to be stressed. In particular, efforts will continue toward developing improvements in X-ray equipment, systems, and techniques. As an example of what can be done, the National Center for Radiological Health has developed an automatic collimating system that can be used in routine diagnostic procedures. This device automatically adjusts the X-ray field to the film size being used. Tests have been conducted of the system and arrangements are being made to further test models in two hospitals. Much of this work is also being done under contract with institutions having unique capabilities that may be applied to this problem. Examples include a contract with Emory University, Atlanta, Ga. on TV image storage techniques for use in fluoroscopy and with Tufts University, Boston, Mass. on the effect of X-ray beam quality on film quality.

Work will be continued through bioenvironmental and other research toward utilization of current knowledge of environmental radiation exposures and dose mechanisms. This work will provide relationships to establish a more valid basis for estimating exposures and enable the development and precise application of control and prevention techniques at the Federal, State and local regulatory levels.

Investigations will be continued to better define the movement and dispersion of the more important radioactive contaminants from their source to their ultimate disposition in man in order to determine critical points in the transmission pathway amenable to effective and feasible preventive measures.

Examples of studies underway include the incorporation of vermiculite into the ration of lactating animals to determine the binding effects of this material on strontium and cesium in the diet so as to reduce the secretion of these elements in the milk of the animals. Results to date indicate a significant reduction in the secretion of cesium in the milk, but no consistent reduction in the secretion of strontium. Similarly, work is being conducted on the addition of alginates to the diet of lactating animals and humans to determine the effect of these additives on the strontium cycle. Alginates are obtained from sea kelp and are common ingredients in the manufacture of ice cream and certain "jello" like desserts. The addition of this material to the diet of lactating animals has been shown to reduce the excretion of strontium in milk. At the present time it is planned to determine whether the consumption by humans of foods containing this material increases the rate of secretion of strontium from the body. Additional studies are planned to determine factors which influence the uptake of radionuclides from the soil by animal feeds and by human foods.

While work will continue, as necessary, on such well known radionuclides as strontium 90, cesium 137, and iodine 131, initial control studies will be started on tritium, carbon 14, xenon, and krypton, which have been recently recognized as potential health problems and upon which very little work has been done up to this time.

Surveillance-type studies on tritium and carbon 14 in the environment and in human autopsy specimens indicate that the levels of these radioisotopes are increasing. This is particularly important from the standpoint of the possible use of low-fission, high-fusion devices in the Plowshare projects under consideration by the Atomic Energy Commission. The inert gases, xenon and krypton, have recently been recognized as important contributors to population exposures in the vicinity of nuclear reactors. Therefore, it is important that studies on these radionuclides be carried forward.

The increase of $34,000 is due to annualization of positions new in 1967 offset in part by one less day of pay in 1968.

3. Training

1967 estimate:	
Positions	119
Amount	$1,587,000
1968 estimate:	
Positions	119
Amount	$1,584,000
Increase or decrease:	
Positions	----------
Amount	−$3,000

Training activities are designed to assist in providing through appropriate training mechanisms and techniques the numbers and kinds of technical and professional competencies required to staff activities in Federal, State and local governmental and nongovernmental agencies and institutions. Radiological Health training activities are also concerned with the intentional exposures of patients to ionizing radiations by the health profession, as well as those related to radiation exposures incident to other uses of ionizing radiation. Maintaining a training program meeting these various needs requires continuous assessment of specialized technical needs and those radiological health problems related to their efficient use and regulation.

The training effort includes development of formal training programs within institutions which receive grants to supplement their resources. In addition, course material and other training aids are provided as necessary. The public Health Service provides at the regional laboratories, at Cincinnati, Ohio, and at Rockville, Maryland specialized training courses for radiological health personnel in Federal, State and local programs.

In 1967 a significant developmental effort was undertaken by contract to strengthen the teaching of users of X-ray equipment, where much can be done to reduce unnecessary exposure to both patients and personnel. The problem in training in the X-ray field is the lack of a clear understanding of what constitutes the appropriate training for each of the roles of the respective team members. Solving this problem requires studies leading to a complete understanding of the inter-relationships between the equipment and techniques in medical X-ray and the appropriate functioning of each member of the team.

At Oregon State University a program is being developed in X-ray science and engineering, including teaching, training, research, evaluation and development activities, which the contractor is to present as a plan that may be used as a model for the establishment of similar programs at other institutions. A second, similar effort, will be initiated as soon as negotiations can be completed with a suitable school. However, in this instance teaching and training for undergraduate medical students, radiology residents, and nonradiology residents are included as well as for the supporting staff of physicists, engineers, and technicians.

In training technicians, courses are designed to provide guidance to the trainers, instructors, and supervisors of technicians in developing the appropriate type and level of training and the teaching materials needed to support such training.

The decrease of $3,000 is due to one less day of pay in 1968.

4. Measurement and surveillance

1967 estimate:	
Positions	284
Amount	$4,105,000
1968 estimate:	
Positions	284
Amount	$4,088,000
Increase or decrease:	
Positions	----------
Amount	−$17,000

The Public Health Service maintains and operates national surveillance networks that measure environmental radioactivity (including releases from Federal test sites and ranges) in order to provide for scientific information purposes a continuing record of national sources, levels and trends of radiation and radioactive materials in the environment and the exposures and doses received by people from all radiation sources.

The principal data from the Radiation Surveillance Network together with the Pasteurized Milk Network, the Institutional Total Diet Sampling Network, the Bovine Thyroid Network, Human Bone Network and others are released monthly (or more often, as required). Preparation and publication of these data are accomplished by the Radiation Surveillance Center.

Studies are also conducted to obtain estimates of the magnitude and distribution of population exposure to X-radiation. During the time that a reduction in surveillance activities became possible due to the weapons testing moratorium, X-ray population exposure studies were undertaken without increasing funding or personnel levels. Valuable information is being obtained to guide efforts to improve existing practices and reduce unnecessary exposure of patients and operators.

Although the nuclear weapons test ban appears to reduce the need for environmental surveillance for a time, current world conditions make a continuing effort in this field essential. Furthermore, as major nuclear facilities for industrial and other peaceful uses become more widespread, the Service's surveillance capability has increasing value.

Our laboratories will continue projects aimed at more fully evaluating the potential significance of tritium and other radionuclides of health significance as environmental contaminants. The sources, both military and civilian, need to be analyzed to enable forecasts to be made of tritium exposure in future years. A similar situation exists with regard to carbon 14. Preliminary investigations of several phases of the environment as well as examinations of specimens from humans indicate a general increase in levels of these radionuclides.

The decrease of $17,000 is due to non-recurring equipment costs and one less day of pay in 1968.

5. Technical assistance

1967 estimate:	
Positions	165
Amount	$2,317,000
1968 estimate:	
Positions	165
Amount	$2,313,000
Increase or decrease:	
Positions	----------
Amount	−$4,000

The purpose of this activity is to provide technical assistance and specialized consultative services and support to States in carrying out their radiological health programs. Assistance is also provided to other agencies in investigating, evaluating and minimizing public health risks involved in industrial, military, space and other uses of ionizing radiation.

Recent experience indicates the need for accelerated activity by the States in the whole area of medical and dental X-ray. The demands being placed upon the States for the certification of hospitals under the medicare program have emphasized the need for expanded efforts in upgrading medical and dental installations. Current Public Health Service programs, including provision of X-ray survey demonstration teams to the States and the furnishing of dental surpaks, will be continued. A similar program using surpaks for the evaluation of certain characteristics of medical X-ray installations is also underway.

The radioactive materials program is another important activity directed towards reducing the hazards of medical uses of non-AEC controlled sources such as radium. Public Health Service efforts are directed towards advising the States on proper survey methodology for installations using radium and the implementation of techniques for determining the integrity of radium source encapsulation.

Concentrated work effort continues on analysis of potential health effects of proposed major nuclear installations. This is done for the States and the Atomic Energy Commission. Such service is essential for an independent health appraisal of the environmental and human exposure potential. Current projections of the Atomic Energy Commission and other agencies indicate that the number of such installations to be constructed within the next few years will be increasing at an unprecedented rate.

Effort in this entire activity can be related directly to two factors. The first is a marked increase in total radioactivity resulting from more widespread use of a number of radiation sources. The second is the knowledge and experience

gained from research and other Public Health Service supported activities that can be applied with increasing effect.

The decrease of $4,000 is due to one less day of pay in 1968.

WEDNESDAY, APRIL 5, 1967.

URBAN AND INDUSTRIAL HEALTH

WITNESSES

JEROME H. SVORE, DIRECTOR, NATIONAL CENTER FOR URBAN AND INDUSTRIAL HEALTH
EARL H. ARNOLD, ASSOCIATE DIRECTOR, NATIONAL CENTER FOR URBAN AND INDUSTRIAL HEALTH
DR. MURRAY C. BROWN, CHIEF, OCCUPATIONAL HEALTH PROGRAM
DR. RICHARD E. MARLAND, CHIEF, INJURY CONTROL PROGRAM
DR. RICHARD A. PRINDLE, DIRECTOR, BUREAU OF DISEASE PREVENTION AND ENVIRONMENTAL CONTROL
VERNON G. MacKENZIE, DEPUTY DIRECTOR, BUREAU OF DISEASE PREVENTION AND ENVIRONMENTAL CONTROL
PETER J. BERSANO, FINANCIAL MANAGEMENT OFFICER FOR DISEASE PREVENTION AND ENVIRONMENTAL CONTROL PROGRAMS
DR. WILLIAM H. STEWART, SURGEON GENERAL
G. R. CLAGUE, ACTING CHIEF FINANCE OFFICER
JAMES B. CARDWELL, DEPUTY ASSISTANT SECRETARY, BUDGET

Object classification

[In thousands of dollars]

		1966 actual	1967 estimate	1968 estimate
	Personnel compensation:			
11.1	Permanent positions	6,490	8,521	9,522
11.3	Positions other than permanent	105	115	165
11.5	Other personnel compensation	128	149	174
	Total personnel compensation	6,723	8,785	9,861
12.0	Personnel benefits	845	1,063	1,258
21.0	Travel and transportation of persons	729	1,014	1,356
22.0	Transportation of things	110	205	331
23.0	Rent, communications, and utilities	335	615	800
24.0	Printing and reproduction	130	242	256
25.1	Other services	195	456	514
	Project contracts	976	2,139	2,950
25.2	Services of other agencies	112	279	281
25.3	Payment to:			
	"Public Health Service management fund"	325	309	350
	"National Institutes of Health management fund"	97	119	136
26.0	Supplies and materials	426	563	599
31.0	Equipment	786	967	1,212
32.0	Lands and structures		41	165
41.0	Grants, subsidies, and contributions	13,105	18,591	22,525
99.0	Total obligations	24,894	35,388	42,594

Personnel summary

	1966 actual	1967 estimate	1968 estimate
Total number of permanent positions	955	1,136	1,249
Full-time equivalent of other positions	27	28	34
Average number of all employees	794	1,010	1,119
Average GS grade	8.0	8.1	8.2
Average GS salary	$8,181	$8,619	$8,756

Program and financing

[In thousands of dollars]

		1966 actual	1967 estimate	1968 estimate
	Program by activities:			
	1. Grants:			
	(a) Research	9,598	10,696	12,071
	(b) Training	1,107	1,795	3,331
	(c) Fellowships	12	100	123
	(d) Survey and demonstration	1,989	5,000	5,000
	(e) Planning	400	1,000	2,000
	2. Direct operations:			
	(a) Solid wastes	800	4,168	5,597
	(b) Occupational health	3,086	3,571	4,544
	(c) Injury control	1,984	2,874	3,250
	(d) Food and water quality	3,678	4,474	4,726
	(e) Arctic health	910	1,113	1,333
	(f) Special environmental hazards	443	597	619
	Total program costs, funded [1]	24,007	35,388	42,594
	Change in selected resources [2]	887		
10	Total obligations	24,894	35,388	42,594
	Financing:			
16	Comparative transfers from other accounts	−11,208	−13,861	
25	Unobligated balance lapsing	153	435	
	New obligational authority	13,839	21,962	42,594
	New obligational authority:			
40	Appropriation	13,842	21,963	42,594
41	Transferred to—			
	"Office of the Surgeon General salaries and expenses" (42 U.S.C. 226)	−3		
	"Operating expenses, Public Buildings Service," General Services Administration (80 Stat. 674)		−1	
43	Appropriation (adjusted)	13,839	21,962	42,594
	Relation of obligations to expenditures:			
10	Total obligations	24,894	35,388	42,594
70	Receipts and other offsets (items 11-17)	−11,208	−13,861	
71	Obligations affecting expenditures	13,686	21,527	42,594
72	Obligated balance, start of year	2,679	7,505	13,534
74	Obligated balance, end of year	−7,505	−13,534	−29,541
77	Adjustments in expired accounts	−68		
90	Expenditures	8,791	15,498	26,587

[1] Includes capital outlay as follows: 1966, $261,000; 1967, $792,000; 1968, $966,000.
[2] Selected resources as of June 30 are as follows: Unpaid undelivered orders, 1965, $111,000 (1966 adjustments, −$68,000); 1966, $930,000; 1967, $930,000; 1968, $930,000.

Mr. FLOOD. We now have with us Mr. Jerome H. Svore. Mr. Svore is the Director, National Center for Urban and Industrial Health.

BIOGRAPHICAL SKETCH OF PRINCIPAL WITNESS

We have your biographical sketch which we shall place in the record at this point.

(Sketch follows:)

Name: Jerome H. Svore.

Position: Director, National Center for Urban and Industrial Health.

Birthplace and date: Norway, Kans., December 29, 1911.

Education: Bachelor of Science in Mechanical Engineering, University of North Dakota, 1934; Master's Degree in Sanitary Engineering, Harvard University, 1940; Professional Engineer Degree (honorary), University of North Dakota, 1949.

Experience: 1958–1967, Directed Federal water pollution control activities in the South Central United States carried out initially by the Division of Water Supply and Pollution Control of the Public Health Service and subsequently by the Federal Water Pollution Control Administration; 1957–1958, Executive Secre-

tary, Columbia Basin Interagency Committee; 1953–1957, Director of Public Health, North Dakota State Department of Health; 1945–1953, Chief Sanitary Engineer, North Dakota State Department of Health; 1938–1945, Sanitary Engineer, North Dakota State Department of Health; 1934–1938, Field Engineer, Federal Emergency Construction Program.

Association memberships: American Public Health Association, Water Pollution Control Federation, American Water Works Association, Sigma Xi, National Society of Professional Engineers, National Academy of Sanitary Engineers.

Mr. FLOOD. You may proceed with your statement, Mr. Svore.

GENERAL STATEMENT

Mr. SVORE. I welcome this opportunity to present to you briefly some of the basic ideas and concepts with which we are working in the development of the new National Center for Urban and Industrial Health. Dr. Prindle has touched on the purposes to be served by the recent reorganization of the Bureau which he directs; I will accordingly try to outline for you how the National Center for Urban and Industrial Health intends to launch its segment of the overall program of the Bureau of Disease Prevention and Environment Control.

URBANIZATION AND INDUSTRIALIZATION

Two factors are repeatedly and justifiably cited for their profound influence on the health and welfare of the American people. They are urbanization and industrialization. Those of us in the public health professions have recognized that the headlong rush toward greater urban concentrations and the increasing pace of technological innovation and application cannot fail to have a very important, perhaps critical, effect on the health of many millions of people throughout the country. As yet, I must say in all frankness, our knowledge of the health impact of urban living in a highly industrialized nation is perilously inadequate. We cannot afford this kind of ignorance, for it may mean that we are jeopardizing in advance the health of future generations by our failure to explore, identify, and correct health hazards in the environment which are of man's making and subject to his control.

The program of the National Center for Urban and Industrial Health is designed to lead us toward some of the solutions to health problems which our way of living creates. It is designed to concentrate knowledge and resources toward the elimination of health hazards of urban life in all its complexities; to insure the safety of food and water consumption, a healthful working environment, community sanitation, and the nucleus from which a broad scale attack can be launched against an almost endless array of factors and conditions that impinge on and influence the quality of life and health in our society.

Our health concern here is not restrictive, in that we are not limiting ourselves to any one form or source of disease or injury. We are concerned with health as it manifests itself in freedom from undesirable environmental influences, whether they be insects and vermin spread by a city dump, or unrelenting noise in a factory or community.

CENTER FOR URBAN AND INDUSTRIAL HEALTH

In forming the Center, we have pulled together a number of programs from within the Public Health Service—Occupational health,

injury control, solid wastes, environmental engineering and food protection, and others—each of which is intimately involved in efforts to deal with health problems existing in the urban industrialized society in which we live. In forging this new alinement, we have been guided by an awareness that the trends which bear most importantly on urban and industrial health are not now well understood, nor can they be mapped accurately to a logical end point. What we have attempted to do, therefore, is erect a base on which can be built a sound, integrated program for the acquisition and application of knowledge in a constantly changing sector of the total health arena. We have tried to plan for flexibility, as opposed to rigidity. We recognize, for example, that concern for health in urban communities cannot disregard the fact that the health of people in rural areas is very much influenced by the health needs and health hazards of cities.

The support of Congress, including passage of major legislation such as the Solid Waste Disposal Act of 1965, has given us the means for progress toward resolving problems of urban and industrial health.

PROGRESS DURING 1967

Our goal is improved health and safety through better understanding and elimination of environmental disease and injury hazards. Let me cite a few examples of progress toward this goal in 1967. During this fiscal year we will begin operations at the Johnson City, Tenn., demonstration composting project. In cooperation with the Tennessee Valley Authority, we are investigating the feasibility of composting all the municipal refuse and untreated sewage sludge generated by this community, converting it into a material that can safely be used as an organic soil conditioner.

We have awarded so far this year solid waste planning grants to 13 States, which brings to 25 the number of States that are beginning to bring their solid waste problems under control through the development of sound, health oriented management programs.

We established at Morgantown, W. Va., a laboratory for the intensive study of various respiratory diseases associated with coal mining and other industrial activities. The Morgantown laboratory forms the nucleus of a more extensive and broadly oriented facility which we plan to operate as a field station of the National Center for Urban and Industrial Health.

We opened a Driver Research Laboratory at Providence, R.I., where we are now carrying out simulation studies of both human and engineering factors involved in the causation of traffic accidents and the associated risk to the people involved.

We assisted in achieving an unprecedented level of protection from disease hazards in fluid milk and in food and beverages sold to the public and including those sold in vending machines thanks to the application by States of sanitation standards developed and promulgated under the milk and food program.

OBJECTIVES IN 1968

Turning to 1968, we intend to accomplish the following major program objectives-demonstration of several promising new techniques

for the handling of solid wastes, including innovative principles of incineration, compaction, and biodegradation; exhaustive evaluation of the health implications of new solid waste handling techniques at our new Cincinnati field laboratory and in other direct and grant supported projects; increased research attention to the physiological effects of urban crowding, noise, climatic conditions, and other stress factors which jeopardize public health and welfare; epidemiological studies to determine the relationship between the handling and care of accident injury victims and the likelihood of satisfactory recovery; studies that will lead to improved understanding of the asbestos and beryllium hazards that exist in industry and in the total community environment; food research studies that will lead to the reduction of salmonellosis, staphylococcal food poisoning, botulism and virus infections; execution of the Department's responsibilities in the area of water quality, as spelled out in Reorganization Plan No. 2 of 1966 requiring the Department to continue its role in relation to the health hazards of water pollution.

The challenges implicit in the concept of urban and industrial health protection and injury control can be met only if we succeed in bringing together into a meaningful whole the wide range of programs and activities that have attempted, often with marked success, to deal with parts of this overall problem. For instance, our Arctic Health Research Laboratory at College, Alaska, need not and will not be the focus of an isolated program concerned only with a small part of the total urban health picture. Millions of Americans now live and work in areas where extremes of climate are a significant factor in their personal and community health problems. The knowledge we can gain in this field will be of great importance in such areas as occupational health, injury control, and solid waste disposal.

We feel that solutions for the health problems being created and aggravated by our urban and industrial society must grow out of a comprehensive recognition of, and attack on, these problems. In order to carry out this attack, we are requesting a total of $42,594,000 for 1968, an increase of $7,206,000 over the present budget. We are building one program out of many; this is a demanding challenge for which we request your support. But the greater challenge—the protection of the health of the American people—demands that a broader effort be made without delay.

If I can answer any questions on these general remarks or on the budget information that is before you, I will be pleased to do so.

SUMMARY OF BUDGET REQUEST

Mr. FLOOD. The adjusted appropriation for 1967 is $35,823,000. The request for 1968 is $42,594,000. That is an increase of $6,771,000.

UNOBLIGATED RESERVE

Here again we have this "Unobligated balance, reserve." Yours is $435,000.

It seems as though we were quite generous last year. It seems we appropriated too much for 1967. Despite that you are asking for a big increase for 1968.

What is the story on the reserve this time?

Mr. BERSANO. This reserve results in part from reduced requirements for the continuation of research grant projects started in previous years; $307,000 of the reserve is related to these reduced requirements.

Mr. FLOOD. Then we appropriated too much money. You asked us for x dollars and got x dollars and now you come back and say "We had reduced requirements."

Mr. BERSANO. This came from a later analysis of the fund requirements to continue these projects.

Mr. FLOOD. Now, you ask for an increase.

Suppose you were sitting here? What would you think?

Mr. CARDWELL. I would hope you would understand the objective of what we are attempting to do this year.

Mr. FLOOD. I do.

Mr. CARDWELL. As Mr. Kelly explained in his presentation on the President's 1967 anti-inflation program, we did examine ways and means by which we might affect restrictions in 1967 without singling out specific programs per se.

One of the measures we took Department-wide, which affected this program, was to ask that a special analysis be made of research grant continuation costs. Where that analysis showed that the later estimate was below the estimate in the budget we would freeze the sums at the lower amount.

This difference occurs every year.

In prior years we permitted the money to become available for the program objective. This year we deliberately froze it as a step against inflation and not as a step designed to restrict the program.

Mr. LAIRD. You stopped fighting inflation? Is that what you are saying?

Mr. CARDWELL. It was a measure of the moment, sir. It was a measure designed to affect the fiscal 1967 year and only that fiscal year.

If that inflation continues to be a problem, and it is my understanding it is not the problem today that it was 6 to 9 months ago, then we would examine measures once again. This was a measure taken for 1967, and only for 1967.

RESEARCH GRANTS

Mr. FLOOD. Then despite what we have just heard, or rather in the face of what we have just heard, for research grants you are requesting an increase from $10,696,000 to $12,071,000. You speak of problems of urban and industrial health. Specifically what are these problems? What are you doing to get answers to these problems, and what answers are you getting?

Mr. SVORE. All of the programs that are within this Center, including solid wastes, occupational health, injury control, the water program, general sanitation are programs that are concerned with the overall health of people in an urban, industrial society. The specific items which you referred to in research are increases that go across the board on all of the programs—I am talking about grants now. All of the programs have research grants with the exception of the Arctic Health Research Laboratory.

A major portion of the grant funds that are being requested for next year is in the area of solid wastes. This program was authorized in October 1965. There had been no organized program on scientifically handling solid wastes in a healthful manner or an overall approach to the problem. A large portion of these funds will be used in that area.

Of the total for occupational health $3,174,000 is being requested for research grants, which will go across the board in all phases of occupational health. Some of them are being stressed at the present time, as I mentioned in my opening statement, such as beryllium, asbestos, and the continuation of our studies in pneumoconiosis.

Dr. PRINDLE. The other four Centers which you heard discussed each have identifiable activities understood——

Mr. FLOOD. Which one?

Dr. PRINDLE. The other national Centers such as the Communicable Disease Center. This Urban and Industrial Center frankly has a hard row to hoe because it is the newest approach. We have to try to get an organized and comprehensive approach to many little niggling things, in many situations, which are really the impacts of modern living. We are trying to get glamour out of a program like the solid waste program, which is extremely difficult. We hope that by putting these together a better total program can be accomplished. The number of activities we have here that otherwise fall through the cracks—they are not air pollution, not identifiable big programs about which we are all concerned—are really some of the major problems of modern living.

To me this Center has the greatest possibility and potentiality of being the really exciting new approach to the health problems of people as our society continues to urbanize and people continue to move into the cities, crowd together, and are faced with these kinds of issues.

In addition, one of the things that is common to the programs here is that these are activities which generally concern city and local officials much more than they do Federal and State. You have problems of traffic control, housing, urban development; problems of waste disposal in the cities. These have been handled on a piecemeal, community-by-community basis. There never has been a real solid approach with new attempts to put these things together.

This is what we are trying to do at this Center.

Solid waste is a problem that has been with us for years; yet no one has done research to see how we can do anything other than just burning it and causing an air pollution problem; or dumping it into water and causing a water pollution problem; or causing a land pollution problem. We need new approaches.

On the other hand, some of the other programs in this Center already have standards and regulations, ordinances and plans that we are promulgating.

This Center runs a variety of important research activities. There are some activities at the present time trying to solve problems which face us today. The fluid milk program is a good example, working with the States and developing ordinances. We have had a very successful program which has essentially eliminated disease hazards from fluid milk.

Here we have a direct activity in which we are helping people at the local level. I think all the other programs we are trying to develop at this Center are really to get at the problems facing people on an almost day-by-day basis.

TRAINING GRANTS

Mr. FLOOD. You are asking to almost double the money for training grants. Suppose you give us some facts and figures about your lack of trained people. What kind of training are we talking about?

Mr. SVORE. This covers all types of training. It includes graduate training for professional people. One example, if I may go back to solid wastes again, there never were established courses on scientific approaches to handling this problem. We have established graduate curriculums at six different institutions. We hope to increase this by six more. This will give us a capacity across the country of about 60 graduate students annually.

This is an entirely new program and had to start from scratch last fall.

One of the other major efforts in training which we are providing is in the general area of food and milk hazard control. This is a never-ending problem, for one thing, because of the turnover of people in this area.

We started a few years ago with the certification of interstate milk shippers. The number has more than doubled, and we anticipate that the number will double again within the next 2 or 3 years.

In order to do this we must have trained people who can certify that this product is safe for shipment in interstate traffic.

Dr. PRINDLE. These trainees are in the State and local departments who do these jobs in many cases.

Mr. FLOOD. Graduate schools?

Dr. PRINDLE. We can provide you with a listing of the training we do and the numbers of people.

Mr. FLOOD. I wish you would.

Mr. SVORE. We shall be glad to provide this for the record.

(The information referred to follows:)

Education and training activities and support

The training grant program provides for the establishment of university based graduate training specifically aimed at upgrading the competencies and increasing the numbers of professionally qualified personnel needed for the various disciplines in the area of urban and industrial health. The number of persons receiving this type of training by fiscal year and category is as follows:

Mr. FLOOD. I wish you would.

	Number of persons receiving training		
	1966 actual	1967 estimate	1968 estimate
Training grants (graduate training)	99	188	266
Research training	77	132	190
Solid waste training	20	45	60
Injury control fellowships	2	11	16

The direct operations training program provides short-course instruction to Federal, State, local and industrial personnel in such areas as milk, food, water and shellfish sanitation; solid wastes techniques and planning; control of occupational health hazards; elimination of community environmental health problems; and control and prevention of injuries and deaths. These courses are given at the urban and industrial health training center at Cincinnati, Ohio, and at various field locations throughout the country. The number of persons receiving this type of training by program for fiscal years 1966–1968 is as follows:

	Number of persons receiving training		
	1966 actual	1967 estimate	1968 estimate
Direct operations (short course)	5,137	6,510	6,800
Solid wastes	100	565	600
Occupational health	320	350	500
Injury control	2,460	2,460	2,500
Food and water quality	707	1,585	1,600
Special environmental hazards	1,550	1,550	1,600
Total	5,236	6,698	7,066

SOLID WASTE DISPOSAL

Mr. FLOOD. Under the solid waste disposal program you are asking again to double the planning grants, from $1 to $2 million. You are asking for an increase of $1,429,000 and 35 people for direct operations. Are you making any progress here?

Mr. SVORE. In planning grants the increase of $1 million is for grants which go to the States to develop——

Mr. FLOOD. It is not only $1 million but it doubles the amount for this activity.

Mr. SVORE. We are able to provide grants so far to 25 States to plan solid waste programs on a statewide basis. This will provide for additional States, and this is on a matching basis, to provide this type of an overall program in planning and in organized efforts in controlled collection of solid wastes, similar to a State program of air pollution, or a State program of water pollution control. This is an organized effort on a State basis. This the States did not have until the Solid Waste Act was passed about 18 months ago. That is where the $1 million increase will go.

The other increase is to carry out some of the in-house research that we are conducting. At Cincinnati we will have the first national center of solid waste research. This is where we can carry on the entire aspect of research in regard to solid waste. The facility will be constructed to handle solid waste. We will be able to compose it, incinerate it and do all the various aspects of biodegradation. This is the reason for some of the position increase we are requesting.

OCCUPATIONAL HEALTH

Mr. FLOOD. Now you were talking about occupational health. This is certainly not something new around here by any means.

You want an increase of 62 positions and almost $1 million. What are the problems?

Mr. SVORE. I have Dr. Murray Brown, the head of our occupational health program.

If I may, I would like to ask him to discuss some of the problems in beryllium, asbestos, and the uranium problem which has been developing for years.

BERYLLIUM

Mr. Flood. We have been dealing in exotic fuels and exotic metals, and in low- and high-fracture points for airframes for many, many years. I know the beryllium people have been very cooperative down through the years, and they still want to be. They have kept a pretty close liaison with the Public Health Service and the Department of Health, Education, and Welfare. I am satisfied that the people in the beryllium industry, and it is pretty well narrowed down to a few groups, want to cooperate in any way they can. I have been aware of the toxicity of beryllium down through the years.

Will you touch on that, Dr. Brown?

Dr. Brown. Beryllium, as you know, is a material that has been identified as being quite toxic. It has three major manifestations when it comes into contact with humans. It can produce granuloma on the skin in some of its forms, wherever there is a scratch or abrasion and material comes in contact. These have to be surgically removed. They are disabling but not permanently crippling.

It also causes an acute disease in the lung. With a large enough dose a person may die within days of an acute pneumoniclike process.

Then later on people who have been exposed to it, perhaps 20 years later, develop a chronic beryllium disease of the lung and this shortens life.

The material apparently is stored in the body and you can identify in beryllium workers many years later the presence of it in the body and presence in excretion of beryllium.

The problem is one of trying to find out how to work with this material with complete safety. The industry itself, that is, the prime producers, are relatively small in numbers of people. There are about 10,000 workers involved in the process of converting beryl ore into a useful beryllium product. From this level it goes to perhaps 6,000 prime customers of the industry.

These people in turn fabricate it and handle it in its various forms, frequently by subcontract to some unknown number of smaller operations.

The usefulness of the material has been clearly demonstrated. For instance, every computer contains a number of beryllium parts. It is used to plate the molds for blown plastics. It is in relay springs. As you mentioned, it has become recognized as the highest energy output material for rocket propulsion. The exposures to this which we have observed in the past have at various levels produced these problems.

We find that the industry is handicapped seriously by the fact that fear of illness from this material has tended to make people shy away from it despite its usefulness.

At this point the questions to be answered are how, in its various forms, ranging from the oxide to the beryllium copper alloys to other forms, these can be handled safely by this rather large number of people who deal with it.

Mr. FLOOD. What about asbestos?

Dr. BROWN. Asbestos has been definitely identified as the cause of a chronic lung disease, which is crippling and can lead to premature death.

By inference it has been implicated as a cause of carcinoma of the lung. More recently there has been circumstantial evidence that it is involved in the production of mesothelioma.

Mr. FLOOD. Is this in the processing and mining?

Dr. BROWN. Any exposure. Most of the data that we have is on the ores that come from South Africa. These have been under study for perhaps 20 years, largely in England, to some degree in this country. These ores have been implicated rather clearly by circumstantial evidence.

The Canadian ore, which is 90 percent of the ore we use in this country, has not been carefully studied, and we do not have much data on the Finnish ore, some of which is used in this country.

The length of fiber, shape of fiber, and these sorts of things are different in the ores, and the kinds of materials that are on the fibers differ with the source of the ore.

The kinds of questions that are not answered are, for instance, is it the fiber of the asbestos itself that causes carcinoma, if, indeed, asbestos does do so, or is it something that is on the surface of the fiber, either as a result of the natural ore or as a result of something added in the processing.

The whole area is very vague at the moment, but the kind of implication that is here and the necessity for clarifying the situation arises from the fact that this material is all around us. I suspect we can find some in this room if we looked hard enough. There has been speculation that there may not even be a threshold level, and perhaps just a single fiber is all a person needs to get into difficulty. We have to find out whether this is true and what it is that causes the difficulty if asbestos is, indeed, involved.

A decided example of how ubiquitous it is, is when you realize brake linings contain asbestos and that brake linings burn up. The dust from brake linings, if something happens to it, certainly isn't material that is easily destroyed. The possibility exists that we have a larger hazard than one has recognized to this point.

The amount of asbestos used in this country last year totaled the amount ever mined in the whole world prior to 1930. This will give you some idea of the use of the material. It is used in a wide variety of ways we don't think about. It is even in certain types of water pipe today, in the tiles used on floors, in the ceiling boards. It is all around us and it represents to our minds a very potentially serious problem and one which we should study, and study in depth.

What we have done to date is this: We are currently characterizing the exposure of workers in the asbestos industry; that is; job by job, how much asbestos they are exposed to in a respirable form, a form that can get into the lungs.

We have examined the death rates in the asbestos industry, and we have come to the conclusion that the evidence indicates that there is a 22-percent excess of deaths among people working in the asbestos fiber, that is the textile industry.

We have called together all the experts we could find in the country. We have had a free discussion for 2 whole days as to what must be known before we know where we stand in regard to this material.

After that we set up a master list of questions that should be answered and that has been reviewed by experts across the country.

We are now moving to an intraservice committee which is reviewing the priorities on these undertakings and, which is settling within the Public Health Service itself, who shall do what.

We are clear on a good part of what our mission is, but we think there are certain things that can be done elsewhere in the Service.

The Cancer Institute and the environmental health sciences group will be sitting with us on the 20th of this month to formulate the long-range plan and to determine who does what.

Mr. FLOOD. Very interesting and enlightening. Much of this is new information to me.

Mr. SMITH. Is water pollution involved if brake linings wear out on the streets and the storm sewers take the water?

Dr. BROWN. This is a question that should be answered. We don't know.

Perhaps the best answer to the question is to say that we need to implicate or not implicate the asbestos used in this country as a cause of carcinoma first, and then from that point move on to the ways in which people are brought in contact with it.

Mr. SVORE. This is a very common product in water supply pipes, as you know.

FOOD AND WATER QUALITY WORK

Mr. FLOOD. You are asking for a smaller increase for food and water quality work, $252,000 and 14 positions. What water activities remain with you under this agreement, related to the Federal Water Pollution Control Administration, that you worked out with the Department of the Interior?

TRANSFER OF WATER POLLUTION CONTROL ACTIVITIES TO DEPARTMENT OF INTERIOR

Mr. SVORE. May I review briefly what actually happened in the transfer of this activity to Interior and what was left with us?

Mr. FLOOD. We would like to know.

Mr. SVORE. The Federal Water Pollution Control Administration was created within the Department of Health, Education, and Welfare taking with it the activities of the Division of Water Supply and Pollution Control which was a division of the Public Health Service.

Subsequent to that the Federal Water Pollution Control Administration was moved to the Department of the Interior under Reorganization Plan No. 2, of 1966.

Mr. FLOOD. What went on there?

Mr. SVORE. The water pollution control activities moved over to Interior. Their responsibility is in the field of water pollution control. The responsibility for water supply, however, remained with us.

Reorganization Plan No. 2, in transferring the water pollution activity, specifically left with the Department of Health, Education, and Welfare the public health aspects of water pollution control.

Mr. FLOOD. This is an appropriations committee. You are asking for money. Why the increase? What are the problems?

Mr. SVORE. When this transfer was put into effect all positions and funds were transferred to the Department of the Interior. Yet, it did not take away from the Department of Health, Education, and Welfare the responsibility in water supply and the health aspects of water pollution in river basin planning.

We are still involved in 29 river basin planning operations.

Mr. FLOOD. Does it include the Susquehanna? Did you ever hear of that?

Mr. SVORE. Yes; I have heard of it. I am not personally acquainted with all 29 of these because——

Mr. FLOOD. I think you ought to get acquainted with that one.

Mr. SVORE. I can provide you with a list of the river basin planning operations wer are involved in now. When the positions and individuals moved over to Interior this left a vacancy of HEW representation on all of these planning groups in all the basins.

Also, there is still a responsibility for HEW to serve on the river basin commissions which are now being established.

(The list referred to follows:)

RIVER BASIN PLANNING OPERATIONS

The following is a list of river basin projects in which the National Center for Urban and Industrial Health will be involved with respect to planning operations during fiscal years 1967 and 1968:

1. Big Black River
2. Big Muddy River
3. Connecticut River
4. Genessee River
5. Grand River
6. Kanawha River
7. Pascagoula River
8. Pearl River
9. Puget Sound
10. Red River below Denison
11. Sabine River
12. Susquehanna River
13. Wabash River
14. White River
15. Willamette River
16. Missouri Region
17. Ohio River Region
18. Upper Mississippi Region
19. Columbia-N. Pacific Region
20. North Atlantic Region
21. California Region
22. Lower Colorado Region
23. Upper Colorado Region
24. Arkansas-White-Red Region
25. Great Basin Region
26. Great Lakes Region
27. Rio Grande Region
28. Souris-Red Region
29. South Atlantic-Gulf Region

NEED FOR INCREASE FOR WATER QUALITY WORK

Mr. FLOOD. What are your problems now? Why do you need more funds?

Mr. SVORE. Our concern, of course, is in the health aspects of water, including its recreational use. They are all health problems. The entire chemical environment of pollution and its effect on man is of concern to us. These are some of the health aspects of water pollution for which we are responsible.

No matter how good a job you do in treating the wastes of this Nation, you still are not going to create a river that is of such quality that you can drink from it. You still must treat it.

Dr. PRINDLE. Mr. MacKenzie has been working closely with the Federal Water Pollution Control Administration trying to delineate our responsibilities and roles. I wonder if he might speak to this?

Mr. FLOOD. Certainly. You see, you move this to Interior and then we find HEW is still asking for funds. It is a little confusing to us on this side of the table.

Mr. KELLY. The evolution of this change was first to create the Water Pollution Administration as a separate agency within the Department of Health, Education, and Welfare.

I think it is important to realize that because the original division of responsibility between the health function and the water pollution function was carved out and conceived within the Department of Health, Education, and Welfare.

This facilitated the movement to Interior because the work of shifting this organization——

Mr. FLOOD. I agree.

Mr. KELLY. The Department of the Interior essentially accepted the same concepts of materials and conditions that had been developed within HEW as to what constituted the health function and what constituted the water pollution function when we carved out this agency, so that it was not as if it was transferred to the Department of the Interior and then great resentment existed. This had been worked out within HEW.

Mr. MACKENZIE. The public health aspects we are referring to here can be enumerated as coming within several classes. First, the establishment of standards of quality of drinking water for the protection of the public health. Second, establishment of standards of quality of water used for recreational purposes. Third, standards of water quality as related to food sources; a prime example of this is the use of shellfish, the beds of many of which are exposed to pollution in varying degrees and varying kinds. Lastly, we have the need for taking appropriate measures, in connection with water resources development projects, in order to minimize the breeding of disease vectors such as mosquitoes, or, occasionally other disease vectors.

Unfortunately, when a reorganization occurs, although every effort is made to have it as clean and definitive as is reasonably feasible, some elements will still need attention in order to further delineate the responsibilities of the several agencies involved as the operational programs continue.

For this purpose, there have been agreements which have been entered into between the Department of the Interior and HEW, laying out the functions of each Department in this field. There is a continuing liaison between the two Departments, involving this Bureau and the Federal Water Pollution Control Administration, because of the necessity for interchanging of information on specific projects and to agree on the division of the work function that each must pursue.

The work of both Departments is essential in carrying out the overall mission, Mr. Chairman, and what we are including in this appropriation is the function which must be carried out by HEW.

Mr. FLOOD. This agreement that you have with Interior is actually a written instrument?

Mr. KELLY. It is.

Mr. FLOOD. Is it very long?

Mr. KELLY. It is not.

Mr. FLOOD. Suppose you place it in the record.

(Information follows:)

INTERDEPARTMENTAL AGREEMENT CONCERNING CONSULTATION BETWEEN DEPARTMENTS OF HEALTH, EDUCATION, AND WELFARE AND THE INTERIOR, SEPTEMBER 2, 1966

1. This Interdepartmental Agreement has been developed in accordance with the provisions of Section 1(f) of Reorganization Plan No. 2 of 1966, which states:

"The functions of the Surgeon General under Section 2(k) of the Water Quality Act of 1965 (79 Stat. 905) are transferred to the Secretary of Health, Education, and Welfare. Within 90 days after this reorganization plan becomes effective, the Secretary of the Interior and the Secretary of Health, Education, and Welfare shall present to the President for his approval an interdepartmental agreement providing in detail for the implementation of the consultations provided for by said Section 2(k). Such interdepartmental agreement may be modified from time to time by the two Secretaries with the approval of the President."

2. The functions referred to above are defined by Section 2(k) of the Water Quality Act of 1965, as follows:

"The Surgeon General shall be consulted by the head of the Administration on the public health aspects relating to water pollution over which the head of such Administration has administrative responsibility."

3. The public health aspects of water pollution relate to man's drinking water; to his contact with water in recreation and work; to the contamination of food sources, particularly shellfish; and to the breeding of specific insect vectors of disease. The health threat is of three types; (*a*) chemical—both organic and inorganic contaminants, which can result in acute toxic or long-term chronic effects on humans; (*b*) biological—microbiological contaminants and insect vectors associated with spread of communicable disease; and (*c*) radiological—radioactive contaminants which in very low level concentrations may produce radiation damage in humans.

4. Consultation between the Departments of Health, Education, and Welfare, and the Interior under the terms of this Agreement shall be based upon the following general concept:

(*a*) The Department of the Interior is responsible for administering the Federal Water Pollution Control Act as amended; certain functions relating to water pollution control under Section 702(a) of the Housing and Urban Development Act of 1965, Section 212 of the Appalachian Regional Development Act of 1965, and Section 106 of the Public Works and Economic Development Act of 1965, and Executive Order 11288, "Prevention, Control, and Abatement of Water Pollution by Federal Activities."

The stated purpose of the Federal Water Pollution Control Act is "to enhance the quality and value of the nation's water resources and to establish a national policy for the prevention, control, and abatement of water pollution." The responsibilities of the Department of the Interior, under the above legislation and Executive Order, involve the prevention and control of water pollution in consequence of the benefits resulting to the public health and welfare, giving due regard to the improvements which are necessary to conserve the nation's waters for public water supplies, propagation of fish and aquatic life and wildlife, recreational purposes, and agricultural, industrial, and other legitimate uses. To meet these responsibilities the Department of the Interior, through the Federal Water Pollution Control Administration, conducts programs to identify and measure the extent of pollution and its effects on water uses and to assure the treatment and control of waterborne wastes.

(*b*) The Department of Health, Education, and Welfare, under the Public Health Service Act as amended, is responsible for the protection of the public health. Within this responsibility, the Department through the Public Health Service is, therefore, concerned with the causes, diagnosis, treatment, control and prevention of physical and mental diseases and impairments of man. As related to Reorganization Plan No. 2, these responsibilities include: determination of the health significance of water pollution; investigation of waterborne diseases and means for their control; provision of consultation to the Department of the Interior on the public health aspects of water pollution; and advising on the public health questions involved in the inclusion of storage for water quality control in Federal reservoirs.

5. Under the terms of this Interdepartmental Agreement the Department of Health, Education, and Welfare will provide advice to the Department of the Interior as follows:

(*a*) Recommendations on criteria for water quality standard setting based on health aspects of intended water use for drinking water supplies, shellfish and other marine food production, bathing, and other water contact activities. Recommendations will be provided and modified as new supporting data are developed.

(*b*) Upon request, consultation and technical assistance on specific water-related health problems, as these may arise in connection with water pollution control activities, such as comprehensive pollution control program, enforcement actions, control of pollution from Federal installations, water pollution research projects, construction grants, and the study of water pollution from vessel operations. In cases where epidemiological surveillance activities indicate that a probable public health hazard exists, the Public Health Service will initiate appropriate action to advise the Federal Water Pollution Control Administration.

(*c*) Review and comment on construction grant applications and on requirements for control of pollution from Federal installations for specific projects whose operation may adversely affect the sanitation of shellfish-growing waters. The Federal Water Pollution Control Administration will refer all such projects to the Public Health Service for review and comment.

6. Section 1(e) of Reorganization Plan No. 2 of 1966 provides for the Department of Health, Education, and Welfare to advise on public health questions involved in determinations by Federal agencies of the need for and value of the inclusion of storage for water quality control in Federal reservoirs. Advice on the effects of streamflow regulation on public health will be provided by the Public Health Service based upon the studies prepared by the Federal Water Pollution Control Administration under Section 3(b) of the Federal Water Pollution Control Act. The Federal Water Pollution Control Administration report will be provided to the Public Health Service for review and comment. The Public Health Service comments, together with its own report on the production of disease transmitting insects and other environmental health considerations in the project area, will be submitted to the Federal construction agency concerned.

7. To assure an adequate basis for such advice and consultation to the Department of the Interior, the Department of Health, Education, and Welfare will, through the Public Health Service, conduct the following kinds of studies on the health aspects of water pollution:

(*a*) Epidemiological, microbiological, radiological, and toxicological research and investigations into the human health significance of waterborne contaminants, to determine health tolerance for such contaminants as they affect drinking water supplies, shellfish and other marine foods production, and water contact activities.

(*b*) Epidemiological surveillance of the incidence of waterborne disease based on disease reporting, and on health-related water quality data derived from the Public Health Service drinking water quality network established under the Interstate Quarantine Regulations, the National Shellfish Sanitation Program, and the Radiation Surveillance Center, and on data from the program activities of the Federal Water Pollution Control Administration.

Investigation of waterborne disease outbreaks will be conducted in cooperation with State and local health departments. Data and participation will be requested from the Federal Water Pollution Control Administration when water pollution is involved in the outbreak. Reports based on these investigations which identify pollution that presents a danger to health will be referred to the Federal Water Pollution Control Administration for appropriate action.

(*c*) Studies of the relationship of surface water characteristics to the production of disease vectors such as disease-transmitting insects, snails, and protozoa.

(*d*) Development of techniques for the identification, measurement and study of the behavior of waterborne contaminants which cause or influence disease, such as viruses, bacteria, organic chemicals, and trace elements. The results of these Public Health Service studies will be made available to the Federal Water Pollution Control Administration as a complement to its studies on identification and measurement of water pollutants, the results of which in turn will be made available to the Public Health Service.

Study of methods of removing contaminants of health significance to meet human tolerance levels as related to drinking water, swimming pools, shellfish depuration, and food processing. To avoid duplication of Federal installations for pilot plants, when such facilities are required to study methods of removing contaminants from drinking water, Public Health Service personnel may use

Department of the Interior facilities. To assure that such installations will adequately serve such purposes, the Department of the Interior shall consult with the Department of Health, Education, and Welfare in their design.

Study of the human health relationship of waterborne contaminants to animals and plants used as sources of foods, such as shellfish and other marine foods, food crops irrigated with polluted water, including their field packaging, and use of sewage sludge as a fertilizer and soil conditioner.

8. The Public Health Service and the Federal Water Pollution Control Administration will exchange on a regular basis relevant health-related water quality data and research results. Particular attention will be given to prompt exchange of significant new findings which would affect the program responsibilities of either agency.

9. To effect essential coordination between Public Health Service and the Federal Water Pollution Control Administration, and to insure fulfillment of this agreement, each agency will designate an official liaison representative. These representatives, together with appropriate staff, shall meet at the request of either agency to discuss measures taken to implement this agreement and review any evident or emerging technical, administrative or fiscal problems which either agency considers might affect the proper functioning of this agreement. Any unresolved problems will be brought to the attention of the respective Secretaries.

AUGUST 8, 1966.

JOHN W. GARDNER,
Secretary of Health, Education, and Welfare.

AUGUST 8, 1966.

STEWART L. UDALL,
Secretary of the Interior.

SEPTEMBER 1, 1966.

LYNDON B. JOHNSON,
The President.

Mr. FLOOD. Mr. Shriver?

MORTALITY FROM FIRES AND EXPLOSIONS

Mr. SHRIVER. I have recently received from one of the large insurance companies statistics relating to the continuing increase in mortality from fires and explosions. There seems to be a tremendous increase. What is being done about this?

Mr. SVORE. I have with me this morning Dr. Marland, who is the head of the injury control program. With your permission I would like to call on him.

Mr. SHRIVER. The bulletin I referred to was the statistical bulletin of Metropolitan Life Insurance Co.

Mr. FLOOD. Who are you? Tell us something of your background.

Dr. MARLAND. I am Richard E. Marland, chief of the injury control program. I have a doctor of philosophy degree in environmental health, University of North Carolina, a master of public health degree in environmental health, and a master of science degree in food science, and technology.

Mr. FLOOD. How long have you been on board?

Dr. MARLAND. Nearly 20 months. I am a newcomer in the Public Health Service.

Mr. SHRIVER. Did you understand what I was referring to?

Dr. MARLAND. Yes; Mr. Shriver. The mortality and morbidity both from fires and explosions are in fact, increasing. The statistics which you have there from the insurance industries reflect the same kind of picture which we are getting on a much smaller scale from our own program. There are two factors involved—one, the most responsible factor, is that there are more people and more houses.

The rate at which these are occurring is not increasing per se. The rate already is alarming. However, although the rate is not increasing, the absolute number from fires and explosion has been increasing by about 1,000 a year over the last decade.

Mr. SHRIVER. What can be done about it?

Dr. MARLAND. The Public Health Service, through our injury control program——

Mr. FLOOD. What do you mean by explosions?

Dr. MARLAND. Gas heaters are a frequent cause of explosions in the homes or in house trailers. House trailers frequently, more frequently even than houses, have such equipment.

The injury control program has developed, through surveillance team operations in two locations of the United States data from studies of the injuries that have occurred in those regional areas within the last 2 years. Through interviews with injured parties, professional persons such as physicians, firemen, police offcers, and other persons involved, we have determined more precisely than we have ever known before the exact nature of the cause of each injury.

In Birmingham, as an instance, we did a retrospective 5-year study of the incidence of burn injuries admitted to hospitals.

We then conducted a public education program in the Birmingham area. The net result of this was a 50-percent reduction in the subsequent hospitalizations from burn injuries in the same area in the same hospitals.

Mr. SHRIVER. Did you do the same thing in other places of the country? I am sure it is a problem.

Dr. MARLAND. More largely confined to the South and Southwest than to the entire United States. However, it is a national problem; yes, sir.

The problem as we see it is that people in general are not fully appraised of the hazards inherent in heating or electrical equipment and clothing, for that matter.

FLAMMABLE FABRICS

Flammable fabrics are a matter of great concern and interest to us. We find that the mortality from clothing fires is approximately 2,000 persons a year, with more than 150,000 injuries.

We define an injury as that which causes either a restriction in the activities of the patient or requires medical care.

Mr. FLOOD. Do synthetic fabrics contribute to this problem?

Dr. MARLAND. Some synthetics are very safe with regard to flammability. Others are a small improvement, perhaps, over some of the natural fibers. You cannot generalize on synthetics.

Mr. SHRIVER. In connection with elimination of the problem of injuries resulting from fires from clothing, let us say, what can be done by your agency?

Dr. MARLAND. The way in which we have attacked it, and to this point in time we feel we have been successful, has centered about an educational campaign within a specific area, such as a city or county. This could be done on a larger scale, though we have never yet tried it. A campaign of education is what it really amounts to. We would send our specialists, educators as well as technically qualified people such as in the area of burns, or whatever type of injury we are concerned with,

and we are concerned with all phases of injury. These experts, together with our educational staff, comprising a team of perhaps three, four, or five people, would, in conference with the medical association of the community, with the hospital groups, and with the community and civic action groups, develop a program of education through the PTA, through the women's club, through the medical association, putting into effect those features which do control the injury-producing environment or train the individual to avoid the environment.

Mr. SHRIVER. Is this being done now?

Dr. MARLAND. Yes. We have had many successful projects dealing with several sources of injurious environmental——

SAFETY OF MOTEL POOLS

Mr. SHRIVER. I have a release of the U.S. Department of Health, Education, and Welfare; Public Health Service, where you are quoted, Dr. Marland. This has to do with a new pamphlet, "How Safe Are Motel Pools?" This is a study of 53 motel pool facilities. With an increase in pools being constructed throughout the country, backyards, and elsewhere; this is a difficult problem. A week ago there was a loss of life in my hometown of Wichita in a private swimming pool. Are you working on this problem, or is it a problem?

Dr. MARLAND. Yes, sir; we are working on it. We recently completed a survey based on the physical characteristics of pools and the habits of people who use pools to establish certain recommendations for the construction and protection of pools——

Mr. FLOOD. What is there peculiar about a pool at a motel as distinguished from a country club? Why a motel?

Dr. MARLAND. They are increasing in frequency throughout the country and the number of fatalities is increasing because there are more and more motel pools.

Mr. SHRIVER. And perhaps they are not as well guarded.

Dr. MARLAND. That is right. The motel pool characteristically does not have a full-time lifeguard, does not have the operating rules which people must follow.

Therefore we have promulgated and published through the American Medical Association a series of recommended operating procedures for motels, but they extend to private pools. A private pool owner would find these same rules of operation——

Mr. FLOOD. Wouldn't that be under the jurisdiction of the State rather than the Federal Government?

Mr. SHRIVER. This agency puts out information.

Dr. MARLAND. Dr. Prindle described the way in which our program characteristically works, Mr. Chairman.

Mr. FLOOD. Should not the State require these regulations?

Mr. SHRIVER. Cities should, and many of them do. However, we still have these fatalities and we still have these accidents occurring.

Dr. PRINDLE. We are not trying to control these things. We are trying to give guidelines to cities or States on which they can base their laws. These are recommendations and we say, "These are the things you should have."

Mr. FLOOD. I don't think Mr. Shriver is concerned about your telling him how to run his pool.

Mr. SHRIVER. That is right. But they do make available, as I understand the testimony, what can be done.

Dr. MARLAND. Yes. This is our style of operation. We develop the the best data which we can determine as to the reason why things happen which result in injuries, and then to whichever authority, be it city, State, local; we make recommendations which can be converted into ordinances.

As a matter of fact, this week we have mailed to each of the 50 Governors and the 50 attorneys general recommendations with regard to the installation of glass panels which we are recommending they incorporate in their State statutes and codes relating to the construction of housing.

This was done in cooperation with the Federal Housing Administration and the United States of America Standards Institute. It is a rather comprehensive recommendation as to the nature of glass which should, or could, be safer to use on glass doors and panels adjacent to glass doors in private housing.

These recommendations went out this week from our office. This is the nature of our operation: to determine the data, to determine the facts of the environment which lead to injuries, and then recommend to the people who have the authority to enforce these recommendations which we feel are called for.

Mr. SHRIVER. That would be the local and State people and not controlled from up here?

Dr. MARLAND. Most frequently local and State, yes.

Mr. SHRIVER. I think you are performing the proper function of the Federal Government, to send them information, Doctor, in attempting to prevent this increase.

That is all I have, Mr. Chairman.

AMOUNT OF INCREASE FOR NEW EMPLOYEES

Mr. NATCHER. How much of your increase would be used to fund new employees?

Mr. BERSANO. For the 113 new positions we are requesting $660,000 for the payment of salaries and related benefits.

NUMBER OF SCHOLARSHIPS

Mr. NATCHER. How many scholarships would you have under your $123,000 request? What would be the total number?

Mr. SVORE. In training?

Mr. NATCHER. Yes.

Mr. SVORE. There are 16.

Mr. NATCHER. That is, in training?

Mr. SVORE. In training.

Mr. NATCHER. What would be the total number of scholarships in all sections?

Mr. SVORE. I was giving the figure for fellowships.

Mr. NATCHER. I meant fellowships, yes.

Mr. SVORE. Sixteen specifically for fellowships. There will be additional funds for other training in addition to this.

Mr. BERSANO. There will be 250 students supported under the

project training grant program in addition to those funded under the fellowship grants.

Mr. NATCHER. Thank you, Mr. Chairman.

Mr. FLOOD. Mr. Michel.

ASBESTOS

Mr. MICHEL. How much is in the occupational health budget for studies concerning the use of asbestos?

Mr. SVORE. For the studies on asbestos and beryllium, we are requesting 42 additional positions.

Mr. BERSANO. Specifically for asbestos, $343,000.

Mr. MICHEL. Going beyond that, you said for asbestos and beryllium?

Mr. SVORE. I was giving you the total number of new positions requested for asbestos and beryllium, 42.

Mr. MICHEL. What is the number for asbestos?

Mr. BERSANO. Twenty-one positions, total.

Mr. MICHEL. How much money?

Mr. BERSANO. $343,000, altogether.

BERYLLIUM

Mr. MICHEL. How about beryllium?

Mr. BERSANO. Twenty-nine positions and $514,000, altogether.

Mr. MICHEL. What did we do in this area last year, anything?

Mr. BERSANO. Last year for beryllium activities we had two positions and $25,000, and for asbestos we had six positions and $91,000.

Mr. MICHEL. What accounts for that marked increase in the request?

Mr. SVORE. Because of the importance of this problem and the fact that——

Mr. MICHEL. On the basis of the increase in positions and money, it is a really big problem.

Mr. FLOOD. Do you want to comment on that, Doctor, in reply to Mr. Michel's question?

Mr. SVORE. Dr. Brown is head of the occupational health program.

Dr. BROWN. There has been a growing recognition that we had to find a safe way to work with this very toxic material. It is a material that is important in the economy, and even more specifically in defense activities. Its toxicity has been known for a long time. We have known it since the late forties when we learned of it in the fluorescent light industry.

I reviewed for the committee earlier the kinds of trouble it causes, which can be summarized by saying it produces granulomas on the skin in certain forms. It produces an acute disease which can be fatal. It causes a chronic and delayed lung disease which can shorten life and which can be very serious.

Mr. MICHEL. Mr. Chairman, in view of the fact that it has already been spread upon the record, I apologize for having opened up the subject matter again, other than just to express my own concern about it because I have a particular case in my own district which concerns me.

Mr. FLOOD. The questions you asked about the number of positions and the amounts were not developed.

Have you a beryllium or asbestos problem?

Mr. MICHEL. The one problem I have reference to has to do with a certain kind of plastic. I am a layman in this game, but from what little knowledge I have been able to pick up along the way, it is a very serious thing.

Apparently you pointed out earlier in the record that it is, Dr. Brown, is that correct?

Dr. BROWN. That is correct. I think you are referring to something else, however. I think you are referring to solvents used in industrial processes. This is another problem which we are working on. It is in the laboratory phase at this point. There is a totality of occupational hazards within which beryllium, asbestos, uranium, and so on, are important, but also on the chemical side there are things like plasticizers.

Mr. SVORE. This is true in many areas where they are developing new chemicals, including plastics, and new processes that do affect the environment.

POLYURETHANE

Mr. MICHEL. Could you give us some idea of the research which has been done with respect to polyurethane? Have we any research being done in this area?

Dr. BROWN. Yes.

Mr. MICHEL. To what extent?

Dr. BROWN. At the present time, it is in the laboratory animal study phase. We know quite a bit about the hazard, and we know how it should be handled. We are specifically looking into the solvents used in making polyurethane plastics to get criteria from which standards can be developed; that is, the amount of exposure which is safe.

Mr. MICHEL. Are we moving in this area as fast as we can? Sometimes we like to get a lot more accomplished than we are actually prepared for, but there are limitations sometimes other than money.

Dr. BROWN. Possibly by the time we are back here next year we will be able to report real progress on the status of this problem.

EPOXY RESINS

Mr. MICHEL. As I indicated, we have a firm in our district which has had many problems in the use of epoxy resin and the foam and vapor associated with fabricating these plastics. Is this a serious problem throughout the country, Doctor?

Dr. BROWN. I cannot tell you just how serious, but it does exist. The batch process does go on. If this can be done under controlled conditions, it is much safer. The particular problem you are referring to in your State and district goes to the point that these things are mixed in batches in open vats, and the probem is to keep the concentration of the fabricated solvent down to a level where it does not make men ill.

Dr. PRINDLE. May I point out, Congressman, this is typical of a whole series of problems with which we are faced, where new chemicals and new processes are developing faster than we can possibly keep

up with them. It may be a new process is developed tomorrow, but it will take Dr. Brown 2 to 5 years even to find out whether it is safe and what the levels are.

We are always in the situation of being behind.

Mr. MICHEL. In the meantime, those workers who are adversely affected by this can turn around and file for disability benefits, I guess, can they not?

Dr. PRINDLE. In that situation, yes.

Mr. MICHEL. If we do not remedy this thing, we are getting racked up on the other side by the disability claims of the workers themselves.

Dr. BROWN. You might be interested to know that these materials are not confined to the working situation. The epoxy resins, particularly in paints, endanger you at home. The high concentration of exposure, of course, occurs where things are made or processed and handled by working people. It is here that we get most of our knowledge, but frequently the exposure is not confined to the workplace.

This is an instance where what we find in occupational health should be generally applicable to protect the public at large.

Mr. MICHEL. Is this, then, what gives rise to the label on a can with certain instructions saying don't drink it or don't breathe in the fumes or don't get too close to the brush? Who would alert the public to these dangers?

Mr. CARDWELL. This would come under the Hazardous Household Labeling Act administered by the Food and Drug Administration.

Mr. MICHEL. Is there liaison between them and your shop?

Mr. CARDWELL. Yes.

Dr. PRINDLE. We have an official liaison from this particular operation to the Food and Drug Administration.

Mr. MICHEL. Have there been any deaths in the past year that are directly attributable to this thing we are talking about?

Dr. BROWN. I would have to have the record checked.

Mr. MICHEL. Would you do that and put something in the record to give me some indication, and the source of your information, if you will, please.

(The requested information follows:)

Lack of a nationwide reporting system for occupational diseases, together with the fact that they are frequently not recognized as occupational in origin by the physician, makes it very difficult to provide definitive information regarding the number of people who have died or were made ill as a result of working with poly-urethane plastics. The State of California does require reporting of occupational diseases. In 1964, 59 cases of respiratory diseases due to these materials were reported by physicians in California; 93 cases of eye conditions due to exposure to materials used in making foam plastics were also reported. Some information regarding these and similar problems is obtained when we are called in to assist in the identification of the cause of an outbreak of occupational disease, or to assist with its control. In 1966 there was an outbreak of respiratory disease in a California plastic plant, which involved more than 50 workers. In 1965 there were 10 compensation cases recorded in the State of Pennsylvania, while 2 cases were reported in the District of Columbia in the same year. In the several outbreaks of disease that we have investigated, there were 5 known deaths.

The use of plastics has increased at the rate of 20 percent a year over the last 20 years and will continue to do so. In 1966 the total production was 13 billion pounds, of which poly-urethane foams accounted for 3 billion pounds. The many uses of these materials, ranging from laminated desk tops through insulation in all new refrigerators, provides a potential hazard for a very large number of

people. The acute toxic hazard which is largely limited to exposures in the course of manufacture of poly-urethane foams produces an acute pneumonitis, and bronchitis, accompanied by severe upper respiratory irritation. Some people develop a sensitivity to these materials which precludes their employment in the industry. This is apparently related to a genetic factor which occurs in one percent or less of the population.

The explosives increase in the use of plastic materials and the wide variety of people exposed to them, has made it essential that our laboratories undertake extensive and continuous studies of how they may be safely handled during their manufacture, use, and destruction by burning. Undoubtedly, many illnesses occur as a result of ignorance of these factors we have already identified as constituting hazards. This is largely due to the absence of effective occupational health programs in most of our States, which results in the absence of the technical and professional skill to apply this information at the work place.

WORKERS WHO MAY BE EXPOSED

Abrasion resistant rubber makers
Adhesive workers
Aircraft builders
Insulation workers
Isocyanate resin workers
Lacquer workers
Mine tunnel coaters
Organic chemical synthesizers
Plastic foam makers
Plasticizer workers
Polyurethane foam makers
Polyurethane sprayers
Ship burners
Ship welders
Spray painters
Textile processors
Tolylene diisocyanate workers
Upholstery makers
Wire coating workers

OCCUPATIONAL SAFETY ACTIVITIES RELATING TO TRACTORS

Mr. MICHEL. I have several large tractor companies in my district, and I happen to know that some of the engineers spend a good deal of time just working on the kind of springs that are best used in a tractor seat to keep the operator from developing all kinds of ills afterwards from prolonged driving of a crawler-type tractor, or even a rubber-tired tractor.

Is anybody in your shop working at all with any of these companies on this problem, or is that strictly a private industry problem?

Dr. BROWN. Our work has been concerned with noise, and also with the general ergonomics of tractors and all sorts of heavy machinery. We are concerned about how the man fits the machine. We have actually conducted studies on heavy machinery in California within the past 18 months, and we intend to undertake some more.

We consider the effect of equipment on man to be important, and we have been cooperating not only with industry but with the universities. There is one study underway, as you probably know, of all types of tractors in the world. We have participated in this study.

Dr. MARLAND. A cooperative study has been conducted at the University of Iowa in regard to the reduction of injuries from tractors, persons falling from them or being caught in the machinery. This has already resulted in the adoption of many factory modifications by the manufacturers.

The Institute of Agricultural Medicine at the university has encouraged industrial participation in its study, and has established excellent cooperation.

Mr. MICHEL. When I was a child out on the farm, the power takeoff from the tractor was exposed, and it could be just as dangerous as the rollers of a corn sheller at times. I do not know how many hands and

feet have been lost in this way. Is anything being done in this field?

Dr. MARLAND. At this very time we are concerned with developing guards satisfactory for the prevention of injury. We have discovered that the operator did not like them, and they were not convenient, so he removed them. We are now recommending redesigned guards for power takeoffs so they will not be removed.

COOPERATION FROM MACHINERY MANUFACTURERS

Mr. SHRIVER. What kind of cooperation do you get from the machinery manufacturers on the recommendations that you make?

Dr. MARLAND. Substantially the tractor manufacturer's representative would go with our program person to a meeting at the University of Iowa when a study had been completed. They all sit at the conference table and review the report. The industry people say, "Let us take it back to our design people." This is very quiet and casual, but it is an effective program.

Mr. MICHEL. It does not get the notoriety that the automobile safety program has been receiving in the last year.

PROBLEM WITH TRACTORS ROLLING OVER

Mr. FLOOD. What is this problem with farm tractors? Every day I pick up the paper and I see where somebody has been killed because a tractor fell over on him. How does a tractor fall over on you?

Mr. SVORE. It can go over two ways, sideways or backwards.

Mr. FLOOD. I know, but why?

Mr. HULL. Carelessness.

Dr. MARLAND. The attempt is now being made to design the tractor in such a way that even a careless operator will be safer, but I would assume it will not be possible to remove the human being as the most dangerous part of the whole rig from careless operation. Within the last year or two, models have shown greater rigidity with respect to turning over.

Mr. FLOOD. It seems to me you would have to go out of your way to have a tractor fall over on you.

Mr. MICHEL. In row crop tractors, the front wheels are close together and the rear wheels are spread. Then when you go over a bank or something of this nature on a steep incline, you find many more accidents with so-called row crop tractors than those which have the wheels spread in front just as they do in the rear.

Mr. SMITH. The center of pull is behind and at a low level, just a foot off the ground. The rear axles are higher. If the front wheels become raised to a higher level, the back wheels walk under the front wheels and that throws it over backwards.

Mr. HULL. But with a cornpicker, they will not stop the machine. They get out and try to unchoke it or to repair whatever happens to it, and consequently they lose an arm and sometimes two arms.

Mr. MICHEL. When we first got overdrive and road speeds on our tractors, it was great sport for us younger folks to go barreling down the road in overdrive to get home quicker for dinner. If you are used to going in first, second, or third gear and spinning that wheel in a

real tight circle, it is a lot different when you are going 15, 20, or 25 miles an hour, and that has resulted in serious and fatal rollover accidents.

Mr. SMITH. I have not noticed much inclination on the part of the tractor companies to do something about roll bars. They are priced many times their cost. If they really wanted to cooperate, I should think they would promote roll bars at reasonable cost.

Dr. PRINDLE. I see we have some real experts here to whom we may have to turn.

Dr. MARLAND. Mr. Chairman, may I describe our real concern? The tractor is an illustration of many other injury control problems which could be approached in a similar manner. We find that the only valid data on which you can base research are those which our own expert, trained, epidemiological investigators obtain. If you depend upon the information gained from newspaper accounts or some other source, you really do not have any scientific basis on which to make recommendations.

We have had a surveillance team in operation in Denver where, unfortunately, there are few tractors in relation to the Midwest. The type of epidemiological investigation which I described earlier with reference to burns could probably result in the kinds of data which would aid the University of Iowa in conducting more highly specified research.

If the epidemiological pattern of tractor accidents were to be investigated, as in fact burns and falls in the home are now being subjected to surveillance, this would be a mechanism which we would recommend as being an effective means of getting results.

Dr. PRINDLE. This surveillance, I may add, is really one of the major functions of this center, not only in the injury program as specifically described, but the same is true in occupational health. As a matter of fact, in many of these situations in which we are trying to observe what is happening to people, whether it involves injuries from chemicals or from other kinds of hazards, our purpose is to determine whether or not there is an association between that hazard and the individual's illness. This will then enable us to develop standards.

This really has to be the backbone of much of our operation here. It is really an observational type of thing, seeing what is happening to the public in a variety of situations and developing the appropriate recommendations on this basis.

COMPARATIVE TRANSFERS

Mr. MICHEL. On page 215 you show comparative transfers from occupational health of over $6.5 million. What would be that figure for this year if you had not undergone your organizational changes?

(The requested information follows:)

1968 REQUEST FOR OCCUPATIONAL HEALTH

The amount that would have been requested for the Occupational Health Program for fiscal year 1968, excluding any adjustments due to the reorganization of the Public Health Service, is $8,105,000.

HISTORY OF BUDGET ESTIMATE

Mr. MICHEL. Could we have a history of the estimates and reductions in the 1968 budget for injury control, occupational health, and special environmental hazards? I would like this history to show your estimate to the Surgeon General, to the Department, to the Bureau of the Budget, and finally, to the Congress.

(The requested information follows:)

URBAN AND INDUSTRIAL HEALTH

History of 1968 estimates and total decrease

[Dollar amounts in thousands]

Program	NCUIH request to PHS		PHS allowance		Department allowance		BOB allowance		Total decrease	
	Positions	Amount	Positions	Amount	Positions	Amount	Positions	Amount	Positions	Amount
Total	2,360	$78,119	1,846	$61,006	1,797	$60,231	1,249	$42,594	1,111	$35,525
Solid wastes	375	19,200	305	18,885	305	18,865	249	15,602	126	3,598
Occupational health	521	15,489	390	10,453	385	10,417	327	8,523	194	6,966
Injury control	576	21,693	430	17,231	430	17,102	170	5,290	406	16,403
Food and water quality	718	17,005	572	10,300	528	9,710	394	9,710	324	7,295
Arctic health	116	1,989	102	1,774	102	1,774	72	1,333	44	656
Special environmental hazards	54	2,743	47	2,363	47	2,363	37	2,136	17	607

NATIONAL ADVISORY ENVIRONMENTAL HEALTH COMMITTEE

Mr. MICHEL. In a special report to the Surgeon General, the National Advisory Environmental Health Committee made a number of recommendations to be pursued by the Public Health Service in the elimination or control of any factors in the work environment which are deleterious to the health of workers.

The report to which I am referring is entitled, "Protecting the Health of 80 Million Americans." What legislative proposals have been drawn up, based on this report, if any? I would like to know roughly what kind of legislative proposals have been drawn up, based upon this report, and which are under consideration by your shop, if that is in order.

(The requested information follows:)

Based on the recommendations of the Frye Report, the following legislative proposal, dated August 12, 1966, was submitted to the Surgeon General:

LEGISLATIVE AUTHORITY FOR ACTIVITIES OF THE DIVISION OF OCCUPATIONAL HEALTH

BACKGROUND OF NEED FOR LEGISLATION

Occupational health activities in the Public Health Service are carried out under Section 301 of the PHS Act as amended which provides for activities relating to the causes, diagnosis, treatment, control, and prevention of physical and mental diseases and impairments of man. There is no mandate for conducting programs specifically aimed at those factors in the occupational environment which may cause such physical and mental diseases. Thus, the occupational health program must ultimately be related to individual diseases

or agents of disease rather than to a program aimed at total worker health. Such lack of authority also results in a fragmentation of effort within the Public Health Service toward the prevention and control of disease in the general population caused by chemical and physical agents. It is in the occupational environment that measurable exposures occur. Knowledge of the effects of these exposures are an absolute necessity before an intelligent and effective effort can be made in preventing and controlling diseases from such agents in the general population. The overflow of knowledge from the plant to the community can best be exemplified in the case of noise and its effects on the populace. Hearing conservation in industry and alleviation of community annoyances from the noises which seem to be inherent in our society are two phases of a single problem. For the past two years requests for legislation relating to a national hearing conservation and noise abatement effort were made. The needs for such legislation and effort are even more evident today.

A peculiar anomaly also exists in the provision for protection of citizens from hazardous, dangerous, or toxic materials. Home consumers are protected by the Federal Hazardous Substances Labeling Act; I. C. C., and Coast Guard regulations are designed to protect the avenues of transportation from the hazards of fire, explosion, or corrosion which may be caused by such materials; yet nowhere is there provision for labeling of materials used or shipped in interstate commerce which may affect the worker.

The increasing complexity of technology and of the industry-society interrelations pressages the need for a more comprehensive approach to occupational health activities. The physical well-being of the working population affects the economic well-being of the nation. Lost time or work absence due to diseases that are caused or aggravated by the work environment are only part of the picture. Reduced efficiency and output in workers who remain on the job but who are not acting at full capacity or whose production is curtailed because of the absence of fellow workers means greater economic loss to the nation. As a corollary the working population represents a reachable target group for the entire spectrum of public health activities.

The complexity of present society makes itself felt in yet another way. Our working population is highly mobile. Six percent of that working population moves each year. Over a million workers are engaged in some form of interstate transportation. It is reasonable to expect that the standards and criteria for healthful working environments should be the same wherever the worker is employed. Yet this is just not the case. There are no nationally accepted or utilized criteria, standards or methods of evaluating the hazards in the environment. Research necessary to even suggest such standards has for many years been at a minimum level. The ability to utilize such standards is all but nonexistent because of the dearth of mechanisms and personnel. In eight States there are no official occupational health programs at all. The Federal government has been virtually unable to assist in building State and local occupational health programs because there is no statutory authority for granting funds specifically for such programs. Data needed for well-planned programs, both at the national and State levels are not available nor can they be obtained readily by the Public Health Service acting under present law. Requests for assistance from employers, employees, management, and organized labor cannot be answered under present law except in a highly limited and restricted manner.

There is at present no central body which is responsible for conducting occupational health activities within the Federal establishment nor for providing the focal point needed by other governmental and private agencies responsible for the well-being of the nation's employed.

PURPOSE OF LEGISLATION

The purpose of this proposed legislation is to: (1) Invest in a single agency the authority necessary for mounting a national occupational health program; (2) protect the nation's human resources so as to promote the public health and welfare and its national productive capacity; (3) initiate, accelerate and centralize a national research and development program to prevent occupational diseases and to promote actively good health and well-being in the working population of this country; (4) provide technical and financial assistance to State and local governments in connection with the development and execution of their occupational health programs; (5) encourage and assist the development and operation of public and private occupational health programs.

DETAILED SPECIFICATIONS

Submit for consideration and passage by the Congress a national occupational health act creating an occupational health activity by directing the Secretary of HEW to establish a national program for the prevention and control of occupational diseases and the promotion of worker health. The Secretary and the Surgeon General would be authorized and directed to:

(*a*) Conduct and carry out research on the causes of occupational diseases, the toxicology of industrial chemicals, the physiologic effects of physical hazards, the psychological stresses related to work, and other such investigations, experiments, training, demonstrations, surveys and studies, including clinical and medical, relating to the causes and effects, extent, prevention and control of occupational diseases.

(*b*) Establish a medical panel on occupational diseases with authority to determine which such diseases shall be reportable to the Secretary and Surgeon General in the same manner that communicable diseases are now reportable.

(*c*) Conduct research and carry out investigations leading to air quality and physical agent criteria for inplant levels of exposure for recognizing and establishing those upper limits which can be tolerated, yet protect the worker from harm.

(*d*) Set standards in Federal industrial establishments for permissible levels of chemicals in the air which may be inhaled, ingested, or absorbed through the skin, and for those levels of physical hazards such as noise, heat, vibration and electromagnetic radiations to which Federal employees in Federal establishments may be subjected.

(*e*) Establish within the national occupational health program the resources and expertise to determine the standards and needs for and adequacy of the preventive medical and public health services and environmental activities within the several Federal agencies, and certify to the adequacy of such services.

(*f*) Establish standards for the labeling of hazardous, dangerous, or toxic materials used or shipped in interstate commerce, and not now subject to provisions of the Federal Hazardous Substances Labeling Act or appropriate Interstate Commerce Commission or Coast Guard regulations.

(*g*) Make grants to occupational health units and other public or non-profit private agencies, institutions, and organizations for the purposes of implementing and applying occupational disease control and occupational health promotion activities. These project, training, study, demonstration, and services grants would not exceed 75 percent of the costs of such projects.

(*h*) Carry out a hearing conservation and noise abatement program in which the effects of excess noise caused by industrial processes or procedures on the hearing mechanism may be studied, together with methods of control of such noises and the prevention of hearing loss. Recognizing further that the public health and well-being of citizens and communities may be affected by noise of aircraft, and other vehicular transportation, highway and other construction and other major noise sources associated with interstate commerce, the Secretary would be empowered by this legislation to mount a national noise abatement program.

In carrying out the provisions of the preceding section the Secretary would be authorized to collect and make available through publications and other appropriate means the results of the research conducted and other information pertaining to such research and other occupational health activities.

Where there is evidence of a serious threat to health, or where there is a refusal to cooperate in studies designed to measure the extent of occuptional health problems or to obtain data for carrying out the national occupational health program, there would be vested in the Secretary or his delegate the right of entry to those industrial plants which come under the Walsh-Healey Public Contracts Act, or in those industries in which the exposure to or the handling of hazardous materials without proper precautionary measures, or without full knowledge of the dangers involved, poses a threat to life, health, and safety of the workers, which threat has the effect of burdening and obstructing interstate commerce and the free flow of goods in interstate commerce.

This program would be continuing as described in the Frye Report and in the subsequent implementation document submitted to the Surgeon General. The expected costs would be:

Fiscal year:	
1968	$31,904,000
1969	41,869,000
1970	46,820,000
1971	52,207,000
1972	57,000,000

The program would permit the realization of the objectives stated in the Frye Report and would, if enacted and implemented, permit the attainment of the goal of the reduction in five years, of one day in the yearly average of sick absence and a comparable reduction in related economic losses. Further, with the increase of expenditures of Federal funds for the care and treatment of illnesses, the program would, through prevention and control of such diseases, provide a monetary return by way of a reduction in the funds necessary for such care and treatment.

A number of Federal agencies are currently working in some aspect of occupational health. These include the Department of Defense, the Department of Labor, the Department of Interior, and the Atomic Energy Commission, and various programs within the Public Health Service. Within the framework of the proposed legislation there would be established inter- and intradepartmental committees to consider, at their respective levels, appropriate roles of the several governmental agencies in occupational health. The Secretary of the Department of Health, Education, and Welfare would coordinate the interdepartmental activities.

The response to the Frye Report by organized labor and management, medical and other professional groups would indicate that there would be a wide base of support for this legislation. Inevitably, there may be opposition to portions of this proposal by segments of these groups. Portions of the legislation have been, or are being introduced into the present Congress. These include: H.R. 1179 "Hazardous Materials Safety Act" and H.R. 14602 and companion bills relating to the noise abatement problem. In addition, legislation is now being prepared by Senator Frank E. Moss (Utah) and Representative James O'Hara (Michigan) with respect to the labeling activities.

ATERNATE PROPOSAL

As an alternate to a national occupational health act the foregoing could be accomplished by amendment of the Public Health Service Act.

As an alternative to the grants provisions of the proposed legislation, the provisions of S. 3008, 89th Congress could be utilized.

The Public Health Service made a detailed study of the above proposal, and on November 25, 1966, a modified version was transmitted by the Surgeon General to the Secretary. The proposal follows:

AN OCCUPATIONAL HEALTH PROGRAM FOR THE UNITED STATES

THE GOALS

1. To reduce the incidence and costs of diseases or injury caused or aggravated by the working environment.

2. To utilize the workplace as a means of reaching a major segment of the adult population for providing public health services.

3. To provide national leadership within the Public Health Service for occupational health activities.

Occupational health deals with the protection and promotion of health of the employed population through efforts to: (1) make the working environment safe and free from disease and injury hazards, and (2) strengthen health services available to the individual worker. Efforts directed to the protection of the worker include surveillance of potential hazards, study and identification of the psychological stresses caused by hazards in the environment, development of control methods, establishment of environmental standards and criteria, and enforcement of standards. Efforts to improve the personal health of the worker include pre-placement and periodic physical examinations, preventive medicine, detection of illness, provision of first aid and other in-plant emergency health services. Adjuncts to occupational health include health insurance and workmen's compensation.

THE PROBLEMS

1. Incidence and Costs

Exposure to the chemical and physical hazards of industry are known to cause disease and disability. The acute large-scale occupational poisonings of the early decades of this century no longer occur, but the chronic long-range effects appear to be increasing. This can be seen from the pattern of workmen's compensation costs for occupational injuries and disability.

In the 1955–1964 decade, the number of workers covered increased by only 14%, from 41.4 million to 47.3 million. The benefits paid, however, rose from $916 million to $1.7 billion, an increase more than six times as great as the increase in workers covered. It is not possible to determine what proportions of the costs are for occupational diseases alone since there are no national statistics on occupational diseases in the United States. Some estimates can be made, however, based on experience in California, where occupational disease is reportable. In 1964 there were a total of 27,000 occupational diseases reported in that State, a rate of 4.8 per 1,000 workers. If this rate, which is probably low, should hold nationally, then of the 70 million employed civilians in the United States, we could expect some 336,000 cases of occupational diseases annually. Accurate data are needed.

Where would such diseases be likely to occur? The PHS's Division of Occupational Health has made some estimates and is now trying to define the occupational disease potential in the United States. In a series of prototype studies begun in 1965, surveys were made in selected areas of the country of the workers at risk in a limited number of industrial categories, suspected of having high priority industrial hygiene problems. There are employed today 21 million workers in manufacturing, construction, and automobile service and repair enterprises. Not all of these employees are at the production line. Eliminating, therefore, the clerks, salesmen, and other "non-plant" personnel there are still 14.6 million workers in this group who are potentially exposed to occupational hazards. If the data from the Division's studies apply nationally, then it can be estimated that 36% or 5.2 million employees work under such conditions, that industrial hygiene attention is needed within the next 12 months, and would need followup attention at least once a year. Thus, even conservative estimates based on selected, high-priority work populations show that large numbers of American workers are at risk to an occupational hazard. It is important then that some mechanism be established for finding the hazardous areas and for developing and applying the prevention and control techniques that are needed.

The greatest deficiency in the control of known occupational hazards and occupationally caused disease is the lack of trained personnel in the non-Federal organizations which have the legal responsibility for correcting workplace hazards. Illinois, the third largest of our industrial States, has only one professionally trained industrial hygienist for the entire State. Texas has two, one of whom is in school and one of whom is about ready to retire. As of January 1966, there were only 187 industrial hygienists employed by *all* State organizations. There were only 48 such persons employed in the 25 largest cities of the Nation. A conservative estimate made by the Division of Occupational Health in 1966 indicated a need for at least 482 additional industrial hygiene field personnel in State and local agencies merely to inspect and survey industries and to suggest controls.

Still another problem in trying to prevent and control occupational diseases relates to the long time that it takes for many of these to develop. Major emphasis in occupational disease research has been in relation to the dust-caused diseases. Available data indicate that in terms of prolonged disability and compensation costs, the pneumoconioses continue to be the greatest single recognized occupational disease problem in the United States. In the period 1950–1963, 35,000 claims amounting to $195 million were settled or awarded by workmen's compensation agencies in just 18 States.

This may be illustrated further by the findings in the Division's efforts in the uranium mining industry. When the study began in 1949, it was recognized that the potential for lung cancer existed in the exposures to which the miners were subject. Initial efforts were on control methods, yet it was known that some lung cancers would appear. By 1966, some 17 years after the start of the study, there had accumulated a seven-fold increase in the incidence of lung cancer over what would normally be expected. Without the controls and reduction of the hazard the cancer rates would have been catastrophic. It is only after long-term study of the exposure-disease relation that there can be any assurance of these implications.

2. Utilizing the Workplace for Public Health Promotion

On an average day in 1965 there were 1,485,000 employed civilians absent from work due to illness. More than a million of these had absences lasting one work week or more. The dividing line between occupational and non-occupational illness is hard to find. Exposure to the chemical and physical hazards of industry are also found to be linked to the chronic diseases of cancer, allergies, heart and respiratory diseases in a direct relation, or as a contributory factor.

Ideally, an in-plant medical service should serve three functions. First it should relate to the illnesses and injuries caused directly by the employment. The physician or the nurse cannot carry on an adequate medical program without being involved with the work environment.

Second, the ideal health service should relate to the non-occupationally caused, but occupationally aggravated illnesses. This means that the preplacement and periodic examinations must be made with a knowledge of the demands of the job. It means too that the plant medical services should view illness of employees in terms of the effect of the work on the illness and in terms of the effect of the illness on the work.

The third service which should be carried out by a properly operating industrial medical unit relates to the discovery of diseases in a "captive" or reachable population through periodic examinations, screening techniques, or merely by being available when the worker feels the need to confer with a physician or a nurse. (This is becoming evident as a result of a demonstration project new being carried out under Division of Occupational Health sponsorship.)

The ideal situation, however, doesn't exist. Most health units are little more than first aid rooms or areas for dispensing of aspirin. Most medical and nursing units are found in workplaces with more than 500 employees. (Such workplaces amount to less than 9,000 out of the 3.5 million in the United States, and employ only 16.3% of all gainfully employed workers.) The personnel available for providing health services to the working population are few. A survey by the Division of Occupational Health reported in 1966 showed that there were only 10,000 nurses actively engaged in some form of occupational nursing. In 1962 there were only 1,751 full-time and 569 part-time physicians specializing in occupational medicine. The number has remained static since 1957.

With the national demands from all sources for medical and nursing services, the manpower necessary to carry out the needs of occupational medicine will not be available without strenuous efforts to develop the field. Small plants will continue to find the costs of providing medical service prohibitive. It becomes important then to find mechanisms whereby the industrial and community health and medical resources can be combined for the use of both groups.

3. National Leadership

In the face of expanding technology, it is apparent that the Federal Government must take the initiative in setting priorities and carrying out a national occupational health program.

Medical and environmental studies of the health hazards of the workplace are being carried out by the Public Health Service. Yet, since 1950 there has not been one major industry-wide study carried out by its Division of Occupational Health that has not been in response to a request or pressure from some outside group. Health hazards in the uranium, phosphate, diatomaceous earth and metal mining industries were studies after instigation by labor unions. Studies in the asbestos, beryllium and plasma welding industries were in response to requests from the industries themselves. Almost every instance where the Division has attempted to undertake a major study as a result of its own evidence that such studies were necessary has been discouraged. Research on the health effects of mining soft coal was proposed by the Division for a decade before evidence from Europe showed that the concern was warranted.

The Division for years has proposed a major research and control program for noise. At no time have the allowed expenditures for noise been as high as $100,000 in any year. Yet legislation introduced into the 89th Congress (by Representative Kupferman) called for a $20 million attack on noise by the Federal Government. The legislation will be reintroduced into the 90th Congress.

Occupational health activities relating to the general working population are now the responsibility of at least 18 Federal agencies. Authority for control of occupational diseases is divided between the Federal, State, and local levels.

Activities relating to health promotion within the working environment have been carried out more by private industry than by all government agencies combined. The expenditures for in-plant health and medical services by large

industries in 1965 for only 20% of the total workforce were approximately $330 million. This was about 100 times the operating budget of the Division of Occupational Health.

Criteria and standards for safe enviroments are being suggested at a slow pace by voluntary organizations.

There is no reporting system for occupational diseases, nor are there adequate or consistent methods for gathering data and reports.

Hazardous materials may be shipped in interstate commerce for use in industry without adequate warning or labelling.

In short, the Federal Government has not lived up to its mission of providing national health leadership to the working population.

Immediate and short-range actions

The PHS–DHEW will, in addition to carrying out program commitments already made, establish priority for the following activities in 1968.

1. Establish a national occupational health surveillance and intelligence program.
2. Recruit and assign personnel to States and other agencies for initiation of control programs.
3. Expand the present minimal program on the effect and control of noise.
4. Intensify studies in the asbestos industry to include the medical evaluations of the work population and to include studies on the effects of other fibers.
5. Initiate the environmental and medical studies of the beryllium industry.
6. Begin to develop criteria for (a) exposure, (b) air analysis, and (c) medical services.

Under existing authority the commitments and short-range priorities would necessitate, for the Division of Occupational Health, a budget of $14 million and 496 positions in 1968. If grant authority under Public Law 89–749 is to be included, the proposed 1968 budget would be $19.4 million. This compares with $6,592,000 and 260 positions in 1967 and with $9,296,000 and 380 positions in the 1968 Departmental allowance.

THE PROGRAM

Initially, it would appear that the following represents the minimum program necessary to solve some of the problems presented.

1. Development of legislation which would give the Public Health Service authority to control health hazards and to carry out a program of health promotion within the workplace. Such legislation would include authorization to conduct the studies necessary to determine the incidence and prevalence of occupational disease in industries engaged in interstate commerce and would provide for the right of entry for purposes of research and measurement of the hazards. It would establish the Public Health Service as the focal point for Federal occupational health activities.

2. Develop the surveillance and data gathering system which would have as its objectives:

(*a*) Collection and analysis of reported or otherwise known cases of occupational diseases.

(*b*) Determination of the conditions within the workplace of the health risks to which workers are subject.

3. Establish, within the limits of present knowledge, criteria for healthful working environments.

4. Conduct the toxicologic and other research necessary to determine the effects of the industrial environment on the worker and to establish additional criteria and standards for evaluation and control of health hazards.

5. Respond to the requests made by the AIHA and ACGIH to the Surgeon General for the establishment within the Division of Occupational Health of a mechanism for certifying air sampling instruments.

6. Establish labelling requirements for all hazardous substances used in interstate commerce.

7. Strengthen and support those agencies within the several States which are or should be carrying out an occupational health program by:

(*a*) Financial assistance.

(*b*) Assignment of personnel to carry out the necessary surveillance programs and to initiate control programs.

(c) Supplying and carrying out laboratory services and rendering technical assistance which the local agencies are not capable of performing.

8. Develop, initiate and encourage, through project grant, or other mechanisms, in-plant health services, and establish criteria for industrial medical programs.

NECESSARY ACTION

Legislation

The purpose of the proposed legislation is to: (1) Invest in a single agency the authority necessary for mounting a national occupational health program; (2) protect the Nation's human resources so as to promote the public health and welfare and its national productive capacity; (3) initiate, accelerate and centralize a national research and development program to prevent occupational diseases and to promote actively good health and well-being in the working population of this country; (4) provide technical and financial assistance to State and local governments in connection with the development and execution of their occupational health programs; (5) encourage and assist the development and operation of public and private occupational health programs.

Of the Federal agencies concerned with some aspects of occupational health, the two which have displayed the greatest activtites have been the Public Health Service and the U.S. Department of Labor. The Department of Labor has directed its efforts toward safety or prevention of traumatic injury. An agreement between the Public Health Service and the Department of Labor recognized that the Public Health Service be involved in medical and engineering studies for measuring, controlling, and eliminating hazards. The Department of Labor was to gather and distribute information on hours of labor, working conditions, accident statistics, wages, and employment. It would also formulate standards for the guidance of States in protecting the working population from health hazards associated with industry. The health standards that have been formulated to date have been in conjunction primarily with Labor's Walsh-Healey responsibilities. These standards, however, have been based on criteria proposed by unofficial voluntary organizations. There has been no health research input from the Department of Labor. Further, there has been little health input requested from the Public Health Service.

The basis for this legislative proposal therefore is that it is necessary to vest in the Nation's *health* agency the responsibility for determining the factors that affect the health of 40% of the Nation's population.

The proposed legislation has the following key elements:

1. It would establish the DHEW as the central agency for carrying out and coordinating occupational health efforts within the Federal Government. The Department would be directed to conduct and carry out research on the causes of occupational diseases, the toxicology of industrial chemicals, the physiologic effects of physical hazards, the psychological stresses related to work, and other such investigations, experiments, training, demonstrations, surveys and studies, including clinical and medical, relating to the causes and effects, extent, prevention and control of occupational diseases.

2. The Department would, in addition, conduct research and carry out investigations leading to air quality and physical agent criteria for in-plant levels of exposure for recognizing and establishing those upper-limits which can be tolerated, yet protect the worker from harm. To these ends, the legislation would provide for the right of entry into establishments engaged in or affecting interstate commerce for the purpose of carrying out the necessary research.

3. The Secretary of Health, Education, and Welfare would be authorized to set standards in Federal industrial establishments for permissible levels of chemicals in the air which may be inhaled, ingested, or absorbed through the skin, and for those levels of physical hazards such as noise, heat, vibration and electromagnetic radiations to which Federal employees in Federal establishments may be subjected. The Secretary would further be given the authority to determine the needs for and adequacy of the preventive medical and public health services and environmental activities within the several Federal agencies, to set standards for health services, and certify to the adequacy of such services.

4. The legislation would provide direction that an occupational disease reporting mechanism be established.

5. The legislation would direct the Secretary of Health, Education, and Welfare to establish standards for the labeling of hazardous, dangerous, or toxic materials used or shipped in interstate commerce, and not now subject to provisions of the Federal Hazardous Substances Labeling Act or appropriate Interstate Commerce Commission or Coast Guard regulations.

6. The legislation would authorize the Secretary to make grants to occupational health units and other public or non-profit private agencies, institutions, and organizations for the purposes of implementing and applying occupational disease control and occupational health promotion activities.

7. The Secretary would be directed to carry out a hearing conservation and noise abatement program in which the effects of excess noise caused by industrial processes or procedures on the hearing mechanism may be studied, together with methods of control of such noises and the prevention of hearing loss. Recognizing further that the public health and well-being of citizens and communities may be affected by noise of aircraft, and other vehicular transportation, highway and other construction and other major noise sources associated with interstate commerce, the Secretary would be empowered by this legislation to mount a national noise abatement program.

Costs

The projected costs for this program as submitted in the preliminary five-year planning prepared for the PPB System are:

Fiscal year:	*Million*
1969	$30.6
1970	30.5
1971	51.2
1972	51.2
1973	51.5

Alternative Action

As an alternative proposal to the recommended legislation, portions of the proposed national program could be effected by the issuance of an Executive Order. This would direct the Secretary of Health, Education, and Welfare to coordinate Federal occupational health activities, set standards within Federal establishments, determine needs and to certify to the adequacy of health services within the Federal establishment.

The Executive Order would have the primary advantage of rapid implementation. It would constitute a strong policy statement by the President and put the government in the positive role of providing national leadership in the field of occupational health.

An Executive Order would fall short, however, in providing for a total national program. Specifically, it could not make those changes in the statutory occupational health responsibilities of the several Federal agencies which now lead to duplication of effort and to gaps in occupational health coverage. It could not provide for the right of entry for research purposes, a key factor of the national program. The Order could not establish a national occupational disease reporting mechanism. The labelling provisions of the program could not be promulgated by an Executive Order. Finally, the Executive Order would not be able to establish the national hearing conservation and noise abatement program.

The legislative approach, however, would be able to provide for all the elements which could be set by the Executive Order. More important, it could include those elements which would not be possible under the Executive Order. The disadvantage of the legislative approach is the length of time it would take to be implemented. There is also the possibility of opposition to the right of entry provision. A weighing of the relative merits of the two approaches indicates that strong support by the Administration would enable the Federal Government to establish a complete national program for occupational health through Congressional action.

PRESIDENT'S CONCERN OVER OCCUPATIONAL HEALTH

Mr. MICHEL. The President in one of his messages to the Congress has called for great strides to be made in the area of occupational health. Could you give us an idea of the present dangers involved in exposure to the chemical and physical hazards of industry known to cause disease and disability which would cause the President to voice such concern?

(The requested information follows:)

The President's concern over the occupational health and safety of the worker, as stated in his 1967 message to Congres on health and education, was brought about by the findings and health recommendations of the report titled "Protecting the Health of Eighty Million Americans." The following data give the dimensions of the problem of the health of American workers. Exposure to the chemical and physical hazards of industry is known to cause disease and disability. The acute large-scale occupational poisonings of the early decades of this century no longer occur, but the chronic long-range effects appear to be increasing. This can be seen from the pattern of workmen's compensation costs for occupational injuries and disability.

In the 1955–1964 decade, the number of workers covered increased by only 14%, from 41.4 million to 47.3 million. The benefits paid, however, rose from $916 million to $1.7 billion, an increase more than six times as great as the increase in workers covered. It is not possible to determine what proportions of the costs are for occupational diseases alone since there are no national statistics on occupational diseases in the United States. Some estimates can be made, however, based on experience in California, where occupational disease is reportable. In 1964 there were a total of 27,000 occupational diseases reported in that State, a rate of 4.8 per 1,000 workers. If this rate, which is probably low, should hold nationally, then of the 70 million employed civilians in the United States, we could expect some 336,000 cases of occupational diseases annually.

The PHS has made some estimates and is now trying to define the occupational disease potential in the United States. In a series of prototype studies begun in 1965, surveys were made in selected areas of the country of the workers at risk in a limited number of industrial categories, suspected of having high priority industrial hygiene problems. There are employed today 21 million workers in manufacturing construction, and automobile service and repair enterprises. Not all of these employees are at the production line. Eliminating, therefore, the clerks, salesmen, and other "non-plant" personnel there are still 14.6 million workers in this group who are potentially exposed to occupational hazards. If the data from the PHS' studies apply nationally, then it can be estimated that 36% or 5.2 million employees work under such conditions, that industrial hygiene attention is needed within the next 12 months, and would need follow-up attention at least once a year. Thus, even conservative estimates based on selected, high-priority work populations show that large numbers of American workers are at risk to an occupational hazard. It is important then that some mechanism be established for finding the hazardous areas and for developing and applying the prevention and control techniques that are needed.

The greatest deficiency in the control of known occupational hazards and occupationally-caused disease is the lack of trained personnel in the non-Federal organizations which have the legal responsibility for correcting work-place hazards. Illinois, the third largest of our industrial States, has only one professionally trained industrial hygienist for the entire State. Texas has two, one of whom is in school and one of whom is about ready to retire. As of January 1966, there were only 187 industrial hygienists employed by all State organizations. There were only 48 such persons employed in the 25 largest cities of the Nation. A conservative estimate made by the Public Health Service in 1966 indicated a need for at least 402 additional industrial hygiene field personnel in State and local agencies merely to inspect and survey industries and to suggest controls.

Still another problem in trying to prevent and control occupational diseases relates to the long time that it takes for many of these to develop. Major emphasis in occupational disease research has been in relation to the dust-caused diseases. Available data indicate that in terms of prolonged disability and compensation costs, the pneumoconioses continue to be the greatest single recognized occupational disease problem in the United States. In the period 1950–1963, 35,000 claims amounting to $195 million were settled or awarded by workmen's compensation agencies in just 18 States.

This may be illustrated further by the findings in the Service's efforts in the uranium mining industry. When the study began in 1949, it was recognized that the potential for lung cancer existed in the exposures to which the miners were subject. Initial efforts were on control methods, yet it was known that some lung cancers would appear. By 1966, some 17 years after the start of the study, there had accumulated a seven-fold increase in the incidence of lung cancer

over what would normally be expected. Without the controls and reduction of the hazard the cancer rates would have been catastrophic. It is only after long-term study of the exposure-disease relation that there can be any assurance of these implications.

COOPERATION WITH DEPARTMENT OF LABOR

Mr. MICHEL. To what extent do you and the Department of Labor work together?

(The requested information follows:)

COOPERATIVE ACTIVITIES BETWEEN THE OCCUPATIONAL HEALTH PROGRAM, PHS, AND THE U.S. DEPARTMENT OF LABOR

The Public Health Service, because of its special capabilities in occupational health, assists upon request the Bureau of Labor Standards, U.S. Department of Labor with the following:

Assists with technical and medical phases of inspections conducted under the Walsh-Healey Public Contracts Act.

Performs laboratory analyses of chemical substances.

Supplies calibrated field instruments.

Provides short-term training in industrial hygiene practices and assists with preparation of training course materials.

Reviews critically their draft documents and standards dealing with environmental health hazards, toxic substances, and health and safety practices in industry.

Testifies as experts in hearings on health aspects of the Walsh-Healey regulations and various other bills dealing with health and safety.

Provides information on occupational health legislation and regulations for their publication, "Index on Occupational Health and Safety Laws, Codes, Rules of Regulation."

The PHS Occupational Health Program has cooperated with the Office of International Organization, USDL regarding: reciprocity in the training and orientation of foreign personnel in occupational safety and health; and collaboration on the Central Intelligence Service program for abstracting technical material on occupational health and safety.

At the invitation of the PHS Occupational Health Program, the Bureau of Employees Compensation has participated in training courses for nurses in industry by lecturing on administrative aspects of workmen's compensation practices.

There is a continuous informal reciprocity with regard to publications, information data and advice on various aspects of occupational health and safety between the staffs of the two agencies.

The USDL is official U.S. representative to the International Labor Organization, and the PHS Occupational Health staff are asked to comment on draft position papers, particularly with respect to adequacy of industrial hygiene and related health aspects of the documents.

The PHS has initiated and has conducted studies, such as on the health of uranium miners, where the USDL has jurisdiction but has not exercised it.

At the request of the USDL, the PHS Occupational Health Program revised their pamphlet—"Occupational Hazards and Diagnostic Signs." The revised publication entitled "Occupational Diseases—A Guide to their Recognition" was published by PHS in 1964 and contains 375 pages.

The USDL publication "Occupational Health Hazards—Their Evaluation and Control," Bulletin 198 (1958) was written by William Griffin of the Bureau of Labor Standards and Andrew D. Hosey of the PHS Occupational Health Program.

A pamphlet "Occupational Skin Diseases" was published jointly by the PHS Occupational Health Program and the Bureau of Labor Standards in 1953.

MINE RADIATION LIMITATIONS

Mr. MICHEL. From the Washington Post under date March 10 we clipped an item with a headline, "U.S. Limits Sought On Mine Radia-

tion," by Washington Post Staff Writer J. V. Reistrup. In the interest of brevity and to expedite the hearing, I will submit it for the record.

Could we have the Department's comments on the veracity or validity of what is claimed in that particular article?

(The article follows:)

[From the Washington Post, Mar. 10, 1967]

U.S. LIMITS SOUGHT ON MINE RADIATION

(By J. V. Reistrup, Washington Post Staff Writer)

The executive Director of the Federal Radiation Council indicated yesterday that he would recommend stiff Federal limits to the amount of radiation permitted in underground uranium mines.

The comments by Paul C. Tompkins came at a session of the Council staff with representatives of industry, organized labor, the Western states where uranium is mined and the Public Health Service.

The meeting was closed to the press, but participants said Tompkins indicated the recommendations of the Council would follow the relatively strict standard for permissible radiation resulting from Public Health Service studies.

HAS BEEN UP TO STATES

In the past, safety standards for underground uranium mines have been left to the states, since the Atomic Energy Commission decided it did not have the power to regulate them.

The Walsh-Healey Act gives the Secretary of Labor the power to set standards for the way material procured by the Government is produced, but the Labor Department has been waiting for the results of the Radiation Council's study, begun two years ago.

Some miners already have died of lung cancer associated with radiation from the mines, and the Public Health Service experts who have studied the problem expect more. The lung cancers take anywhere from 10 to 30 years to develop, but are quickly fatal.

Legislation passed by Congress last year empowers the Secretary of the Interior to pass on state mining safety standards, in effect authorizing him to set the rules himself if the state rules are too weak.

BASED ON "WORKING LEVEL"

The Radiation Council staff report discussed yesterday has not been made public, but it is known to be based on the unit known as the "working level" that was recommended by the Public Health Service in 1957 as a desirable limit for radiation.

The Council is known to be considering recommendations to:

Set an annual radiation dose equivalent to breathing one working level for 2,000 working hours as the occupational exposure guide.

Require records from which average exposures can be estimated and recorded for individual miners if they are exposed to more than three-tenths of a working level averaged over 13 weeks.

Identify mine areas showing more than one working level as requiring special precautions such as respirators to prevent an undue radiation hazard.

Setting higher maximums than one working level would simply mean more claims for compensation by miners who contract lung cancer, Tompkins is reported to have said.

The Federal Radiation Council is an interdepartmental advisory body that will report to the President, who will presumably pass the recommendations on to the Department of the Interior.

(The Public Health Service's comments follow:)

Information contained in the March 10, 1967, Washington Post article entitled "U.S. Limits Sought on Mine Radiation" is essentially correct. However, the story needs to be clarified in view of technical information currently available to the Occupational Health Program of the Public Health Service.

The mining of uranium is by no means a new problem. When our study began the only knowledge on which to base an estimate of the hazard was from Germany and Czechoslovakia. Here, two mines with uranium as an associated ore had been in operation since the 15th century. It was known that miners in these two areas died in the prime of life with a rapidly developing respiratory disease later identified as lung cancer. In the 1930's sufficient information had been developed to relate these cancers to exposure to radon, a radioactive gas resulting from the decay of radium. Uranium as found in its natural state is slightly radioactive and decays over a long period of time into radium. In any uranium ore body, uranium and radium exist in an equilibrium ratio. Radium decays by emission of an alpha particle to radon which has a relatively short half-life of 3.8 days and in the atmosphere of the mine decays into a series of radioactive nuclei whch attach themselves to water droplets and dust particles in the mine atmosphere. Radioactive nuclei are referred to as radon daughters. A miner inhales radon and the radioactive nuclei which are attached to the water and dust particles. Thus the miner receives a significant dose of alpha radiation to his lung tissue. The amount of radiation received is proportional to the radon concentration in the mine atmosphere and the time spent underground.

Very early in our investigation, it was found that the radon concentrations in the American mines probably exceeded the concentration reported in the European mines. Therefore, it was reasonable to assume that in the course of time, the same problem could be expected to develop in the American mining industry. It was known from the European experience that the average time for the development of these cancers was 15–20 years after initial exposure.

Recognizing the serious nature of the problem, the Occupational Health Program took a number of corrective steps. Following a study of the radon concentrations in practically all of the active uranium mines in the Western States, a conference was held with the management of each mine at which time the potential problem was explained and recommendations were made to reduce the concentration of radon and its daughter products to the lowest possible level. Staff members also conferred with the State Health and Mine officials in each of the uranium mining states in an attempt to have the states assume some degree of responsibility for corrective action.

By 1960 it became apparent that a potentially serious problem existed in the American mines and that the mining industry was not exercising complete control over the problem. For this reason in December 1960, a Conference of the Governors of Uranium Mining States was called in Denver, Colorado. As an outgrowth of this conference, the states have taken a much more active part in the control of this hazard.

The engineering and epidemologic study has demonstrated conclusively that there is a causal relationship between exposure to excessive concentrations of radon and the incidence of respiratory cancer in uranium miners. The incidence rate is a function of the intensity and duration of the exposure. In 1955 it was recommended that the average exposure to radon be limited to 1.5×10^5 MEV of total alpha energy per liter of air. This is commonly referred to as the working level. To determine a miner's exposure, the estimated concentration expressed in working level is multiplied by the number of months worked at this concentration. These values are summed for all mines and years during which each man worked underground to give a value known as the cumulative working level months.

In a population of 6,000–9,000 uranium miners, there was little indication of excessive mortality due to respiratory cancer until 1963. The rate began to climb rapidly in 1963, which was about 15 years after the initiation of uranium mining in the United States and at the present there are about 100 known lung cancer cases among the uranium miners.

From a study group of 3,415 miners which have been followed since 1950, it has been possible to obtain rather firm data on the incidence rate of respiratory cancer. Among those workers with cumulative working level months of less than 840, 4.9 lung cancers have been observed per 10,000 miners against an expected rate of 3.1. This rate climbs very sharply as exposure exceeds this value so that in the group with cumulative exposures between 840 and 1,789 working level months, the observed number of cancers per 10,000 is 18.2 against an expected rate of 3.9. In the group with exposure between 1,800 and 3,719 cumulative working level months, the observed rate is 50 as compared to 4.8; and in those with cumulative working level months in excess of 3,720, the observed lung cancer rate is 171 compared to 4.3. This increased rate for the latter three

groups of 6, 10, and 43 times the expected rate leaves little doubt that there is a causal relationship between exposure to excessive concentrations of radon and the occurrence of lung cancer.

Since 1961 the Program has been collecting sputum samples from the population at risk. These samples are being read by sputum cytologists in an attempt to identify pre-malignant changes which might occur in the epithelium cells of the respiratory system of the uranium miners. Although the results of these studies have not been definitive, there is an indication that this technique may be of great help in the management of chest diseases and for screening purposes. It may offer hope of detecting lung cancers at an early and curable stage. Those men with suspicions cytology are sent to a hospital facility for further diagnostic studies. Routine physical examinations of the miners have not proved to be helpful since, at this time, there is not a diagnostic technique which will permit the detection of respiratory cancer until it has fully developed. The life expectancy of a uranium miner after the diagnosis of lung cancer averages about 2½ months.

The primary method of preventing health damage by radon and its daughter products is to control the concentration of radon daughters in the mine atmosphere to 1.5 x 10^5 MEV. Our data to date would indicate that there is only a slight increase in the incidence of respiratory cancer among those miners who have worked at or below this concentration. On the other hand, it is known and accepted by most radiobiologists that exposure to any degree of radiation carries with it some degree of risk and should be avoided insofar as possible. Therefore, the ultimate control method would be one which eliminates all exposure to radon and its daughter products. However, this becomes difficult to attain and for this reason we are recommending that the average exposure for persons employed in underground uranium mines be not greater than 1 working level.

The primary method of controlling radon in the mine atmosphere is through mechanical ventilation of the mine. This should be supplemented with other engineering control measures to reduce the amount of radon seeping into the mine atmosphere from the ore body. This may be accomplished, in part, by sealing off the unused areas of the mine by coating the mine walls with an impervious material and maintaining a positive pressure in the mine. Experience has indicated that in most mines where these procedures are employed, the concentration of radon in the general mine atmosphere can be maintained at or below the recommended working level. In some mines, because of the richness of the ore and other factors, it has not been possible to maintain the concentration of radon at the recommended level. The feasibility of applying an impervious material to the walls of the mine and using positive pressure as a control measure has only been partially explored.

In those mines where it is not possible through known engineering procedures to reduce the radon concentration to the recommended level, it will be necessary to supplement engineering control with respiratory protection of the individual. Certain respiratory devices which are presently available will provide an additional degree of control. However, complete control can only be obtained by providing the individual with an uncontaminated source of air. Such devices are available but because of their bulk and weight they are not practical for this kind of situation. Additional research is necessary to devise an air supplied respirator minaturized to the point where it does not interfere with the miner's ability to work and his safety.

Another method of control, but one which is not practical except in extreme situations, is to limit the exposure of the miner. We are not, at this time, in a position to recommend this method of control since the effect of high levels of exposure for short periods of time is unknown. In addition, such a system is difficult to administer and imposes a hardship on both the individual and the mining company.

Any system of engineering controls must by supplemented be a system of medical surveillance even though at this time we do not have a diagnostic technique which would permit an early detection of respiratory cancer. It is highly important that the condition be diagnosed as soon as possible and provide whatever treatment medical science is able to give the individual. There are a few clues at this time which indicate the possibility of developing early diagnostic techniques, such as sputum cytology. Good medical practice would certainly dictate that men exposed to radon should be given a thorough physical examination, including an X-ray of the chest, at least every six months.

The major job of problem identification and development of basic methods for its control has already been accomplished. However, much needs to be done in the application of these control measures. The remaining tasks may be divided into four areas:

1. Providing technical assistance to the control agencies.
2. Research on additional methods of engineering control, including the development of respirators suitable for use in these mine atmospheres.
3. Conducting further research, especially in the area of developing adequate diagnostic methods and further refining data on the effect of radiation on the health of miners.
4. Providing social and medical assistance to those that have been injured by virtue of exposure to excessive concentrations of radon and its daughter products.

Mr. FLOOD. Mr. Laird?

Mr. LAIRD. No questions.

Mr. FLOOD. Thank you very much, gentlemen.

JUSTIFICATION MATERIAL

URBAN AND INDUSTRIAL HEALTH

Amounts available for obligation

	1967	1968
Appropriation	$21,963,000	$42,594,000
Comparative transfers from:		
"Occupational health"	6,559,000	
"Injury control"	4,894,000	
"Environmental health sciences"	2,408,000	
Transferred to "Operating expenses, Public Buildings Service," General Services Administration	−1,000	
Total	35,823,000	42,594,000

Obligations by activity

	1967 estimate		1968 estimate		Increase or decrease	
	Positions	Amount	Positions	Amount	Positions	Amount
Grants		$18,591,000		$22,525,000		+$3,934,000
Research		10,696,000		12,071,000		+1,375,000
Training		1,795,000		3,331,000		+1,536,000
Fellowships		100,000		123,000		+23,000
Survey and demonstration		5,000,000		5,000,000		
Planning		1,000,000		2,000,000		+1,000,000
Direct operations	1,136	16,797,000	1,249	20,069,009	+13	+3,272,000
Solid wastes	214	4,168,000	249	5,597,000	+35	+1,429,000
Occupational health	265	3,571,000	327	4,544,000	+62	+973,000
Injury control	168	2,874,000	170	3,250,000	+2	+376,000
Food and water quality	380	4,474,000	394	4,726,000	+14	+252,000
Arctic health	72	1,113,000	72	1,333,000		+220,000
Special environmental hazards	37	597,000	37	619,000		+22,000
Total obligations	1,136	35,388,000	1,249	42,594,000	+113	+7,206,000
Unobligated balance, reserve		435,000				−435,000
Total obligations and balance	1,136	35,823,000	1,249	42,594,000	+113	+6,771,000

Obligations by objects

	1967 estimate	1698 estimate	Increase or decrease
Total number of permanent positions	1,136	1,249	+113
Full-time equivalent of all other positions	28	34	+6
Average number of all employees	1,010	1,119	+109
11 Personnel compensation:			
Permanent positions	$8,521,000	$9,522,000	+$1,001,000
Positions other than permanent	115,000	165,000	+50,000
Other personnel compensation	149,000	174,000	+25,000
Total personnel compensation	8,785,000	9,861,000	+1,076,000
12 Personnel benefits	1,063,000	1,258,000	+195,000
21 Travel and transportation of persons	1,014,000	1,356,000	+342,000
22 Transportation of things	205,000	331,000	+126,000
23 Rent, communications, and utilities	615,000	800,000	+185,000
24 Printing and reproduction	242,000	256,000	+14,000
25 Other services	456,000	514,000	+58,000
Project contracts	2,139,000	2,950,000	+811,000
Services of other agencies	279,000	281,000	+2,000
Payment to "Public Health Service management fund"	309,000	350,000	+41,000
Payment to "National Institutes of Health management fund"	119,000	136,000	+17,000
26 Supplies and materials	563,000	599,000	+36,000
31 Equipment	967,000	1,212,000	+245,000
32 Lands and structures	41,000	165,000	+124,000
41 Grants, subsidies, and contributions	18,591,000	22,525,000	+3,934,000
Total obligations	35,388,000	42,594,000	+7,206,000

Summary of changes

1967 enacted appropriation	$21,963,000
Comparative transfers from:	
"Occupational health"	6,559,000
"Injury control"	4,894,000
"Environmental health sciences"	2,408,000
Transferred to "Operating expenses, Public Buildings Service," General Services Administration	−1,000
Unobligated balance, reserve	−435,000
1967 total estimated obligations	35,388,000
1968 estimated obligations	42,594,000
Total change	+7,206,000

	Base		Changes from base	
	Positions	Amount	Positions	Amount
INCREASES				
A. Built in:				
1. Annualization of 130 new positions authorized in 1967				$556,000
2. Increase for operation and maintenance costs of Artic Health Research Laboratory				220,000
B. Program:				
1. Research grants		$10,696,000		1,375,000
2. Training grants		1,795,000		1,536,000
3. Fellowships		100,000		23,000
4. Planning grants		1,000,000		1,000,000
5. Expansion of solid wastes program	214	4,168,000	35	1,094,000
6. Expansion of occupational health program	265	3,571,000	62	970,000
7. Expansion of injury control program	168	2,874,000	2	335,000
8. Expansion of food and water quality program	380	4,474,000	14	257,000
9. Increase in pro rata share of Public Health Service management fund		309,000		41,000
Total program increases			113	6,631,000
DECREASES				
A. Nonrecurring items of equipment				−125,000
B. 1 less day of pay (261 days in 1967; 260 in 1968)				−26,000
C. Nonrecurring cost of relocation of Arctic Health Research Laboratory				−50,000
Total decreases				−201,000
Total net changes requested			+113	+7,206,000

EXPLANATION OF CHANGES

Research grants

The increase of $1,375,000 will support an additional 24 non-competing continuation grants and 11 awards for new research grants. Research emphasis will be directed toward improving man's adjustment to changing environmental conditions through the solution of problems associated with these changes in the areas of environmental toxicants; injury control, particularly traffic injuries; occupational health hazards; and solid wastes disposal.

Training grants

The increase of $1,536,000 will provide 29 additional grants. Four of these grants will be solid waste training grants for the university support of graduate-level students and development of training curricula. The remaining 25 are research training grants which provide support for graduate students studying to be researchers in urban and industrial health programs.

Fellowships

The increase of $23,000 will provide five additional fellowships to support trainees preparing for careers in injury control research.

Planning grants

The increase of $1,000,000 will provide 16 additional planning grants to State and interstate agencies for the collection of information and data on the extent of their solid waste problems and the development of long-range plans for establishing a solid waste program.

Solid wastes program

The net increase of 35 positions and $1,094,000 will provide for continuing research investigations currently being conducted on health hazards of solid waste disposal and implementing new research projects on solid waste reduction by trench incineration, incinerator design studies, sanitary handling and separation of refuse, and improved biodegradation techniques. Technical assistance will be increased in order to expand data collection activities for evaluating existing solid waste disposal systems and procedures and to stimulate cooperation in planning among public and private agencies sharing responsibility for solid waste management in interlocal or interstate regions. Expanded demonstration activities will be undertaken through contracts, at the Urban and Industrial Health

facilities at Cincinnati, Ohio, and at the Johnson City, Tennessee Composting Demonstration facility.

Occupational health program

The net increase of 62 positions and $970,000 will allow for the acceleration of environmental studies on the health hazards associated with asbestos and beryllium. Training activities will be expanded to strengthen the competency and increase the trained manpower pool of State and local government agencies in the occupational health field. The technical services increase will provide consultative assistance through the assignment of professional personnel to a number of States and by expanded assistance through field facilities.

Injury control program

The net increase of 2 positions and $335,000 will provide for increased epidemiological studies on the effects of the series of events which occur before and after a person has been injured and their relationships to his extent of final recovery.

Food and water quality program

The net increase of 14 positions and $257,000 will provide for microbiological research studies on the health aspects of drinking water supplies, and for carrying out responsibilities of the Surgeon General in the water supply field in accordance with an agreement related to the transfer of the Federal Water Pollution Control Administration to the Department of the Interior.

LEGISLATIVE AUTHORIZATION FOR GRANT PROGRAMS

Public Health Service Act, Title III, Sec. 301 (d)

The legislative authority in Section 301 of the Public Health Service Act which provides for the award of grants for research, research training, and fellowships is included in the section of the justifications under the tab, "Preamble Paragraph" in Volume V.

Solid Waste Disposal Act, Title II, Sec. 204 (b), (3)

"Make grants-in-aid to public or private agencies and institutions and to individuals for research, training projects, surveys, and demonstrations* * *."

Solid Waste Disposal Act, Title II, Sec. 206 (a)

"The Secretary may from time to time, upon such terms and conditions consistent with this section as he finds appropriate to carry out the purposes of this Act, make grants to State and interstate agencies of not to exceed 50 per centum of the cost of making surveys of solid waste disposal practices and problems within the jurisdictional areas of such States or agencies, and of developing solid waste disposal plans for such areas."

Solid Waste Disposal Act, Title II, Sec. 210 (a)

"There is hereby authorized to be appropriated to the Secretary of Health, Education, and Welfare, to carry out this Act, not to exceed $7,000,000 for the fiscal year ending June 30, 1966, not to exceed $14,000,000 for the fiscal year ending June 30, 1967, not to exceed $19,200,000 for the fiscal year ending June 30, 1968, and not to exceed $20,000,000 for the fiscal year ending June 30, 1969."

Explanation of transfers

	1967 estimate	Purpose
Comparative transfers from—		
"Occupational health"	$6,559,000	Transfer of the "Occupational health," "Injury control," and "Arctic health" activities into this appropriation. Reorganization of the Public Health Service and realinement of appropriation structure.
"Injury control"	4,894,000	
"Environmental health sciences"	2,408,000	
Transfer to "Operating expenses, Public Buildings Service," General Services Administration.	−1,000	Transfer to General Services Administration for leased space.

INTRODUCTION

The National Center for Urban and Industrial Health plans, conducts, and coordinates a national program for the prevention and control of environmental

hazards and health problems associated with urban living including those related to an industrialized society. The Center structure integrates many heretofore distinct activities so that more effective effort to cope with the growing problems in urban and industrial health may be exerted. The several functional programs, including solid wastes management, occupational health, injury control, food and water supply, and special environmental hazards, which have common interests are structured within the Center concept to correlate various activities such as epidemiology, cold weather research, and other research and training related to urban and industrial health.

Technological and medical solutions are available, or can be developed, that will make significant contributions to solving major urban an industrial health problems. One of the reasons for the lack of greater success to date has been that urban and industrial health studies have not been considered in an entirely correlated systematic context—the focus has often been fragmented among individual organizational entities. This failure to concentrate on the total problems of urban and industrial health has, in many instances, prolonged adverse environmental situations.

Many of the problems in urban and industrial health were not of great public concern 20 years ago; some were considered only as future inconveniences. Today, however, these problems have become of great concern due to the rapid technological changes in industry, our patterns of living, and our ever-increasing urbanization. To provide solutions for these changes and the complex problems associated with them, a new approach and an expanded program effort is necessary.

During 1968, research studies will seek new and improved solid waste concepts and methodologies, including improved health protection from waste disposal. Epidemiological studies will concentrate on determining health hazards associated with asbestos and beryllium and studies relating to respiratory diseases. Investigations will be initiated on the pattern of events, quality of initial care, and recovery or physical impairments related to emergency care of the injured. Research efforts will also be concerned with the control and prevention of injuries and deaths at home and at work, including investigations as to how and why automobile accidents occur. Milk and food research will continue to develop new technical data that can be applied toward reducing the incidence of foodborne diseases and contamination. New water supply research activities will investigate the health effects of waterborne contaminants on man and related disease outbreaks. The arctic health program will continue studies on arctic environments, defining health hazards and the means for overcoming them.

Training efforts will provide short-course instructions in such areas as State planning for solid waste programs, injury control and occupational health techniques, ambulance attendant training, and milk and food surveillance procedures. Both intramural and extramural training programs will be expanded to up-grade and increase the numbers of qualified research and other professional personnel now available to the various disciplines under urban and industrial health.

Technical assistance will be expanded through direct assignment of personnel to State occupational health programs, through demonstration and planning grants for purposes of stimulating solid waste efforts, and by consultation, guidance, and surveillance related to such problems as solid waste disposal criteria and current practices in use. Increase efforts will carry out assigned responsibilities of the Surgeon General in the water supply field.

Grants

	1967 estimate	1968 estimate	Increase or decrease
Research	$10,696,000	$12,071,000	+$1,375,000
Training	1,795,000	3,331,000	+1,536,000
Fellowships	100,000	123,000	+23,000
Survey and demonstration	5,000,000	5,000,000	
Planning	1,000,000	2,000,000	+1,000,000
Total grants	18,591,000	22,525,000	+3,934,000

Research grants

	1967 estimate		1968 estimate		Increase or decrease	
	Number	Amount	Number	Amount	Number	Amount
1. Noncompeting continuations	229	$6,671,000	253	$7,739,000	+24	+$1,068,000
2. New grants	129	3,861,000	140	4,123,000	+11	+262,000
3. Supplements	(26)	164,000	(31)	209,000	(+5)	+45,000
Total	358	10,696,000	393	12,071,000	+35	+1,375,000

Problems of urban and industrial health have become more difficult to control because of increasingly rapid technological changes and expansion of metropolitan areas. Continuous study is essential to keep control measures in step with changing environmental health problems. The research grants program permits enlistment of research capabilities at universities and other non-profit institutions to define, assess, and elucidate urban and industrial health problems. Support is provided to investigators whose research proposals are reviewed by panels of experts and recommended for award.

Major problems which have been explored and on which work will continue during 1968, include studies regarding biochemical and physiological action of industrial chemicals and the means for detection of early toxic effects; the behavioral responses of humans and animals under simulated industrial conditions; the effects of physical and chemical contaminants on the skin of workers; radiation effects from the laser beam, together with suitable methods for protecting workers; and the synergistic effects of alcohol on chlorinated hydrocarbons.

During 1968, increased emphasis will be made in research directed toward improvement of man's health by the development of criteria to optimize the design and manipulation of urban environments. This includes studies on the physiological effects of environmental stressers such as: noise, vibration, humidity, temperature, overcrowding, and residential sanitation as well as those relating to the availability and use of safe, healthful, recreational areas.

Evaluations will be undertaken on the feasibility of new approaches for handling solid wastes, including biodegredation, chemical conversion, and physical reconstitution. New approaches in the area of waste collection and transport will be explored, such as the use of underground systems serving whole communities or regions. The primary emphasis in these areas will be studies leading to protection against health hazards associated with the processing and disposal of solid wastes and studies involving conversion or recycling into potentially useful and safe materials and resources. Investigations of major importance currently receiving support include: a five-part project under the direction of Percy H. McGauhey, Director of Sanitary Engineering, University of California at Berkeley, to evaluate environmental effects, land use planning, underground transport methods, systems analysis of waste management, and improved treatment techniques; and in investigation being conducted by Dr. P. W. Purdom, Director of the Department of Environmental Engineer, the Drexel Institute of Technology, of health hazard potential of incineration residues which may be used for landfills. In 1968, $2,515,000 is included for solid wastes research grants compared to $1,677,000 in 1967.

With heavy emphasis now being placed on traffic injuries by a Presidential message and Congressional action, it is anticipated that there will be a much greater interest on the part of researchers to undertake studies in this area and it is planned to emphasize the need of this research in 1968. Other injury control objectives for 1968 will be to further broaden the interests of senior researchers, particularly in the life sciences, to undertake research in injury prevention, and to stimulate, develop and focus attention of senior researchers on the needs in the various areas of non-transportation accidents such as falls, fractures, poisonings, home, and childhood accidents.

The provision of Federal support for new research programs on urban and industrial health is essential in an often complex urban society. Very few research organizations, including universities, have taken really independent and significant steps to investigate and solve urban and industrial health problems

from an interdisciplinary point of view. The major reason is the lack of a national focal point—both financial and technical to encourage such activity. The Center for Urban and Industrial Health will provide a mechanism to overcome this problem.

In 1968, an increase of $1,375,000 is requested to support a total of 393 grants, 35 more than the 358 to be supported in 1967.

Training grants

	1967 estimate		1968 estimate		Increase or decrease	
	Number	Amount	Number	Amount	Number	Amount
Continuations	28	$1,429,000	29	$1,439,000	+1	+$10,000
New grants	7	366,000	35	1,892,000	+28	+1,526,000
Total	35	1,795,000	64	3,331,000	+29	+1,536,300
Solid wastes training grants	8	350,000	12	490,000	+4	+140,000

Under the authority of Public Law 89-272, solid waste training grants are awarded to universities to provide for curricula development, training aids, and support of graduate-level students. Recognizing its particular responsibility to encourage and support training programs in the solid waste management field, and realizing how severely hampered the field is by the lack of personnel trained to cope with the mounting waste disposal problem, the Federal government has assigned a high priority to the training of professional, technical, and managerial personnel capable of researching and applying new concepts and systems for solid waste management. The training program was initiated in 1966, with the award of four training grants for curricula development and the support of 20 graduate-level students. In 1967, approximately 45 students will receive training at eight universities. In 1968, $490,000, an increase of $140,000, is requested for training of 60 post-graduate students at 12 institutions.

	1967 estimate		1968 estimate		Increase or decrease	
	Number	Amount	Number	Amount	Number	Amount
Research training grants	27	$1,445,000	52	$2,841,000	+25	+$1,396,000

The research training grants program is one of the major efforts of the Center to meet the need for more researchers who are interested in and prepared to undertake research in one or more of the many areas of urban and industrial health. The intent is to encourage development of organized training programs which integrate course work and research practice under senior investigators and thereby provide competent investigators capable of independently conceiving, designing, and carrying through fruitful research. These grants provide support for faculty, visiting lecturers, research seminars, equipment, and stipends for graduate students selected by the university.

It is expected that graduates of such training programs will develop careers in various program areas of urban and industrial health research. Numerous scientific committees have repeatedly pointed out that the trained manpower now available is insufficient for the task of dealing with the hazards to public health from environmental contamination. The study "Restoring the Quality of Our Environment," by the President's Science Advisory Committee, states, "In the long run, improving both numbers and quality of highly trained manpower engaged in key actions, from research to enforcement, will do most for us, and merits highest priority." The aim of the program is to produce personnel with the capability to pursue the complexities of characterization, measurement, evaluation, and elimination of urban and industrial health hazards.

During 1968, grant funds will be provided for graduate programs of research training in professional schools which by curriculum design and direction are oriented to attract and train scientists for this specialized field of public health.

In these programs, students will receive training in a particular discipline, research experience in a problem area significant to urban and industrial health, and a synthesis of research methodology of related fields of science. In addition to the support of pre- and post-doctoral students, these funds will strengthen the scientific base of the programs by augmenting faculties, stimulating the organization and conduct of seminars, and improving training laboratories by providing modern research instruments.

This increased program of research training grants will eventually permit a stepped-up attack on pressing problems in research. It will help in overcoming a serious deterrent to our national capability for developing sound programs in urban and industrial health, including urban planning and development.

The 1968 request of $2,841,000, an increase of $1,396,000, will provide support for approximately 160 students at 52 institutions.

	1967 estimate		1968 estimate		Increase or decrease	
	Number	Amount	Number	Amount	Number	Amount
Fellowships	11	$100,000	16	$123,000	+5	+$23,000

In addition to training grants which the National Center for Urban and Industrial Health is using to meet the increasing need for trained and experienced investigators interested in undertaking research, fellowships are used to provide direct support to students for graduate-level training. The intent is to encourage promising students to develop careers in particular areas of injury control research.

There are now research programs for training of students in special areas at a few universities such as UCLA, Cornell, and Ohio State University. In addition, there is some exposure of students to such research through their employment on projects supported by research grants. The need is for training through integration of course work and practice under senior scientists. The $123,000 requested will support 16 students in 1968.

Survey and demonstration grants—solid wastes

	1967 estimate		1968 estimate		Increase or decrease	
	Number	Amount	Number	Amount	Number	Amount
Survey	25	$1,000,000	25	$1,000,000	----------	----------
Demonstration	16	4,000,000	16	4,000,000	----------	----------

New ideas and technological innovations in solid wastes disposal systems will be barren unless their practicability and effectiveness can be demonstrated. Demonstration grant projects may receive up to two-thirds Federal support and may include the construction of disposal and waste reduction facilities. This program will make possible the early application of new solid waste management systems and principles without which the prospects for substantial improvement in controlling the mounting solid waste problem would be meager. Thus, demonstration projects are an essential step in the integrated program concept and logically follow successful bench, pilot-scale, and feasibility studies. New methods and systems of solid waste management will be placed into full-scale operation. Projects currently receiving support range from the demonstrations of improved technology for treatment of solid wastes to mergers of small community waste disposal operations into regional management districts. Examples of grant supported projects include (1) a project by the City of Stamford, Connecticut, which involves the construction of a multi-purpose incenerator to demonstrate the feasibility of disposing of solid wastes that normally are too volatile or bulky to burn, such as refrigerators, furniture, and automobiles, and (2) a study and investigation being conducted by the University of Louisville for the purpose of developing a single Jefferson County disposal system to replace

the present manifold community system. This project involves some 58 municipalities with populations ranging from about 1,000 to 400,000. Only three of these municipalities operate their own collection facilities.

In 1966, 19 grants were awarded for demonstrations, studies and investigations providing up to two-thirds of the project costs; three projects included construction of small-scale solid waste disposal demonstration facilities. In 1967, and 1968, 41 grants will be funded at a level of $5,000,000 to facilitate the application of knowledge and systems developed from Federal and privately supported research projects.

	1967 estimate		1968 estimate		Increase or decrease	
	Number	Amount	Number	Amount	Number	Amount
Planning grants—solid wastes	25	$1,000,000	41	$2,000,000	+16	+$1,000,000

The purpose of solid waste planning grants, which permit Federal support of up to one-half of the project cost, is to initially assist States in gathering basic information on the extent of the solid waste problem and on the effectiveness and deficiencies of ongoing efforts within the State. Making use of this information, States receiving support will then develop comprehensive long-range plans for meeting their solid waste problems. The plans will include not only appropriate consideration of the existing and projected solid waste disposal needs of the State, but will also take into consideration such related factors as the control of air and water pollution resulting from improper disposal operations, meaningful land-use planning, protection of the public health, and trends in population and industrial growth that will affect the future character of the solid waste management problem. To the fullest extent possible, these plans will encourage inter-governmental cooperation.

Up to the present, many local and regional planning efforts have either ignored or paid limited attention to the steadily mounting volume of solid wastes. A means for overcoming this will be to concentrate on coordinated, practical, and long-term planning that will accommodate the varying requirements for large metropolitan areas and those of the smallest municipality. Effective cooperation will be sought among various jurisdictions comprising what can be termed a "solid waste disposal shed." An example of an ongoing project of the kind needed is that of the California State Department of Public Health which is assessing the current quantities of solid waste produced throughout the State, using statewide inventories, from which they can develop future long-range plans for solid waste disposal.

During 1966, $400,000 was available for the first year of the program, and $1,000,000 is available to support 25 such grants in 1967. An increase of $1,000,000 is requested for 1968 to permit the award of 41 planning grants. The previously approved State planning projects and 16 new grants will be supported in 1968.

Direct operations

	1967 estimate		1968 estimate		Increase or decrease	
	Positions	Amount	Positions	Amount	Positions	Amount
Personnel compensation and benefits	1,136	$9,848,000	1,249	$11,119,000	+113	+$1,271,000
Other expenses		6,949,000		8,950,000		2,001,000
Total	1,136	16,797,000	1,249	20,069,000	+113	+3,272,000

Summary of program

	1967 estimate		1968 estimate		Increase or decrease	
	Positions	Amount	Positions	Amount	Positions	Amount
Solid wastes	214	$4,168,000	249	$5,597,000	+35	+$1,429,000
Occupational health	265	3,571,000	327	4,544,000	+62	+973,000
Injury control	168	2,874,000	170	3,250,000	+2	+376,000
Food and water quality	380	4,474,000	394	4,726,000	+14	+252,000
Arctic health	72	1,113,000	72	1,333,000	.....	+220,000
Special environmental hazards	37	597,000	37	619,000	.....	+22,000
Total	1,136	16,797,000	1,249	20,069,000	+113	+3,272,000

Solid Wastes

Summary of program

	1967 estimate		1968 estimate		Increase or decrease	
	Positions	Amount	Positions	Amount	Positions	Amount
Research	85	$2,150,000	100	$2,793,000	+15	+$643,000
Training	20	378,000	20	424,000	.....	+46,000
Technical assistance	81	1,200,000	96	1,582,000	+15	+382,000
Demonstration development	28	440,000	33	798,000	+5	+358,000
Total	214	4,168,000	249	5,597,000	+35	+1,429,000

	1967 estimate		1968 estimate		Increase or decrease	
	Positions	Amount	Positions	Amount	Positions	Amount
Research	85	$2,150,000	100	$2,793,000	+15	+$643,000

The President's Science Advisory Committee in its report "Restoring the Quality of Our Environment" and the National Academy of Sciences in its more recent report "Waste Management and Control," have called for a new and redoubled effort to find better methods of alleviating the national solid waste burden, not merely by employing improved disposal techniques, but also by developing techniques for the reduction of wastes, for the productive recycling of waste material, and for the recovery of the energy resources now being lost through inefficient waste management. A steadily mounting burden of wastes handled in ways that endanger the public health and welfare through environmental deterioration and excessive economic penalties cannot be accepted.

The 1968 research program will focus on two fundamental problem areas: the need for greatly improved health protection and the necessity for discovering new and improved solid waste concepts and methodologies. Since some technological innovations are already in the pilot stage and even in limited use in certain segments of industry, in-house research capability will concentrate on providing the resources necessary to evaluate the health implications of this emerging technology and the potential for broader application. This will be accomplished through the solid waste research and pilot plant facilities at Cincinnati, Ohio, and through extensive use of contractual arrangements with other Federal agencies, research institutions and private industry. At the same time a greater effort also will be made to enlist the cooperation of industry in applying both its present technological knowledge and its research and development capabilities to the overall national problem of solid waste management. Segments of industry, such as the aerospace complex, have already made initial entries

into this broad field. These welcome beginnings must be encouraged and expanded to include the chemical industry, the pulp and paper industry, the packaging industry, and other parts of the private sector which can unquestionably contribute toward improved waste management through better disposal practices and the reduction in the volume of disposable wastes.

Health investigations which are currently underway include studies of the occurrence and survival of pathogens and other indicator organisms in compost, and investigation of the survival of microorganisms in rendering plants, and studies designed to identify chemical and microbiological health hazards associated with the use of poultry litter as a feed for beef and dairy cattle.

The requested increase of $643,000 and 15 positions for 1968 will provide for continuing investigations courrently underway and for implementing new ones in such areas as solid waste reduction by trench incineration, incinerator design studies, sanitary handling and separation of refuse, and improved biodegradation techniques.

	1967 estimate		1968 estimate		Increase or decrease	
	Positions	Amount	Positions	Amount	Positions	Amount
Training	20	$378,000	20	$424,000	.....	+$46,000

The direct training program has been established to provide needed specialized technical courses for the professional personnel of organizations and agencies with solid waste responsibilities. The program efforts include the following activities: (1) assessment and evaluation of the training needs of State and local agencies; (2) design of short courses on the basis of needs indicated by surveys, research findings, and demonstration projects; (3) conduct of special in-service courses to meet the needs of the Public Health Service in the discharge of its solid waste program responsibilities; (4) provision of consultation and assistance to State and local agencies in the development of solid waste management training activities; (5) conduct of carefully designed short courses demonstrating the latest knowledge and technology in solid waste engineering and management; (6) development of course curricula and various types of training manuals for class instruction and issuance to State, local, and industrial training programs; and (7) supervision of the graduate training program at universities for approximately 7 Public Health Service professional personnel during 1968.

The program also provides one and two-day orientation courses for personnel who are associated with solid waste management. For professional and technical personnel, one week topical courses are given in Cincinnati and in the field. These courses, designed to improve solid waste management programs, are for professional practitioners or persons who are responsible for establishing and managing such programs.

During 1968 short-term instruction will be provided for State, local, and industrial personnel on subjects ranging from elements of State planning to the sanitary aspects of refuse collection and disposal. The requested increase of $46,000 will provide for annualization of the 11 new positions authorized in 1967.

	1967 estimate		1968 estimate		Increase or decrease	
	Positions	Amount	Positions	Amount	Positions	Amount
Technical assistance	81	$1,200,000	96	$1,582,000	+15	+$382,000

Establishment of the Federal solid wastes program and the rising national awareness of the critical need to make up for past and present shortcomings in the field of solid wastes management have combined to create a growing demand for technical assistance from State, local and industrial officials. The State planning grant program has also intensified the need for extensive Federal technical advice.

During 1968, increased funding will be used to concentrate on establishing guidelines of good practice and technical criteria for currently acceptable solid waste disposal methods and processes, based on comprehensive survey data and knowledge gained through research. Such guidelines and criteria do not currently exist, and the expanding magnitude of the problem requires that standards be made available to guide decision-making at all levels of government. At present, information and assistance in utilizing the best known current practices of waste disposal is provided to State, local, and interstate agencies through the technical assistance program.

The increase also will enable contractual activities to be expanded for gathering data to evaluate current solid waste disposal systems and procedures. A concentrated effort will be made to stimulate cooperation in progressive planning among public and private agencies which share responsibility for solid waste management in interlocal or interstate regions. An increase of $382,000 and 15 positions is requested for the support of these activities in 1968.

	1967 estimate		1968 estimate		Increase or decrease	
	Positions	Amount	Positions	Amount	Positions	Amount
Demonstration development	28	$440,000	33	$798,000	+5	+$358,000

The demonstration development program is responsible for the in-house demonstration projects and the technical considerations relevant to the demonstration grant program. These responsibilities require the conduct of systematic technical and engineering reviews, feasibility studies, preliminary site visits and criteria evaluation. Follow-up activities after project initiation involve construction critique and review, engineering consultation, and liaison activities with grantees or contractors.

As the national solid waste problem becomes more acute and critical, there will be increasing pressure to rapidly exploit research breakthroughs. In response to this, the creation of sound programs through demonstration projects will continue to be encouraged and accelerated. These projects permit the identification and correction of health and other technical problems not evident during pilot or bench scale testing programs and will further permit necessary and meaningful economic evaluations. With the relatively large investments involved in grant and directly supported demonstration projects greater capabilities are needed to conduct careful evaluation and planning.

During 1968, the demonstration project staff will continue demonstration activities through directly supported in-house projects, *including contract* arrangements when appropriate. One new project to be initiated will be a comprehensive and economical solid waste management demonstration program for communities with a population under 25,000. The objective of such a project will be to incorporate into one compatible system proven, effective methods and techniques currently available for the storage, collection, and disposal of solid wastes. Efforts will also be directed to enlist the cooperation of industry in applying its present technological knowledge to the national problem of solid waste management. The Johnson City, Tennessee, demonstration composting project, which was initiated jointly by the Public Health Service, the Tennessee Valley Authority and Johnson City, will experience its first full year of operation during 1968. The project includes a full-scale demonstration which will permit research on the public health aspects of the use of municipal refuse and raw sewage in compost. The increase of 5 positions and $358,000 in 1968 will provide for operation of this facility and expand in-house demonstration projects.

Occupational Health

Summary of program

	1967 estimate		1968 estimate		Increase or decrease	
	Positions	Amount	Positions	Amount	Positions	Amount
Research	187	$2,594,000	229	$3,335,000	+42	+$741,000
Training	10	152,000	15	226,000	+5	+74,000
Technical assistance	68	825,000	83	983,000	+15	+158,000
Total	265	3,571,000	327	4,544,000	+62	+973,000

	1967 estimate		1968 estimate		Increase or decrease	
	Positions	Amount	Positions	Amount	Positions	Amount
Research	187	$2,594,000	229	$3,335,000	+42	+$741,000
(a) General	110	1,367,000	152	2,108,000	+42	+741,000

During 1968 epidemiological studies designed to investigate and determine health hazards associated with the substances of beryllium and asbestos will receive additional emphasis. These studies will be concerned with the inherent risk of exposure for persons working in industries producing or using these materials and will also explore and evaluate dangers to the general population. Increases of 42 positions and $741,000 are requested in 1968 to carry out these control and preventive research studies.

Asbestos has been implicated as an etiologic agent in the production of certain types of lung cancer and pleural mesothelioma. Evidence suggests a potential problem from incidental and community exposure. Research in European countries and in South Africa, as well as preliminary research findings in the United States, has indicated a high prevalence of lung cancer and pleural mesothelioma among certain groups of asbestos workers. The general population is subject to exposure also since asbestos fibers are an ubiquitous contaminant in municipal atmospheres; a primary source is the breakdown of automobile brake linings. The medical research will include examinations of sputum samples, pathology studies, pulmonary function tests, and medical examinations of workers exposed to asbestos. Mortality and morbidity experience will be compiled and compared with the general population. Toxicologic investigations also will be conducted, using various kinds of raw asbestos and finished asbestos products. The total effort will contribute to the basic understanding of the epidemiology of lung cancer and pleural mesothelioma in the general population and elucidate the requirements necessary for control and preventive research.

The importance of beryllium as a potential health hazard, to both the employed population and the general population, which was noted by the President's Science Advisory Committee in its report "Restoring the Quality of Our Environment", cannot be overemphasized. The toxic properties of this element have been known since 1946 when it was used extensively as a phosphor in fluorescent lamps and in the development of nuclear energy. Following World War II when its use was discontinued as a fluorescent phosphor, the production of beryllium was limited, as it had relatively few industrial uses. However, because of its low density and other physical properties, beryllium is becoming a widely used metal, especially in space technology and as a general purpose alloy. Beryllium compounds are being used as rocket and missiles propellants, thus extending the insidious danger of this metal and its compounds from the industrial site to the ambient air. It is estimated that presently some 10,000 workers may be exposed to beryllium and its compounds, in addition to a large population group living in the vicinity of plants producing beryllium. Since 1946, 735 cases of beryllium poisoning have been reported of which 190 have resulted in death. The pulmonary form of berylliosis generally results in death. Efforts in 1968

will be directed towards the determination of the toxic levels of exposure, the refinement of current standards, and the development of control methods.

Research activities will continue in toxicology, pathology, physiology, occupational medicine, and in engineering and chemical analysis. These activities are directly responsive to the need for new knowledge to control changing health hazards arising at the place of work.

During 1968, toxicologic studies will be directed to several acute industrial problems, such as solvents used in the formulation of plastics, the biologic effects of intermetallics, and the products of pyrolysis of plastics. Basic studies on mechanism of toxic action and the natural defenses of the body will be continued.

Studies of the physical environment, with emphasis on noise, radiant energy, and adverse thermal stress, will be continued. Morbidity and mortality studies have demonstrated that some occupational groups have elevated rates of certain chronic diseases. Studies will be made on the relationship between environmental exposures and chronic diseases in industrial workers. With increasing automation and mechanization, the man-machine relationship becomes increasingly important in terms of health and comfort, as well as of efficient production. For example, changes in the design of tractors will significantly reduce the operator's exposure to exhaust gases, radiant heat and noise. Human engineering studies are underway to determine other means for overcoming health problems of the man-machine relationship.

	1967 estimate		1968 estimate		Increase or decrease	
	Positions	Amount	Positions	Amount	Positions	Amount
(b) Respiratory diseases	77	$1,227,000	77	$1,227,000	.....	.....

Another hazardous area upon which research will concentrate during 1968 is that involving coal pneumoconiosis, a major occupational disease affecting almost 20 percent of the entire bituminous coal mining population. In addition to being a severe health problem, it represents a major social cost, requires extensive use of hospital facilities, and presents problems of medical rehabilitation of coal miners. During 1967 the Appalachian Laboratories for Occupational Respiratory Diseases at West Virginia University will become operational, thus making it possible to conduct major research on coal pneumoconiosis in one location. These laboratories will permit the use of a wide variety of scientific disciplines to examine respiratory diseases in a coordinated and effective manner and to develop long-range prospective studies of coal pneumoconiosis at the clinical and basic science level. In view of the increasing prevalence of respiratory diseases, including bronchitis and emphysema in the general population, these studies will be essential to a broader understanding of the disease mechanism and should result in developing fundamental preventive procedures.

Studies proposed for 1968 will relate to basic mechanisms of respiratory physiology, to fundamental changes in the cellular system of the lung, and to the mechanism of causation. The research data will also be applicable to an understanding of the total complex of respiratory disease in the general population and hopefully should contribute to a solution of one of the Nation's largest public health problems.

	1967 estimate		1968 estimate		Increase or decrease	
	Positions	Amount	Positions	Amount	Positions	Amount
Training	10	$152,000	15	$226,000	+5	+$74,000

An increase amounting to $74,000 and 5 positions is requested to permit training of additional State assignees and other personnel required for State programs. The primary objectives of this training activity are to strengthen the competency and increase the trained man-power pool of State and local govern-

ment agencies which represent a focal point for controlling occupational hazards in today's industry.

Short-term training was provided to 320 occupational health personnel in 1966. It is anticipated that 350 professional personnel will receive training in 1967. The additional funds requested in 1968 will support the training of 500 professional personnel. Of this number, 150 will receive broad based training which will enable them to undertake professional responsibilities and 350 will receive refresher training or courses in new and specialized techniques.

	1967 estimate		1968 estimate		Increase or decrease	
	Positions	Amount	Positions	Amount	Positions	Amount
Technical assistance	68	$825,000	83	$983,000	+15	+$158,000

The ultimate application of techniques for the control and prevention of occupational diseases is at the work place and can be carried out most effectively by State and local agencies. That the States are unable to fulfill their responsibilities in this field is apparent. Of the 45 States which have identifiable occupational health programs, 12 have programs which could be considered adequate. The necessary work in occupational disease control at the operating level cannot be carried out without an effective Federal assistance program. For this purpose, funds are requested in 1968 to permit the assignment of technical personnel to the States to initiate and strengthen State and local programs as quickly as possible.

A part of this program consists of responding to requests from State and local health agencies, industry, and labor for field technical assistance. At the beginning of 1967, there was a significant backlog of these requests, examples of which include: studies of illness due to use of formaldehyde in the garment industry, investigations of deaths caused by improper use of silver solder containing cadmium, and studies of illnesses resulting from the presence of mercury in newly opened mines. During 1968, teams of experts will be provided to assist in the rapid solution of some of the more critical problems and occupational health personnel will be assigned to field facilities to provide day-to-day assistance to local and State governmental organizations.

An increase of 15 positions and $158,000 will provide the support necessary to stimulate the initiation of State occupational health programs, and for increased consultation to States, local agencies and industrial and labor groups.

Injury Control

Summary of program

	1967 estimate		1968 estimate		Increase or decrease	
	Positions	Amount	Positions	Amount	Positions	Amount
Research	85	$1,746,000	87	$2,053,000	+2	+$307,000
Training	13	185,000	13	190,000	.....	5,000
Technical assistance	70	943,000	70	1,007,000	.....	+64,000
Total	168	2,874,000	170	3,250,000	+2	+376,000
Research	85	1,746,000	87	2,053,000	+2	+307,000
(a) Prevention and control	50	1,305,000	50	1,372,000	.....	+67,000

The injury control program's research activities are concerned with finding effective injury control measures and determining feasible and appropriate methods of applying these measures. They are directed primarily toward an examination of the physical, physiological, and psychological characteristics of man in relation to his activities and behavior which may cause injury to himself or others. This program of directed research, conducted intramurally and through contracts, provides technical information to support operational programs by the Federal, State and local government agencies.

Burns, fractures, poisoning, suffocation, shock, and piercing injuries resulting in disfigurement, disability, and death—particularly in and around the home—will be given increased attention. Current research is assessing the relationship between bone weakening and falls. Contractual studies are now being planned to determine ways of maintaining bone strength during the aging process, how walking changes as age increases and the extent to which an individual's physical and mental capability deteriorates. From these studies it is anticipated that either preventive or control measures to lower the accident rate from falls involving the aged will be developed.

Preventive or control measures that have been developed or evolved from similar investigations include: efforts to reduce glass door injuries through industrial production of improved glass, improvements in the design and operation of lawnmowers, and the movement toward use of flame retardant fabrics.

In 1968, preliminary work will include appraising and planning studies on injuries and deaths resulting from improper use or installation of home utilities and mechanical equipment, injuries associated with the use of regular household appliances and equipment, and injuries related to unsafe acts of human behavior.

In order to reduce injuries and deaths associated with automobile accidents it is necessary to have a knowledge of how people drive and walk and under what conditions these actions become more hazardous. The phenomenon of motor vehicle accidents cannot be fully understood without considering them in the context of routine driving behavior and basic and applied research must include the study of normal as well as abnormal patterns of behavior. During 1968 research will be conducted both in laboratory and selected field situations for the purpose of developing equipment to simulate the traffic environment of the driver and duplicating situations of stress which might involve danger of accidents. Such a driver-environment simulator is also useful to determine the effects of alcohol, fatigue and other factors of driver behavior. The $67,000 increase represents prior year annualization costs.

	1967 estimate		1968 estimate		Increase or decrease	
	Positions	Amount	Positions	Amount	Positions	Amount
(b) Epidemiology	35	$441,000	37	$681,000	+2	+$240,000

The major objectives of the epidemiology program are to develop definitive information on the causes and circumstances of injuries and indicate specific problems in injury prevention which require additional research. The study of falls and fractures among older people was instrumental in initiating the current research work being conducted on the influence of bone thinning on fractures among the elderly women. During 1968, studies of injuries requiring hospitalization, such as burns and various kinds of falls, will be continued in cooperation with teaching hospitals and State health departments.

The five man surveillance teams, established in 1966 and 1967 in Denver and Boston, will continue to carry out in-depth interviews regarding the circumstances surrounding accidental injuries and deaths. They will continue gathering information on injuries and deaths from fire, explosions, miscellaneous burns, drownings, traffic accidents and other types of accidents. This information which will be coordinated with other groups concerned with the collection of vital statistics and health data including the National Center for Health Statistics, will provide useful clues to causation which can give more specific direction in the area of prevention and control research.

New studies will be conducted to determine the relationship between injuries and the extent of final recovery to the quality, quantity, and initial source of treatment rendered. This will be accomplished through investigations of (1) present inadequacies of emergency care for the injured; (2) relationships between suspected environmental, psychological, medical, and emergency treatment factors and the incidence, severity, and outcome of injuries; and (3) demonstrations of the effects of improved emergency medical services.

An increase of $240,000 is requested to conduct these studies.

	1967 estimate		1968 estimate		Increase or decrease	
	Positions	Amount	Positions	Amount	Positions	Amount
Training	13	$185,000	13	$190,000	.....	+$5,000

The injury control training program for State and local public health personnel provides training in injury control and prevention techniques, recommends methods for improving and expanding community training resources, and provides audio-visual aids in the form of exhibits, brochures, films and radio and television materials on various aspects of the injury control program.

During 1968, regional seminars, intensive short courses and injury control workshop training programs will be continued. Efforts will be directed toward improving the quality of the curricula being offered, and thereby up-grade the accident prevention skills among community public health personnel. These training programs have been very successful to date as evidenced by the steadily increasing number of applications and requests for the addition of new courses to broaden and expand the area of competency by State and community personnel.

Greater attention will be given to emergency and medical service training through intensive short-course instruction and by assisting State and community training programs to initiate, up-grade and expand their own emergency and medical service training programs. An amount of $5,000 is requested for annualization costs.

	1967 estimate		1968 estimate		Increase or decrease	
	Positions	Amount	Positions	Amount	Positions	Amount
Technical assistance	70	$943,000	70	$1,007,000	.....	+$64,000

Technical assistance efforts provide professional guidance and experience to State and local health departments to: (1) plan and develop the injury control part of comprehensive health programs for States; (2) minimize the consequences of accidental injuries; (3) assist States to evaluate, plan, and up-grade their requirements for emergency medical services to the injured; (4) reduce injuries from poisoning, especially in the case of poison ingestion by children; and (5) refer through liaison activities with other Public Health Service programs, the needs in medical care activities not coming within the responsibilities of the injury control program.

Support of State and local injury control prorgams is provided through demonstration projects, assignment of personnel, and provision of surveillance and research findings. During 1968, the latest available information and techniques designed to prevent and control deaths and injuries resulting from accidents will continue to be provided. These consist of developing appropriate protection controls, providing public education and other measures designed to prevent injury, especially those developments directed at protecting children, the disabled and the elderly. Work will continue on the development and promotion of model injury control programs that can be provided to States for incorporation in their comprehensive health plans. One of the major efforts during 1968 will be to continue to provide assistance to States and communities in evaluating, up-grading, and improving their emergency medical services to the injured. This will insure that communities have available a coordinated system which will provide: (1) on-site emergency care; (2) safe and expeditious transportation; and (3) follow-up medical care in hospital emergency units. Poison prevention activities associated with "National Poison Prevention Week" will continue to be supported through wider use of radio, television, and press facilities for greater nationwide coverage. New materials will be provided in year-round educational programs related to the prevention of acidental poisonings. An increase of $64,000 is requested for annualization costs.

FOOD AND WATER QUALITY

Summary of program

	1967 estimate		1968 estimate		Increase or decrease	
	Positions	Amount	Positions	Amount	Positions	Amount
Research	204	$2,350,000	214	$2,542,000	+10	+$192,000
Training	13	234,000	13	234,000		
Technical assistance	41	484,000	45	544,000	+4	+60,000
Certification and regulation	122	1,406,000	122	1,406,000		
Total	380	4,474,000	394	4,726,000	+14	+252,000

	1967 estimate		1968 estimate		Increase or decrease	
	Positions	Amount	Positions	Amount	Positions	Amount
Research	204	$2,350,000	214	$2,542,000	+10	+$192,000

In 1968, the food research program will continue its emphasis on the development of new technical information that can be applied to reduce the incidence of foodborne diseases such as salmonellosis, staphylococcal food poisoning, botulism, and virus infections. These efforts include those directed at shellfish sanitation for the provision of continued scientific data required to prevent transmission of disease agents through marine foods. Particular attention will be given to improve methods for detecting and minimizing contamination in milk, prepared foods, and new or modified products that are potential vehicles for the transmission to man of hazardous microbiological and chemical agents. Laboratory, pilot plant, and field studies will be directed toward investigation of (1) cultural, seriological, and biochemical methods for quantitative estimations of toxins, pathogenic microorganisms, and indicators of unsanitary food practices; (2) environmental factors that influence the occurrence, distribution, persistence, and development of microorganisms or toxins in selected foods; (3) hydrodynamics and kinetics of microbial inactivation by heat, radiation, or other techniques that may determine the public health safety of food processing; (4) effects of man-made contaminants, both chemical and microbiological, on the sanitary quality of shellfish and other marine foods; (5) public health aspects of naturally occurring marine toxins including Type E botulism, Ciguatera-like materials from the Gulf of Mexico, and Gonyaulaux toxins in the Pacific Northwest and Alaska; and (6) effects of new or modified production, harvesting, depuration, processing and distributional practices on the final sanitary quality of shellfish.

The Reorganization Plan transferring the Federal Water Pollution Control Administration to the Department of Interior provided that certain functions would remain with the Department of Health, Education, and Welfare. These functions were delineated in an agreement signed by the Secretaries of the Departments of Interior and Health, Education, and Welfare on August 8, 1966, and approved by the President September 1, 1966. To implement the agreement, and to amplify the current inadequate water supply research activities, an increase of 10 positions and $192,000 is requested. The research program on water supply consists of the development of methods for detecting organic chemicals and trace elements in drinking water and techniques for recovering viruses from finished drinking water. Studies are also being conducted on the effect of recreational use of watersheds upon drinking water quality. This program will provide research on the health effects of waterborne contaminants on man, e.g. epidemiological studies of health hazards associated with drinking water. The reliability of current procedures for disinfecting pathogenic protozoa, bacteria and viruses in water purification plants, and the determination of the characteristics of natural treatment of wastes discharged to ground water sources will also be investigated.

	1967 estimate		1968 estimate		Increase or decrease	
	Positions	Amount	Positions	Amount	Positions	Amount
Training	13	$234,000	13	$234,000	----	----

Training courses are conducted for scientists, engineers, and other professional people in the fields of food protection, milk sanitation, sanitation aboard interstate carriers, shellfish sanitation, and other program areas. These courses provide effective means to consider, appraise, and practice the application of the latest techniques in the subject areas. Laboratory and field practice gives an opportunity to acquire proficiency in new techniques under the guidance of experts. These courses are held at facilities in Cincinnati, at shellfish research centers, and through the regional offices at field locations.

During 1967, 25 course sessions will be given in which approximately 1,300 trainees will receive advanced technical training in microbiological and chemical analysis of milk and food products as well as in new administrative and surveillance procedures in milk and food protection. In 1968, approximately 1,400 persons will attend courses such as methods and practices for State milk laboratory survey officers, administrative aspects of food protection, hospital food protection, and milk pasteurization controls and tests.

Also during 1967, about 125 professionals, responsible for the operation and administration of shellfish sanitation programs, will receive training in public health practices aimed at assuring the sanitary quality of shellfish. Approximately 160 airline and railroad personnel will attend orientation courses in the applied procedures in milk and food protection required aboard interstate carriers. Approximately the same numbers of persons will receive this training in 1968.

	1967 estimate		1968 estimate		Increase or decrease	
	Positions	Amount	Positions	Amount	Positions	Amount
Technical assistance	41	$484,000	45	$544,000	+4	+$60,000

The methods used for providing technical assistance to food and shellfish protection programs are: (1) standards development through preparation of technical manuals of practice, ordinances, codes, and criteria for application by State and local governmental agencies and industry and; (2) technical assistance by consultation, surveys and demonstrations, investigations, and related collaborative activities.

The successful results of these methods for providing technical assistance are borne out by the public health effectiveness of various program activities. These include efforts such as standards development for fluid milk and the vending of foods and beverages for which associated illnesses have been virtually eliminated. Foodborne illness is preventable, yet many outbreaks of such illnesses continue to be reported annually. The reported incidence of salmonellosis alone increased more than thirtyfold between 1950 and 1964. A significant reduction in foodborne illness can be achieved through more effective application of currently available knowledge of public health protection measures. Epidemiological investigations continue to identify or associate specific foods and food processes with the transmission of certain diseases, such as salmonellosis with egg products, dry milk, and smoked fish; and botulism with smoked fish. In recent years, there has been a substantive increase in the complexity and numbers of technical problems encountered in providing effective public health controls for production and marketing of shellfish of satisfactory sanitary quality. During 1968 public health standards and criteria will continue to be developed to reduce and eliminate health hazards associated with certain foods, food processes, and shellfish. Technical and consultative assistance will be provided to State, local, and Federal agencies in the implementation and maintenance of programs and communication of new ideas and research findings on the quality of foods and shellfish.

Under the terms of the agreement between the Departments of Interior and Health, Education, and Welfare, and to enable the Surgeon General to properly discharge his legally assigned duties in the field of water supply activities, a

program of technical assistance will be initiated which will provide: (1) Department of Health, Education, and Welfare representation on 29 Interagency Water Resource Development Committees to assure consideration of health aspects in the planning and conduct of river basin framework studies; and (2) technical assistance to the Department of Interior on health related problems in conjunction with the 13 Federal Water Pollution Control Administration comprehensive program studies, construction grant projects, discharges from Federal installations which may contain substances in concentrations which are hazardous to health, and water pollution caused by the operation of vessels. An increase of $60,000 and 4 positions is requested for this activity.

	1967 estimate		1968 estimate		Increase or decrease	
	Positions	Amount	Positions	Amount	Positions	Amount
Certification and regulation	122	$1,406,000	122	$1,406,000	.....	.....

The Cooperative State-PHS Program for the Certification of Interstate Milk Shippers will continue to provide receiving jurisdictions with needed data on the sanitary quality of milk from out-of-State sources. Milk is a highly perishable product and requires a type of surveillance which is neither physically nor economically practical by the Federal Government alone. As this is a voluntary program, success is largely dependent upon certification of personnel and the evaluation, standardization, and certification of State and local control programs by the Federal Government.

Technical audit of State control programs by the Public Health Service is the keystone of the National Shellfish Sanitation Program. In making these audits the Public Service inspects 860 shippers or packers; evaluates complex sanitary engineering and oceanographic surveys of 447 growing areas covering 8.2 million acres in 21 States; evaluates marine patrol of 445 polluted areas covering 2.0 million acres in 21 States, and evaluates laboratory procedures used in these States. Surveillance and monitoring activities provide for sanitary control of shellfish resources on the Federally-controlled continental shelf (35% of total U.S. production).

Under the provision of the Interstate Quarantine Regulations, inspections and surveillance are conducted of the Food and drinking water served aboard interstate public conveyances, together with review and approval of the sanitary aspects of the design, construction, and operation of water and food supply equipment and of waste disposal facilities. Responsibility for certification of interstate carrier water supplies involves annual sanitary engineering inspections and evaluation of approximately 760 public water supply systems. Complete surveys are made by Public Health Service personnel of the source, treatment processes, storage, distribution system, and supporting laboratory services on triennial basis in company with representatives of State Health Departments and local water purveyors. These programs are of direct benefit to 2 million travelers daily on interstate carriers and of indirect benefit to the millions of persons who come into daily contact with these travelers.

Certification and regulatory activities will be continued at the same level during 1968.

Arctic Health Research

Summary of program

	1967 estimate		1968 estimate		Increase or decrease	
	Positions	Amount	Positions	Amount	Positions	Amount
Research	72	$1,113,000	72	$1,3330,00	.....	+$22,0000

The Arctic Health Research Laboratory is conducting an organized program of scientific investigations into problems affecting human health in arctic and cold weather climates. Major fields of investigation include nutrition and metabolic disease, environmental sanitation, epidemiology, zoonotic disease,

entomology and physiology. Specific projects developed within each of these fields are gradually acquiring, through field and laboratory investigations, the scientific data needed to delineate existing health hazards and to devise ways of overcoming them. The Arctic Health Research Laboratory will move from Anchorage, its current location, to a new facility at College, near Fairbanks, during 1967.

During 1968, programs in epidemiology, entomology, zoonotic disease, nutrition, and metabolic disease will be continued at the new facility. The laboratory will continue epidemiological projects to study otitis media and its relation to hearing loss, and the ecology of respiratory viruses. Long-term investigations are still underway to identify zoonotic disease and metazoan parasites of man and animals. Physiological studies initiated in 1966 will be continued in 1968. These studies are yielding significant findings pertaining to neuromuscular function and its dependence on skin temperature. Work will continue on housing studies, solid waste disposal, and community planning studies.

The increase of $220,000 will provide the funds necessary for full year operational and maintenance costs of the new facility.

Special Environmental Hazards

Summary of program

	1967 estimate		1968 estimate		Increase or decrease	
	Positions	Amount	Positions	Amount	Positions	Amount
Training	6	$98,000	6	$100,000	.....	+$2,000
Technical assistance	31	499,000	31	519,000	.....	+20,000
Total	37	597,000	37	619,000	.....	+22,000
Training	6	98,000	6	100,000	.....	+2,000

Specially designed technical courses in urban planning for environmental health are oriented to the interests of such specialized personnel as sanitarians, planners, community health officers, and other groups. Trainees are taught to identify community environmental health problems and to evaluate approaches to solutions. In some instances, the trainees plan and conduct an environmental health survey in the host community and prepare reports for class presentation and discussion. Based on their findings, they make recommendations and propose programs of implementation for the host community. In 1966 training was provided to 1,550 trainees through 19 courses, consisting of short-term training, demonstration projects, regional seminars, and conferences on environmental health planning called by governors of certain States. In 1968 an estimated 1,600 personnel will attend these courses and seminars given at various locations throughout the country. The increase of $2,000 is the annualization cost of the 1967 program.

	1967 estimate		1968 estimate		Increase or decrease	
	Positions	Amount	Positions	Amount	Positions	Amount
Technical assistance	31	$499,000	31	$519,000	.....	+$20,000

The primary goal for the technical assistance program is to provide consultation and to assist State and local health and planning groups in assuring that environmental health elements are adequately recognized and incorporated in comprehensive community plans. Securing and maintaining an acceptable level of environmental health for community protection requires careful planning and follow-through. In particular, long-range projections of environmental health needs are necessary in order to anticipate and make plans for meeting the future demands created by population growth and urban expansion. During 1968, emphasis will continue to be placed on the development of health criteria for housing and residential environments, including assistance to local officials in the development and administration of codes for healthful housing. There is a great need in this area since only a small portion of our population is protected by adequate housing codes.

Coordination of program planning will continue to be maintained with related activities of the American Public Health Association, the National Association of Housing and Redevelopment Officials, and the Department of Housing and Urban Development. Technical assistance and consultation will also be rendered to local, State, and Federal agencies in important health services, including individual water supply and sewage disposal systems, plumbing, institutional and recreational sanitation, swimming pool sanitation, and mobile park sanitation.

The tremendous and continuing population growth on both sides of the U.S.-Mexico border requires appropriate sanitation measures to meet potential and actual public health hazards. Since the initiation in 1966 of comprehensive environmental health sanitation studies along the U.S.-Mexico border, considerable progress has been made through demonstrations and training sessions. In 1968, demonstrations will continue to be directed at food protection and general sanitation. Monthly training sessions will include personnel from both sides of the Border. Another assistance activity will provide for the improvement of labor camps on both sides of the Border.

The $20,000 will provide annualization costs for the new positions authorized in 1967.

New positions requested, fiscal year 1968

Direct operations	Grade	Number	Annual salary
Biologist	GS–15	2	$35,100
Chemist	GS–15	1	17,550
Engineer	GS–15	3	52,650
Medical officer	GS–15	1	17,550
Statistician	GS–15	1	18,764
Agronomist	GS–14	1	15,106
Bacteriologist	GS–14	1	15,106
Biologist	GS–14	1	15,106
Engineer	GS–14	2	30,212
Medical officer	GS–14	2	30,212
Physiologist	GS–14	1	15,106
Toxicologist	GS–14	1	15,106
Economic adviser	GS–13	1	12,873
Industrial hygienist	GS–13	1	12,873
Microbiologist	GS–13	1	12,873
Public health program specialist	GS–13	3	38,619
Statistician	GS–13	1	12,873
Industrial hygienist	GS–13	1	10,927
Medical officer	GS–12	1	13,201
Public health program specialist	GS–12	1	10,927
Chemist	GS–11	3	28,293
Engineer	GS–11	1	9,221
Physicist	GS–11	1	9,221
Public health adviser	GS–11	1	9,221
Public health program specialist	GS–11	1	9,221
Statistician	GS–11	1	9,221
Toxicologist	GS–11	1	9,221
Chemist	GS–9	5	40,829
Engineer	GS–9	1	7,696
Physiologist	GS–9	1	7,696
Statistician	GS–9	1	7,696
Technician	GS–9	7	53,872
Chemist	GS–7	2	15,458
Physiologist	GS–7	3	19,353
Technician	GS–7	6	38,706
Clerk	GS–5	2	10,662
Secretary	GS–5	2	10,662
Statistician	GS–5	1	5,331
Technician	GS–5	5	26,655
Clerk	GS–4	7	33,432
Secretary	GS–4	3	14,328
Technician	GS–4	2	9,552
Clerk	GS–3	2	8,538
Commissioned officers:			
Director grade	----------	3	39,359
Senior grade	----------	9	103,703
Full grade	----------	10	91,457
Senior assistant grade	----------	3	20,721
Assistant grade	----------	2	12,514
Total, new positions	----------	113	1,064,573

WEDNESDAY, APRIL 5, 1967.

BUREAU OF HEALTH SERVICES

WITNESSES

DR. CARRUTH J. WAGNER, DIRECTOR, BUREAU OF HEALTH SERVICES
DR. PAUL Q. PETERSON, DEPUTY DIRECTOR, BUREAU OF HEALTH SERVICES
DR. HARALD M. GRANING, DIRECTOR, DIVISION OF HOSPITAL AND MEDICAL FACILITIES
DR. JOHN J. WALSH, DIRECTOR, DIVISION OF DIRECT HEALTH SERVICES
SAUL R. ROSOFF, EXECUTIVE OFFICER, BUREAU OF HEALTH SERVICES
RALPH BAHN, FINANCIAL MANAGEMENT OFFICER, BUREAU OF HEALTH SERVICES
DR. WILLIAM H. STEWART, SURGEON GENERAL
G. R. CLAGUE, ACTING CHIEF FINANCE OFFICER
JAMES B. CARDWELL, DEPUTY ASSISTANT SECRETARY, BUDGET

Mr. FLOOD. We now have Dr. Carruth J. Wagner, Director, of the Bureau of Health Services, of the Public Health Service.

BIOGRAPHICAL SKETCH OF PRINCIPAL WITNESS

We have a biographical sketch of Dr. Wagner which we will insert at this point in the record.

(The sketch follows:)

Name: Carruth J. Wagner, M.D.

Position: Assistant Surgeon General, Director, Bureau of Health Services.

Birthplace and date: Omaha, Nebraska, September 4, 1916.

Education: University of Omaha, A.B. 1938; University of Nebraska College of Medicine, B.S. 1938, M.D., 1941, Honorary Degree D.Sc. 1966.

Experience: Director, Bureau of Health Services, PHS (Assistant Surgeon General) Silver Spring, Maryland, January 1, 1967—. Chief, Bureau of Medical Services, PHS, (Assistant Surgeon General) Silver Spring, Maryland, December 21, 1965 to December 31, 1966. Chief, Division of Indian Health, Bureau of Medical Services, PHS, (Assistant Surgeon General) Silver Spring, Maryland, August 1, 1962 to December 20, 1965. Chief, Division of Health Mobilization. Office of the Surgeon General, PHS, Wash. D.C., July 1960 to July 31, 1962. Special Assistant in Charge of Health Mobilization, Bureau of State Services, PHS, Wash. D.C., February 1959 to July 1960. Deputy Chief, Division of Hospitals, PHS, Wash. D.C., November 1957 to February 1959. Director, Training and Professional Standards, Division of Hospitals, PHS, Wash. D.C., February 1957 to November 1957. U.S. Public Health Service Hospital, San Francisco, California; Deputy Chief, Surgical Service, July 1955 to February 1957. U.S. Public Health Service Hospital, Staten Island, N.Y.; Chief, Orthopedic Service July 1953 to July 1955. Resident, Shriners' Hospital for Crippled Children, Philadelphia, Penna., July 1952 to July 1953. U.S. Public Health Service Hospital, Staten Island, N.Y.; Chief, Orthopedic Service, July 1951 to July 1952. Resident in Surgery, U.S. Public Health Service Hospital, San Francisco, California 1943–48; Chief, Orthopedic Services, 1948–51; Deputy Chief, Surgical Service, 1949–51. Served in U.S. Coast Guard, 1943 and 1946. Intern, U.S. Public Health Service Hospital, Seattle, Washington, 1941–42; Resident, Surgery, June–Dec. 1942.

Memberships: *Diplomate:* American Board of Surgery; American Board of Orthopedic Surgery. *Fellow:* American Medical Association; American College of Surgeons; American Academy of Orthopedic Surgeons; American College of Nursing Home Administrators. *Member:* American Association for Surgery of Trauma; Washington Orthopedic Club; American Society for Surgery of the Hand; Alpha Omega Alpha; American Legion; American Management Association; U.S. Section of the International Society of Orthopedic Surgery and Traumatology; American Public Health Association; Association of Military Surgeons; The International Platform Association.

Awards: Special Pfizer Award of Merit Citation conferred by U.S. Civil Defense Council, October 16, 1962. Meritorious Service Award of the American Academy of General Practice, April 1965.

General Statement

Mr. Flood. I see you have an opening statement, Dr. Wagner.

Dr. Wagner. Yes, sir.

Mr. Flood. You may proceed.

Dr. Wagner. Thank you very much, Mr. Chairman.

Mr. Chairman and members of the committee. One of the major goals of our Nation is to assure to every citizen comprehensive and continuous health services when and where they are needed at the lowest possible cost. We propose to present today a new concept which is reflected in the establishment of the Bureau of Health Services, and which we are convinced will move to meet that legitimate public concern.

HEALTH SERVICES INDUSTRY

Health services constitute a vast and complicated industry—the sixth largest in the Nation. This industry has grown rapidly in manpower and other resources in recent years. However, current demands exceed the capabilities of its traditional ideas, methods, and institutions. There is widespread concern among the people of this Nation about the availability, quality, and cost of our personal health services. It is our recognition of the shortcomings in the availability, efficiency, and delivery of health services, and with the costs of health care, that has led to the establishment of this Bureau.

As a nation, we are spending 6 percent of our gross national product for health care purposes, but our health services systems are not performing as well as they might. Relatively few people are receiving comprehensive health care; to many people many services are unavailable. Health consciousness has been rising for years as a result of all that has been written and said about medical advances. But the achievement of better health care has not kept pace with popular expectations. The press, the literature, all of the communications media reflect an uneasiness with respect to personal health services.

We feel definitely more people are living to be older, but the improvement in the life expectancy is beginning to level off.

Mr. Flood. What is the life expectancy this year?

Dr. Wagner. It is approximately 70, Mr. Chairman.

Mr. Flood. Male and female?

Dr. Wagner. It is a little longer for the females than the males.

Mr. Flood. How much has that increased in years in the last 25?

Dr. Wagner. I can submit this for the record, but it has extended in the last two decades from about 64 or 65 up to approximately 70.

Mr. Smith. Will the chairman yield?

I was told the other day that in Puerto Rico in 25 years the life expectancy had increased 23 years. Is that possible?

Dr. WAGNER. In the Indian population of the United States, the life expectancy has gone from 52 or so up up to 63 in about 20 years because of the control of the infectious and contagious diseases and the improvement in the socioeconomic status of the population group.

INFANT MORTALITY AND MORBIDITY

Our progress in the reduction of infant mortality and morbidity has been limited. The poor are largely bypassed by our major systems of health care and the children of the poor enter the cycle of that same bypass, while we fail to utilize the potential of comprehensive health services to support their normal development. Nor do we act to hold disability to a minimal level at a time when long-range gains are possible.

PREVENTIVE MEDICINE

Preventive medicine is seldom sought and seldom practiced. Many physicians are overworked and undersupported by ancillary personnel. Physicians who can manage and coordinate family health care needs are hard to find. Health personnel in all categories are in tragically short supply in many areas, and the system often makes inefficient use of those who are available.

OBSOLETE HOSPITALS

The Nation's hospitals are becoming the focal point for practically all health services, but many such hospitals—and particularly those located in our more urban areas—are functionally or structurally obsolete. Emergency rooms and outpatient clinics are sorely taxed. The number of beds in skilled nursing homes and extended care facilities is insufficient. Substandard nursing homes continue to provide little more than custodial care to most individuals in need of such care. The quality of service provided by hundreds of independent laboratories is in serious question. Licensure has not been extensively employed for standard-setting purposes to assure at least a minimum level of quality. And meanwhile, the costs of health care continues to rise, forced up often by poorly understood economic and operational factors.

Mr. Chairman, these are the problems that we face today in the field of personal health services. Now, I would like to discuss what the Bureau of Health Services proposes to do about them.

Mr. FLOOD. You paint a pretty bleak picture, do you not?

Dr. WAGNER. I think it is bleak if we look at what the people are getting and the needs and what we have in the way of resources to meet those needs, and what the demands and needs will be in the next 10 years. I think it calls for almost a radical change in the way we organize and deliver these services.

I think we must look at traditional ways of using personnel and using facilities and using resources, and come up with more efficient and more effective ways of doing it if we are to meet the health needs.

Mr. FLOOD. How are you to correct the problem you describe of the urban hospitals being obsolete? What do you do about an obsolete urban hospital? I am speaking of a great city like New York. Here is a hospital in such-and-such a block, and it is obsolete. What do you do about that hospital?

Dr. WAGNER. Through our Hill-Burton program, which we will present later on, Mr. Chairman, there is a modest amount of money for assisting State and local communities in the adding of new beds where they are needed, as well as the replacement of obsolescent beds.

Mr. FLOOD. How do you add new beds to a hospital between block 1 and block 2 in the middle of New York City?

Dr. WAGNER. This is a very serious problem.

Mr. FLOOD. That is why I asked you.

Dr. WAGNER. In many instances it is impossible or uneconomic to add new beds to the old hospital, and it is better to build a new hospital.

Mr. FLOOD. Where in New York?

Dr. WAGNER. Again, this is a very important thing, because without comprehensive planning in the community, we cannot.

Mr. FLOOD. What are you trying to do?

Dr. WAGNER. We are trying to encourage the community to approach the need on a comprehensive basis, where they look at what they have in hospital resources and look at what they need, and at the alternatives by which they can meet the need in the most effective way.

In many instances it is better to expand some of the smaller hospitals that already exist where space is available, or to change the old hospitals into different kinds of facilities such as extended care facilities, than it is to try to add a new wing which will take the place of a wing of beds that are not adequate.

Mr. FLOOD. In New York City you just do not add a wing in the middle of a metropolitan block.

Mr. KELLY. The former commissioner of health in New York is president of the Hospital Council of the City of New York. Last year when we were considering legislation with respect to modernization, he was down and talked with us at some length. New York has done some very advanced thinking on how to deal with this problem. One of the ways is that they would like to decrease the number of hospitals. One of the problems of concern to New York is that it is now operating too many small hospitals, uneconomic units. They are also endeavoring to work out a plan whereby the most expensive kinds of equipment are located in certain hospitals, and each hospital does not try to duplicate it.

As a result, they have developed a very far-reaching plan on how to modernize hospitals in the city of New York. What they are up against is the cost of doing it, which is phenomenally high.

Mr. FLOOD. Yes, of course.

Dr. WAGNER. There are some innovative means of construction in urban centers which are emerging which may be valuable but have not been proven yet. One of them is the construction of a tower and the prefabrication of the hospital units, which will permit the building of the hospital in a tenement area with the destruction of only a very small number of tenements.

We are proposing in the next 2 years to do some experimentation and research in this particular area. If this developed, it would provide a mechanism by which you go into the city and provide the health facilities in the area where the people live with minimum amount of disruption to the people in the area.

RISING COST OF HEALTH CARE

Mr. HULL. May I ask a question, Mr. Chairman.

You say, "Meanwhile, the cost of health care continues to rise," which we all know, "forced up often by poorly understood economic and operational factors." Who is responsible for this situation? How did it come about?

Dr. WAGNER. I think it results from a combination of factors. I cannot fix the responsibility. The whole structure of costs has gone up for services. The salaries, for example, of the health workers today as compared to 10 years ago are substantially higher.

Mr. HULL. What do you mean by "poorly understood economic and operational factors"?

Dr. WAGNER. It is poorly understood on the basis that we have a pluralistic kind of health services system where it is very difficult to show cause and effect relationship between the direct and indirect costs that are associated with health care.

Mr. HULL. How do you attack this situation?

Dr. WAGNER. We propose to try to identify what is required in the way of health services, what are available in the way of health resources, facilities, supplies, equipment, materials, people and services, and then to look at the various ways by which we can meet the health needs of the people and what the cost of meeting them will be. This will begin to identify then the cost of services in terms of achievement rather than in terms of the effort that is going on now.

In this process, then, I think we can come up with various ways that communities can look at their own situations and what is available in the State of the knowledge to improve the quality and quantity of services while it constrains the costs at the lowest possible level. In other words, I think the whole key to this is the planning process, the comprehensive planning approach to the health services system, so we can look at all of the alternatives, all of the ways of doing things in terms of both costs and benefits.

So far, we do not have this mechanism, so we do not have a really clear-cut idea of why the costs for care go up in a particular instance.

Mr. HULL. The whole country has been negligent in this particular field.

Dr. WAGNER. I think the need is becoming more acute now because of the increasing disparity and the increasing sophistication of care. The ability now to take care of illnesses which were completely beyond our scope a few years ago requires very sophisticated equipment and very sophisticated types of health personnel, and this has made the problem very acute.

Mr. HULL. We are a little late getting on to it.

Dr. WAGNER. Right. Certainly, in some health services we have been late.

THE PROGRAM OF THE BUREAU OF HEALTH SERVICES

Our mission is broad. It is to stimulate the provision of adequate and comprehensive health services for every American citizen. Our concern for the availability and continuity of comprehensive health services includes efforts to protect the individual's health and to prevent his illness, as well as to insure that he develops normally. At one end of this spectrum is childbirth and at the other end is the older person and the efforts necessary to improve his abilities and opportunities to live productively. Additional elements of comprehensive health service efforts are directed toward repair and containment.

In others words, the efforts which are directed to cure the illnesses which we were unsuccessful in preventing, or to maintain at the lowest level of disability those illnesses which we can neither prevent nor cure.

REPAIR AND CONTAINMENT

Repair involves all that is done to cure illness or disability, those conditions of chronic disease, mental illness or of old age which cannot be prevented or cured completely. There is a dynamic relationship among these three areas. Normal development is concern with those efforts directed toward disease control which may not necessarily have eradication as an endpoint. In most instances a point will be reached when maximum control through prevention will be realized and the continuing thrust against a particular health problem will become identified more and more as a "repair activity" (treatment) and finally a "containment activity" (treatment and rehabilitation). Thus in looking at a health problem in a comprehensive manner at any particular point in time, resources should be programed simultaneously in each of the three activities.

Accomplishing these objectives means directing renewed efforts toward close cooperation with all elements in the health industry. We propose to carry out our mission by developing and maintaining effective working relationships with private medicine and with the public and private institutions and organizations and official agencies in the personal case field.

Establishment of the Bureau of Health Services is a major step in the reorganization of the Public Health Service. We now have a unique and exciting opportunity and challenge to help meet the health services needs and concerns of which we have just described.

DELIVERY OF PERSONAL AND COMMUNITY HEALTH SERVICES

Within this new Bureau of Health Services have been placed all programs that deal with the delivery of personal and community health services. This holds true no matter whether the persons served are specific Federal beneficiary groups such as merchant seamen, American Indians, Alaska natives, coastguardsmen, Federal prisoners, or Federal employees, or whether these are members of the general population, such as those served by the provisions of titles 18 and 19 of the Social Security Amendments of 1965, Public Law 89–97, or members of the community at large.

Therefore, this Bureau is concerned with the health care and health services of our total population. Our interest and responsibility, however, are very precise and specific in terms of our focus on the systems for delivery of health care; the quality and efficiency of services provided; the assurance that the spectrum of services provided meets the total health needs of the community; and the concern for family centered humanistic care that respects and builds human dignity as well as health.

We plan in this Bureau to devote our efforts to making available to all of the people of our country the fruits of new knowledge as well as existing knowledge in the whole health services field. New knowledge, and for that matter existing knowledge, is of real value only on the day when it becomes incorporated into the practices of our health workers and institutions across the country, and thus reaches the people. We plan to address ourselves to bringing to the irreducible minimum the time lag in making the fruits of research available to the public.

COMPOSITION OF THE BUREAU OF HEALTH SERVICES

In order to amplify my explanation, I had this chart prepared to show the composition of the Bureau of Health Services. I will explain general responsibilities so that as each program is presented you will be able to see that role as a part of the total Bureau effort, and thus convey the rationale and program relationships. Two programs, the Division of Indian Health and the Division of Health Mobilization are presented in detail before other committees. The rest of the programs are presented to this committee, Mr. Chairman.

The focus of our effort is on the people living in their own communities. If they are to achieve higher standards of health, it is necessary to mold an efficient health system—a system that puts together the material and facilities and the manpower to bring comprehensive health care to them. The Division of Community Health Services is testing and demnostrating new methods, finding and encouraging ways to carry out this function in the community. Here, through objective planning, is forged the template that makes it possible for all program elements to fit functionally.

With knowledge of the legal authority, of the financial resource, of the social order, and of the administration of the community, required health facilities can be realistically planned. This means better programing by our Division of Hospital and Medical Facilities. As well-conceived and established institutional community resources begin to serve the people, their use by qualified health professionals requires the application of modern techniques for quality control and efficient operation. It is the function of our Division of Medical Care Administration to develop such methods. Testing of new methods for delivery of health care and of community/hospital relationships under reproducible circumstances, not generally possible in the usual operating community hospital, is now available to us through the Division of Direct Health Services.

Working within the framework of knowledge and support available from programs carrying out daily patient care, the Division of Health Mobilization has developed mechanisms to assist local com-

munities to provide health responses to manmade or natural disasters.

The health care for particular population groups such as our Indians, Alaskan natives, Federal employees, and mentally retarded which call for specialized health services can now be implemented, respectively, by the Divisions of Indian Health, Federal Employee Health, and Mental Retardation, capitalizing on the community health system to complement their special needs.

The grouping of the range of health services programs in the Bureau enables a continuing exchange and interaction of experiences horizontally across the Bureau to insure the maximal effectiveness of all programs. In planning our programs, and viewing them on a horizontal basis, we seek to identify resources and activities which can be marshaled toward meeting our goals. Thus, we look across all Bureau programs and identify their impact not only in terms of specific appropriation or organization responsibility, but also in terms of their effect on the quality, quantity, and efficiency of health services. These are common denominators of all our programs. We also plan our efforts so as to effect the spectrum of health services concerned with normal development, repair, and containment. These are also common denominators of all our programs.

BUREAU COOPERATION WITH COMMUNITY GROUPS AND INSTITUTIONS

The programs of the Bureau are rooted deeply in partnership with universities, communities, medical societies, and a wide range of other official and voluntary agencies, all joined in the common effort to improve the health status of our citizens. This is reflected through use of advisory bodies, contracts, grants, and consultant services to supplement the efforts of our own program staff. In 1967 more than 60 percent of our budget will have been implemented outside of the Federal structure through grants, contracts, or other arrangements. We will have utilized the services of several hundred consultants, and entered into some form of grant or contractual arrangements with several hundred officials and voluntary agencies including State and local governing bodies, universities, and other organizations.

The Bureau utilizes a number of programing approaches in meeting its goals. It uses research grants to support the efforts of outstanding individuals in the scientific community who concentrate their talents on problems concerned with more effective and efficient methods for the delivery of health services. It supports research training grants to assist in the development of a cadre of scientific talent skilled in health services research. It utilizes grants to assist agencies and communities in meeting health services problems, and contracts for the conduct of special studies needed to implement our programs. Direct staff serves as a major component of our efforts. The great majority of Bureau personnel are directly concerned with the delivery of health services.

To achieve maximum program effectiveness and integration of program effort, we are not depending solely on traditional program techniques. In addition, we are bringing to bear new methods for program planning, for cost-benefit analysis, and performance measurement, along with built-in progress evaluation. This, not only permits but requires precise plans, meaningful priorities, and reliable data.

PROGRAM PACKAGING

In our efforts to achieve maximum program efforts, we are utilizing the concept of program packaging. This approach requires the marshaling of total program resources to meet program goals on a Bureau-wide, rather than narrow, program basis. Thus, as we identify the need for greater efforts to improve the quality of health services, or the greater need for stress on normal development activities, we seek to delineate the role of each program in meeting these needs, and integrating our efforts in a measurable fashion with those of other public and private agencies in the health services community. Translating health problems into such well-defined programs will permit a public-private partnership that will insure the support and understanding of professional participants and the lay public.

1968 OBJECTIVES

As a result of our 1968 budget request, we look forward to many specific accomplishments. Among these are: 350,000 migrants will have access to personal health care services and 5,700 of these will receive hospital care; the number of employees per 100 patients in bed will increase from 150 to 158, in our Public Health Service hospitals; 33,000 mental retardates will receive services and 15,000 professional and ancillary staff concerned with the care of the mental retardate in the community will receive training; 10 pilot projects will be underway in rural communities to assist in developing health services programs; three centers for experimental research in the organization, utilization, and delivery of health services will be established; over 34,000 new beds will be produced in 1968.

Here then is how the Bureau of Health Services gives focus and purpose to the mission of providing comprehensive care to all citizens. This is how we can bring cohesion to our many splintered health care system. This is the way to be of meaningful assistance throughout the spectrum of health needs from prevention of illness, to the repair necessary to cure illness and return the patient to acceptable functions, and to the containment of disability resulting from illness which cannot be prevented or cured. The health system of this Nation must be able to meet the needs of all from the infant to the aged. We are convinced that the professional skills and programs mechanisms resident in the Bureau of Health Services in partnership with the public and private community will bring new opportunity and vitality to the attack on these problems.

A number of our key program chiefs are here to speak to the details of the appropriation requests as they are reviewed. I will also be pleased to answer any questions which you may have.

Mr. FLOOD. Thank you very much for a complete and very fine statement.

WEDNESDAY, APRIL 5, 1967.

COMMUNITY HEALTH SERVICES

WITNESSES

DR. PAUL Q. PETERSON, DEPUTY DIRECTOR, BUREAU OF HEALTH SERVICES
DR. JOHN W. CASHMAN, DIRECTOR, DIVISION OF MEDICAL CARE ADMINISTRATION
DR. ROBERT I. JASLOW, DIRECTOR, DIVISION OF MENTAL RETARDATION
DR. JAMES D. WHARTON, DIRECTOR, DIVISION OF COMMUNITY HEALTH SERVICES
DAVID B. RAY, JR., EXECUTIVE DIRECTOR, PRESIDENT'S COMMITTEE ON MENTAL RETARDATION
VERLE L. NICHOLSON, DIRECTOR OF INFORMATION, PRESIDENT'S COUNCIL ON PHYSICAL FITNESS
DR. CARRUTH J. WAGNER, DIRECTOR, BUREAU OF HEALTH SERVICES
SAUL R. ROSOFF, EXECUTIVE OFFICER, BUREAU OF HEALTH SERVICES
RALPH BAHN, FINANCIAL MANAGEMENT OFFICER, BUREAU OF HEALTH SERVICES
DR. WILLIAM H. STEWART, SURGEON GENERAL
G. R. CLAGUE, ACTING CHIEF FINANCE OFFICER
JAMES B. CARDWELL, DEPUTY ASSISTANT SECRETARY, BUDGET

Object classification

[In thousands of dollars]

		1966 actual	1967 estimate	1968 estimate
	Personnel compensation:			
11.1	Permanent positions	3,374	5,716	7,136
11.3	Positions other than permanent	67	205	210
11.5	Other personnel compensation	13	26	27
	Total personnel compensation	3,454	5,947	7,373
12.0	Personnel benefits	382	632	742
21.0	Travel and transportation of persons	634	882	1,022
22.0	Transportation of things	58	79	95
23.0	Rent, communications, and utilities	133	227	368
24.0	Printing and reproduction	126	145	229
25.1	Other services	476	523	629
	Project contracts	6,959	4,819	6,048
25.3	Payment to "Public Health Service management fund"	295	475	507
	Payment to "National Institutes of Health management fund"	21	16	16
26.0	Supplies and materials	91	114	138
31.0	Equipment	188	125	150
41.0	Grants, subsidies, and contributions	38,997	58,388	51,206
99.0	Total obligations	51,814	72,372	68,523

Personnel summary

	1966 actual	1967 estimate	1968 estimate
Total number of permanent positions	583	653	799
Full-time equivalent of other positions	8	21	21
Average number of all employees	381	584	687
Average GS grade	5.7	5.8	5.9
Average GS salary	$6,637	$6,829	$6,982

Program and financing

[In thousands of dollars]

		1966 actual	1967 estimate	1968 estimate
	Program by activities:			
	1. Medical care administration and community health:			
	(a) Grants:			
	(1) Research	3,873	5,323	7,958
	(2) Fellowships	97	150	250
	(3) Training	401	500	800
	(4) Migrant health	3,000	7,200	8,100
	(b) Direct operations	8,734	12,351	15,459
	2. Mental Retardation:			
	(a) Grants:			
	(1) Research	36	53	126
	(2) Hospital improvement	8,909	8,972	8,972
	(3) Construction:			
	(*a*) University affiliated facilities	7,020	18,256	10,000
	(*b*) Community services facilities	13,541	14,554	15,000
	(4) Mental retardation program implementation	2,120	3,380	
	(b) Direct operations	1,223	1,633	1,858
	Total program costs, funded [1]	48,954	72,372	68,523
	Change in selected resources [2]	2,860		
	Total obligations	51,814	72,372	68,523
	Financing:			
	Receipts and reimbursements from other accounts:			
13	Social Security trust fund	−2,100		−4,075
16	Comparative transfers to other accounts	43,428	28,508	
22	Unobligated balance transferred from "Hospital construction activities" (Reorganization Plan No. 3 of 1966)			−10,500
24	Unobligated balance available, end of year			10,500
25	Unobligated balance lapsing	5,759	178	
28	Appropriation available from subsequent year	−27,056		
29	Appropriation available in prior year	15,324	27,056	
	New obligational authority	87,169	128,114	64,448
	New obligational authority:			
40	Appropriation	82,182	128,280	64,448
41	Transferred to—			
	"Office of the Surgeon General, salaries and expenses" (42 U.S.C. 226)	−10		
	"Operating expenses, Public Buildings Service," General Services Administration (79 Stat. 531 and 80 Stat. 674)	−3	−166	
42	Transferred from "Economic opportunity program," Office of Economic Opportunity (78 Stat. 1133)	5,000		
43	Appropriation (adjusted)	87,169	128,114	64,448
	Relation of obligations to expenditures:			
10	Total obligations	51,814	72,372	68,523
70	Receipts and other offsets (items 11-17)	41,328	28,508	−4,075
71	Obligations affecting expenditures	93,142	100,880	66,448
72	Obligated balance, start of year	27,793	66,406	66,640
74	Obligated balance, end of year	−66,406	−66,640	−66,219
77	Adjustments in expired accounts	−335		
90	Expenditures	54,194	100,646	64,869

[1] Includes capital outlay as follows: 1966, $188 thousand; 1967, $128 thousand; 1968, $150 thousand.

[2] Selected resources as of June 30 are as follows: Unpaid undelivered orders, 1965, $4,382 thousand; 1966, $7,242 thousand; 1967, $7,242 thousand; 1968, $7,242 thousand.

Mr. FLOOD. The next appropriation we shall go into will be that of Dr. Paul Q. Peterson, who is Deputy Director of the Bureau of Health Services.

BIOGRAPHICAL SKETCH OF PRINCIPAL WITNESS

We have a biographical sketch of Dr. Peterson which we will insert at this point.

(The sketch follows:)

Name: Paul Q. Peterson, M.D.
Position: Assistant Surgeon General, Deputy Director, Bureau of Health Services.
Birthplace and date: Marissa, Illinois, June 30, 1912.
Education:
B.S.: 1935, University of Illinois.
M.D.: 1938, University of Illinois.
M.P.H.: 1946, University of Michigan.
Experience:
Deputy Director, Bureau of Health Services, PHS (Assistant Surgeon General) Silver Spring, Maryland, January 1, 1967——.
Associate Chief, Bureau of State Services (CH), PHS (Assistant Surgeon General) Wash. D.C., January 1964 to December 1966.
Chief, Division of Community Health Services, Bureau of State Services, PHS, Wash. D.C., January 1963 to December 1963.
Chief, Division of Public Health Methods, Office of the Surgeon General, PHS, Wash. D.C., January 1962 to December 1962.
Deputy Chief, Division of Public Health Methods, Office of the Surgeon General, PHS, Wash. D.C., April 1961 to December 1961.
Assistant Director, National Institute of Allergy and Infectious Diseases, National Institutes of Health, PHS, Wash. D.C., July 1958 to April 1961.
Chief, Chronic Disease Program, Bureau of State Services, PHS, Wash. D.C., April 1957 to July 1958.
Chief, Program Services, Chronic Disease Program, Bureau of State Services, PHS, Wash. D.C., October 1955 to April 1957.
Chief, Health Services Branch, Division of International Health, PHS, Wash. D.C., April 1955 to October 1955.
Chief, Public Health Division, Mutual Security Mission, Saigon, Vietnam, 1954 to 1955.
Chief, Public Health Division, Mutual Security Mission, Taipei, Taiwan, Formosa, 1952 to 1954.
Ohio Department of Health, Assistant Director. Concurrently served as Assistant Professor of Preventive Medicine at Ohio State University School of Medicine, 1949 to 1952.
Kentucky State Health Department, Regional Consultant to local health departments, 1947 to 1949.
Engaged in public health work with local health departments in Kentucky, 1942 to 1945.
Commission in Reserve Corps of PHS in 1942.
Interned at Bethesda Hospital, Cincinnati, and was resident at Memorial Hospital, Lima, Ohio. Entered private practice in McLeansboro, Illinois.
Memberships:
Diplomate: American Board of Preventive Medicine.
Fellow: American Public Health Association.
Member: American Medical Association; American Association for the Advancement of Science; Association of Military Surgeons.

GENERAL STATEMENT

Mr. FLOOD. Will you present your statement, please.

Dr. PETERSON. The community health services appropriation combines programs with similar objectives. This appropriation has as its base most of the health services programs previously found in the community health practice and research appropriation, the major com-

ponents of the medical care services appropriation and the mental retardation and gerontology programs previously funded under a variety of appropriations. Community health and medical care service activities supported under formula and general project grants will be continued and strengthened. However, funds for support of these programs are now carried in the comprehensive health planning and services appropriation.

In order to achieve the most effective comprehensive health services systems, we must first understand the nature of the health services structure, its weaknesses, and the barriers to correction of these weaknesses. Once understood, we can work to find means by which the barriers can be removed. Thus, a primary tool in our efforts to improve health services systems is research.

The programs contained in the community health services appropriation support research, through grants and contracts, aimed at developing improved methods of planning, organizing, and delivering health services. Not only do these programs support basic research and research training in the whole spectrum of health services problems; they also support applied research in specific problem areas such as urban health services, rural health, and public health education.

EXAMPLES OF RESEARCH PROJECTS

The nature of this research can perhaps best be indicated by examples of research projects we are presently supporting. One project is examining a variety of public health services to determine what methods of organization and administration most significantly contribute to the effectiveness of local public health services.

This grant is being studied at the New York City Health Department particularly with reference to the response of particular groups of the population and the way they utilize the health services that are provided to them.

Another exciting research area looks toward the establishment of university-based health services research centers, where a research staff may devote logical and coordinated effort to the development and testing of experimental methods for providing improved health services.

This particular project is being studied under the leadership of Dr. George Reader at Cornell University on methods of organizing services in medical centers, the various health personnel who are required, and how they fit into improvement in providing health care to their constituents.

In another project, modern systems analysis techniques are being used to define and simulate a model health services system and its subsystems in a community. This will provide invaluable assistance to other communities and to the States in carrying out their responsibilities under comprehensive health planning and services (Public Law 89–749).

This particular project is being conducted at the University of Pittsburgh to study methods of communications between patients and physicians in the community.

PLANNING COMPREHENSIVE HEALTH SERVICES

With respect to this new law, we must encourage the most effective development of State and community programs for planning of comprehensive health services. Improved methods of organizing and providing such services cannot yield their full potential unless they are integrated into the existing health services structure in a systematic manner. Similarly, the goal of providing adequate, comprehensive health services can be realized only if there is public awareness of the problem and support for necessary improvements. During 1967, we are making substantial progress in our efforts to develop means of increasing the quality, quantity, and efficiency of health services. For example, we are supporting a demonstration project to show that special intensive referral, counseling, and followup services can significantly increase the success in obtaining necessary medical treatment for schoolchildren. As simple as this idea may sound, it has not been used on an organized basis. In 1968, we propose to continue such efforts.

RURAL HEALTH PROGRAM

There are problems to be attacked through the acquisition of new knowledge through research and there are problems susceptible of solution through current knowledge. We are requesting approval of a major rural health program, and are prosposing to initiate a program of family planning services. The rural health program, starting from a small base in 1967, will be expanded to support rural health pilot projects in 10 States. Rural health specialists will work with communities to assess their problems, examine causative factors, and develop solutions. We view these pilot projects as a significant step toward solving the critical problem of providing adequate health services for the rural population.

I would like to indicate that these programs are being planned and implemented in cooperation with the Department of Agriculture through a formal arrangement with that Department through personnel assigned from the Public Health Service in an officially established interdepartmental committee.

FAMILY PLANNING SERVICES

Family planning services need to be recognized as an essential component of comprehensive health services in the community. We propose a program of family planning services in 1968. This program would provide assistance in planning family size, and would also offer services to help eliminate factors which result in birth defects. We are equally concerned with the problems of childless families, as well as epidemiological factors that may be applied to an understanding of this complex problem. Having determined which types of programs are most effective, we will, in turn, assist public and private agencies to more effectively plan and organize their programs.

MIGRANT HEALTH PROGRAM

Through our migrant health grants we are providing health services to one of the most deprived groups in the Nation. The agricultural

migrant worker receives an average annual income of about $1,000, has a fifth-grade education, and lacks special skills except in farmwork. These factors, coupled with his mobility in an environment characterized by poor housing and unsanitary conditions, make him prone to disease and accidental injury. In 1967, we will support about 100 migrant health projects. Services provided include family health service clinics, nursing visits, health education, and sanitary improvements. Also, this year a number of the projects will initiate programs to provide in-patient hospital care for migrant workers and their families. The program is currently reaching only one-quarter of the migrant population. We have, therefore, requested additional funds in 1968 to start new projects, to increase the scope of services provided by current projects, and to provide in-patient hospital care in more areas of the country.

MEDICARE PROGRAM

The Division of Medical Care Administration is the organizational unit in the PHS delegated responsibility by the Secretary for the medical and professional aspects of titles 18 and 19 of Public Law 89–97. During the past 18 months we, along with the State and local health agencies of the Nation, and with the support of professional associations and health facilities organizations, have completed the first steps in the successful launching of the medicare program. Although the immediate effort provides benefits to large but specific population groups, it also offers opportunities to improve the quality of health care for the entire population. The standards established for certification of participating providers—hospitals, extended care facilities, home health agencies, and independent laboratories—assure the availability of professionally acceptable standards for all patients who use the facilities. The utilization review process required of participating hospitals and extended care facilities makes it possible for physicians working together with other professional personnel to sit down together for the review of selected cases on a systematic basis. It is a point where quality control and cost control meet on common grounds. This process offers the opportunity to discuss effective procedures for treating patients, the need for hospitalization and alternative methods of providing care and the need for additional health resources in a community. These discussions form the basis for improved quality of care and lay the foundation for health planning and development. The pharmacy and therapeutic committees provide a mechanism through which physicians and pharmacists may review and recommend clinically acceptable medications to hospital staff members. These procedures although having a significant effect on the most economical use of the health dollar are not principally used to serve this purpose but rather are techniques to assure quality medical care. We will experiment with these and other procedures to assure successful administration of the program.

EXTENDED CARE FACILITIES AND HOME HEALTH AGENCIES

As a result of medicare, more intensive attention has been directed toward extended care facilities and home health agencies. Where available to supply services in adequate amounts and quality, they can

serve as alternatives or supplements to hospitalization in caring for certain patients. Through our activities, we will continue to encourage the development and appropriate use of these resources. This will be accomplished through stimulating physician involvement in home-centered care, sponsoring training programs to improve staff skills, and promoting continuing relationships between hospitals, nursing homes, and extended care facilities. Real opportunities now exist for developing the more effective use of out-of-hospital health resources. The provision of therapeutic services for the aged is only part of the services needed by this population group. Another vitally important element is the provision of preventive services to protect the health of adults who are in apparent good health. Early detection and prompt management of incipient or early disease can do much to prevent or minimize disability. Moreover, since long term illnesses frequently have their onset during the middle years, disease detection activities for adults can be viewed as an essential measure for the conservation of health in later years. During 1968, program activities will emphasize acquainting current and future physicians with applied gerontology, developing multiphasic screening and other health protection services in the community, and sponsoring projects which provide for health maintenance counseling.

COST OF HEALTH SERVICES

There is a common interest and concern today in the cost of health services. We need to understand the economic forces that affect the provision of health services and the means to assure that health funds are being spent efficiently. We plan to expand our activities in health economics. Specifically, we will concentrate on developing tools for program planning and evaluation, study economic and related aspects of health resources, and explore various facets of health insurance coverage.

SERVICES FOR THE MENTALLY RETARDED

The formation of the new Division of Mental Retardation in the Bureau of Health Services represents an important step forward in the provision of health services for America's 6 million citizens who are mentally retarded. Programs formerly administered in three separate Divisions of the Public Health Service have been brought together to provide a national focus for handling the health needs of the retarded, and coordinating these programs with related activities of other agencies so that the burden borne by the families of the retarded may, to the extent possible, be removed. We anticipate that this consolidation will increase the effectiveness of our programs and provide a means for maximum impact on problems of mental retardation.

Within the new Division are the components of a broad approach to the problem of mental retardation. The full cycle of program development is available—beginning with research and continuing from State planning through facility, construction, demonstrations, and development of specialized manpower, to evaluation of techniques and standards. This is an exciting prospect for those of us who seek to help the retarded realize their fullest potential. Let me share with you a few examples of our program activities.

Three years ago a study was initiated with our support at the Children's Hospital here in Washington. The purpose of this study was to develop a simple, inexpensive, blood test to identify parents who might transmit the hereditary type of mongolism. It has been successful and will provide a basis for counseling prospective parents with a family history of mongolism. This is not a great victory, but it is a significant one. We are greatly enthused about the program for construction of community and university-based mental retardation facilities authorized in the Mental Retardation Facilities and Community Mental Health Centers Construction Act of 1963 (Public Law 88–164). Agencies have overmatched available funds so that projects approved as of January 1, 1967, will serve more than 12,000 patients. In addition to providing specialized training for personnel, these facilities will provide specialized services to the retarded and their families. Both programs have been overmatched but a great need still exists which will require continued attention.

SWEAT

In cooperation with 50 grantee institutions a student work experience and training program, known as SWEAT has been initiated. SWEAT workers came from among high school and college undergraduates, and graduate students. Under capable supervision, they filled positions such as psychometrician, cottage supervisor, therapist, recreation specialist, and nurses aid, in day care, residential, diagnostic, and recreation programs. We are pleased with the enthusiasm of the students for their experience. They have at the same time made a significant contribution to patient care. We plan to repeat the program this year with about 50 mental retardation facilities. It will be of interest to you to know that we already have applications from about 160 institutions.

HOSPITAL IMPROVEMENT PROGRAM

A major new program is the one through which demonstration projects are carried out under the hospital improvement program. Through these projects, often neglected residential facilities are able to institute new service approaches and related inservice training. This program is already having a salutary effect on institutions across the country. It will now be possible to look at programs and needs in terms of other major activities, particularly community-based activities, for the retarded. These demonstration projects will provide the basis for expanded programs as the new community facilities constructed under part C of Public Law 88–164 go into operation. While it is true that most of the problems of retardates can be handled in the home community, it is also a fact that special facilities and services are needed. These must be developed and standards established for their proper use. We are currently undertaking the development of such elements with the American Association on Mental Deficiency.

The 1968 estimate for $68,523,000 contains $64,448,000 in appropriated funds and a transfer of $4,075,000 from the social security trust funds. It provides for a net increase of 146 positions and $4,591,000 over comparable 1967 resources.

These increases will permit expansion in research and migrant health grants. In addition, they will provide for the initiation of a family planning program, and increases in the rural health program, the health economics, and health insurance operations.

With me are Dr. Cashman, Director of the Division of Medical Care Administration; Dr. Jaslow, Director of the Division of Mental Retardation; and Dr. Wharton, Director of the Division of Community Health Services. We will be pleased to answer any questions you may have on this program.

Mr. FLOOD. We have a quorum call. We shall resume at 2 o'clock.

(The subcommittee adjourned at 12:30 p.m.)

SUMMARY OF BUDGET REQUEST

Mr. FLOOD. Taking into consideration all the comparative transfers, you have $64,134,000 available for 1967. You are requesting $68,523,000. That is an increase of $4,389,000.

RESEARCH CENTERS

By far the largest item in that increase is $2,635,000 which is for research grants. Within that amount you want $1 million to start a brandnew program of what you call research centers. You will have to give us more detail as to what these would be. If you get this $1 million what will these centers cost in 1969 and 1970, for example?

Dr. PETERSON. We would expect that initially these would be carefully selected centers, Mr. Chairman, that have the characteristic of an academic institution with a medical teaching program, an already existing basic biomedical research program, a program that also has available to it clinical studies and health care for patients who are ill, with various types of health problems.

Also associated with this, the availability of a community which members of the research program may use to carry out community service-related research programs.

Initially we would see that these would support the basic staff that would be full time in the conduct of the research activity and it would also support the necessary community aspects of the program which are required to make various population groups available for study.

It would be our anticipation that the programs would expand fairly rapidly in two directions. First we would hope that a series of these, over and beyond the number projected in this first year, could be established in various section of the country; and, second, we would hope that as the skills of the center to conduct community-based research were developed their resources then could be expanded.

We would envision that this would increase at about the level of $2 million in the second year and probably go to $5 to $10 million within 5 years.

ONGOING RESEARCH PROGRAM

Mr. FLOOD. You say you need an increase of $1,635,000 for the ongoing research grant programs. What kind of research do you contemplate in this program?

Dr. PETERSON. These are the research projects that are presently conducted in the programs in medical care administration and in community health services.

Examples are the program which is presently carried out in the evaluation of local health departments at the Philadelphia Health Research Center to determine the influence of various types of administrative handling of personnel and structuring of programs on the delivery of public health services in the community—the public health nursing services, health counseling, maternal and child health activity, which are provided in the community, and how these are organized and staffed. The types of subprofessional and paraprofessional people who are used in the program to support the professional staff, and the effect they have on the delivery of care.

Mr. FLOOD. Do you work with the community chest and united fund groups?

Dr. PETERSON. These are eligible to participate in research projects. There are several of these organizations where they do have a research staff in connection with their voluntary health service activity, and they are participating in our research programs. Cincinnati, Ohio is one.

Mr. FLOOD. How about the antipoverty groups and various others? Is there overlap?

Dr. PETERSON. The answer is that there is no overlap. We may use some of the poverty projects to provide us with the facility, the population group, the study group that is in the research program. However, we would not find the research program itself providing the service, whereas the OEO project does provide service to the patient.

EFFICIENT USE OF TIME BY HEALTH PROFESSIONALS

Mr. FLOOD. On page 20 of your justifications I find this: "Some professional competencies are virtually untapped. Others are needlessly squandered."

What do you mean by that?

Dr. PETERSON. The squandering of professional talent is in those situations where we find, for example, nurses who within a hospital setting will be spending very significant portions of their time in recordkeeping.

Mr. FLOOD. Sometimes it is over 40 percent.

Dr. PETERSON. That is right. If it is possible for us to organize the service so that all of their time is given to patient care ——

Mr. FLOOD. Why would it not be possible? You have to do it. Why is it not probable?

Dr. PETERSON. It is probable that we will achieve our goals in this respect. However, we find that there are real problems in terms of the organization of the hospital programs and how they are staffed, the traditional responsibilities that have been assumed by various professional groups, so that we find it is difficult to gradually reshape the way in which they are organized. One of the most effective means by which we are able to achieve this has been through making it possible for the hospital to study itself and to define its problems and thereby to begin——

Mr. FLOOD. How long will this go on? We need more nurses as of last night. You will give us perhaps 30 percent more nurses if you stop choking them to death on paperwork. Is this as complicated as you suggest? Will geting rid of this paperwork be a tortuous ordeal?

Dr. PETERSON. I personally feel that it will be a problem that will not respond to immediate correction. I think it is a problem that is amenable to correction within perhaps a period of 4 to 5 years.

Certainly it is my impression that the leadership not only of the nursing profession, with respect to this particular problem, but also of the medical profession, with reference to its problems of better utilizing its professional time, is beginning to have a very significant influence. It will gradually correct the abuses that we now recognize.

Mr. FLOOD. What are the professional competencies that are virtually untapped which you refer to?

Dr. PETERSON. We feel there are many functions that can be performed by various sub-professional people to relieve the physician, the dentist, the nurse, of some of the things that they now do so that they could give more attention to higher levels of professional concern.

An example of that is the way in which cardiac surgery units and intensive care units in hospitals are established, where nurses are assuming much greater professional and technical responsibility for patient management, thereby relieving the physician to use more of his skills in more sophisticated types of patient therapy, diagnosis, and management. This brings about an overall improvement in the capability of the health profession.

MIGRANT HEALTH SERVICES

Mr. FLOOD. This migrant health service is getting to be a real big program. It is growing by leaps and bounds. $3 million is shown for 1966. An amount of $7,200,000 is shown for this year. Now you are asking for an increase of $900,000 for 1968.

With all this mechanization in agriculture we have been reading and hearing so much about in the last decade, which cuts down on numbers of farmworkers, and with considerable improvement in many State laws, why isn't this program going the other way rather than up?

Dr. PETERSON. I think there are several reasons, Mr. Chairman. The first is that although there is a very considerable mechanization of the agricultural industry of the Nation. we find that the agricultural migrant worker is involved in crop production and harvesting activities that, we are advised by our friends in agriculture, will not be amenable to mechanization. It will be sometime, they think, before they will have a strawberry picker that could go through a strawberry patch and provide fruit that would be satisfactory as a top grade product.

The large number of agricultural laborers that are necessary to provide the hand labor for a growing and more affluent population will be maintained. This high demand for agricultural migrant workers will continue over a period of years.

The other factor in this picture is the fact that we are no longer using imported agricultural farm laborers to the extent——

Mr. FLOOD. Why not?

Dr. PETTERSON. The bracero program has been terminated except for occasional——

Mr. FLOOD. How about imports to Florida from the Caribbean areas?

Dr. PETERSON. Those are still going on but to a lesser degree.

Mr. FLOOD. Yes, but it is going on.

Dr. PETERSON. So the demand for the migrant worker who follows a crop does continue. We don't expect that there will be any appreciable decrease in the numbers of migrants presently in the agricultural migrant labor pool.

The increases you are seeing in this program are principally addressing the health needs of these people who, because they do not meet residence requirements, because they are not members of the communities in which they reside, because they tend to be isolated in the agricultural areas where health services are not available to them, their income——

Mr. FLOOD. You have gone from $3 to $8 million in 2 years.

Dr. PETERSON. Yes, sir; and we feel that this meets only a small percentage of the total requirement of this population group in terms of their medical care and health needs.

Dr. WAGNER. The per capita expenditure on migrants is about $12 as compared to about $209 for the country as a whole for health. The gap between the needs and what we are meeting is so great that the increase, although it looks large, when applied to the instant problems is relatively small.

HEALTH INSURANCE

Mr. FLOOD. You have a substantial increase here for health insurance operations, from $3,467,000 to $4,387,000.

I suppose your big headache here is certification of hospitals, labs, extended care facilities, and bringing them up to par under the provisions of the medicare program.

What are these problems? How are you going to solve these problems and why this substantial increase?

Dr. PETERSON. The status of the certification program at the present time, Mr. Chairman, should be stated first. Then we have Dr. Cashman, the Director of this program, and I would like him to address himself to this problem.

At the present time we have over 6,700 hospitals in the country that have been certified either totally without deficiencies of any sort or with correctable deficiencies. We have a few, only about 550, which have been approved with an access certification. These are the hospitals where, because of their geographic location, they are necessary for populations which would otherwise not have hospitals available to them.

In the nursing home situation, out of about 19,000 State licensed nursing homes and related facilities there are at the present time 3,700 that have been certified as extended care facilities.

An extended care facility in this law is not the traditional nursing home. It is a health care facility that provides for continuing intensive care——

Mr. FLOOD. Under medicare.

Dr. PETERSON. Under medicare, under the title 18 program.

Mr. FLOOD. How about the certification of labs under this new procedure?

Dr. PETERSON. The certification of labs is just now getting underway.

IMPACT OF MEDICARE ON HEALTH SERVICES

I would like to ask Dr. Cashman if he would respond to that.

Mr. FLOOD. Very well. Dr. Cashman.

Dr. CASHMAN. I am pleased to report the statistical information which Dr. Peterson has given you but I should like to point that there has been a real positive impact by the medicare program on the health services of our Nation.

Over two and a half million people have been hospitalized. About 25 percent of these people had to be rehospitalized again so we are dealing with about three and a half million episodes of hospitalization paid for by medicare.

The promise of this program is more than what it has done in terms of being able to pay for services. To be more specific, according to one State health officer medicare and its title 19 companion has provided the financial mechanism to entice physicians to return to some of his rural counties.

In Texas, Mr. Casey, one hospital was able to continue to support a full-time staff physician for better care of the patients because of the presence of medicare financing.

Medicare has provided us an opportunity to advance the quality of care not only to this age group but all age groups because all people are treated in essentially the same facilities.

I attended a meeting yesterday where a man from the Virginia State Health Department reported he has attended many meetings in the last year where people of different professional persuasions, different agencies, and with different responsibilities who have never communicated before are now actually beginning to sit around the table together and discuss the problems of providing health services. Medicare has opened up new channels of communications so people can talk about their problems.

The conditions of participation, the standards we have set for hospitals and extended care facilities, home health agencies and independent laboratories have had two or three spinoff values. For example, the American Osteopathic Association was stimulated by our conditions of participation for hospitals to elevate their standards.

We have seen the development of a new kind of facility, the extended care facility. We have seen the growth of an agency, the Home Health Agency. For a long time we have had nursing services at home either supplied by health departments or visiting nurse associations but the Home Health Agency supplies nursing plus at least one other service, such as physical or occupational therapy or medical social services. Therefore, we have seen the development of this new kind of agency.

With regard to the laboratory field, fewer than 15 States have any kind of regulation of laboratories. With the writing of the standards we now have the first set of national standards for laboratories. We have evidence to show that specific laboratories stimulated by our standard-setting activities have upgraded themselves.

We feel that the willingness to pay for cost of services plus the regulating control by the State agency has come a long way in helping.

CONTRACT STUDIES AND DEMONSTRATIONS

Mr. FLOOD. What do you plan to use these contract studies and demonstrations for? You are asking for $200,000. What is your plan there?

Dr. CASHMAN. Our work thus far has largely been in the certification process, getting institutions and agencies certified for participation.

There are two other roles for the State agency in the medicare program. One is a role of consultation. In other words, providing assistance to agencies or institutions which do not quite meet the standards but who have what we call correctable deficiencies or which are not participating in medicare now.

Then there is a role we call coordination. This seems to have the brightest promise. We are aware of problems we have talked about here before—duplication of services, gaps in service, how does one know where to go for care, how does one find services if he doesn't pay——

Mr. FLOOD. Who will the contractor be?

Dr. CASHMAN. We hope to contract with individual agencies to try to develop how best one can——

Mr. FLOOD. What would be such an agency?

Dr. Peterson. I wonder if I might speak to this? One such study is the study proposed for the cost of patient care in nursing homes by Operations Research, Inc., of Silver Spring, Md. This is a program designed to try and make it possible for us to be as specific in terms of appropriate reimbursable cost formulas for nursing homes and extended care facilities and their participation in the titles 18 and 19 programs as we are in the field of hospital per diem costs where the ingredients of the hospital per diem are recognized by the professions, but in the nursing homes and extended care facility areas we are not as well equipped and knowledgeable.

Mr. FLOOD. That would be one such study.

Dr. PETERSON. Yes. Another one, for example, the New York School of Public Administration in New York City, where they are studying how it is possible for them to arrange to provide ambulatory health care services to a group of aged individuals who are resident in the Bedford-Stuyvesant area of New York City. This is the type of very specific program data that is needed, rather than to hope that an independent research investigator might accidentally come up with our specific program needs. We are recognizing a specific requirement for programing purposes and we contract with an agency to provide it.

RURAL HEALTH PROGRAM

Mr. FLOOD. Your rural health program is really flying. From three positions and $155,000 this year you are going to 70 positions and $1 million in 1968.

This may not be the year to fly around here. You seem to have gone out of your way to attract attention. Ordinarily that is ill-advised. What have you to say about this?

Dr. PETERSON. We would hope that we do secure the support of the committee with reference to this problem.

Mr. FLOOD. I am sure of that, but what about it?

Dr. PETERSON. For a number of years we have seen greater and greater concentration of our concern in the urban health area and the problems that are attendant to the——

Mr. FLOOD. What do you mean by rural health? How rural are you going to get?

Dr. PETERSON. We are going to move into the isolated rural agricultural and marginal areas of the United States where, in cooperation with the Department of Agriculture, we have seen the resources of professional health care gradually slipping away from those left in these parts of the country. They are now emerging as a population that is in great need of special attention in order that they may continue to receive the health care they need. This is one of our very urgent health problems and one which we feel needs special attention.

We have with us this afternoon——

Dr. WAGNER. I have a brief comment on this.

Mr. FLOOD. You had better be more than brief on this one.

Dr. WAGNER. Twenty-eight percent of the population is living in the rural areas. Yet they have only about 12 percent of the physicians and resources available. Infant mortality among the nonwhite in rural areas is double that of the nonwhite and white in urban areas.

It is a good investment to give good health services. Farmers have almost double the normal amount of disability. If this can be reduced with an investment of money in a rural health program, what it pays off to the community, to say nothing of the individual, far exceeds the amount being put into the program to prevent it.

Mr. FLOOD. You hope.

Dr. WAGNER. I think we can show this. It is like Federal employee health. If $1 is invested in the good health of the employee a return of about $3 can be obtained. In most industries this situation also applies.

Illness is not only a bad thing for the individual but it is a tax on the community, Mr. Chairman. It costs money for people to be sick. It costs economically more for them to be sick than to prevent their being sick. Not having access to health services, or at least adequate health services is an urgent problem that has to be met.

FAMILY PLANNING SERVICES

Mr. FLOOD. You have another new activity, $500,000 and 15 positions for Family Planning Services.

What do you have in mind?

Dr. PETERSON. We have in mind initiating a program to train physicians and other professionals so that they may provide counseling and programing assistance to communities, to hospitals, and to other health institutions on the problem of excessive infant deaths. We have been advised on the basis of studies that infant mortality is principally governed by family planning—spacing of children, genetic counseling of potential parents, assistance with reference to the prevention of the unwanted child, and also the concerns that I think this Nation must have with reference to the childless family and the need

for making it possible to make available to children who otherwise would not be able to have support——

COOPERATION WITH OTHER AGENCIES ON FAMILY PLANNING

Mr. FLOOD. This seems quite similar to the programs in the Bureau of Family Services, the Office of Economic Opportunity and the Children's Bureau. Everybody wants to get into the act. Is that it?

Dr. PETERSON. There are appropriate roles for various agencies to get into this in terms of the various elements that are of specific concern to their programs. Welfare, Poverty, are working on this problem from one vantage point. We approach it from the medical professional standpoint. We feel there is great need to improve the skill and capability of the health professions of this country, to adequately advise and serve their patients. We think that the health institutions of the Nation need to be able to practice better family planning, genetic counseling, and other professional areas of concern.

We are certain that there is a great deal that is not understood at the present time in terms of the dynamics of the family, the spacing of children, and the various problems of infant survival that can be understood adequately only——

Mr. FLOOD. Have you been talking to the Bureau of Family Services or the OEO people about this? Have you had conversations with them on this?

Dr. PETERSON. Yes, sir.

Mr. FLOOD. Are you on speaking terms with them?

Dr. PETERSON. Yes. We have people assigned to OEO assisting them in reviewing their projects. We participate on a full-time basis with them in the promotion of their program. We have communication with them in terms of their interests and their concern as it relates to the problems in this area.

PRESIDENT'S COMMITTEE ON MENTAL RETARDATION

Mr. FLOOD. There does not seem to be very much change in the budget for mental retardation activities except an increase of 10 positions and $281,000 for the President's Commission on Mental Retardation.

This was established by Executive order of May 11, 1966. What is this Commission and why do we need it?

Dr. PETERSON. As you have indicated, this is a commission the President established to give attention to overall considerations of problems of the mentally retarded, and various program activities being conducted by the different agencies, departments, and programs of the government.

Mr. FLOOD. I have no quarrel with the Commission but we are concerned with 10 positions and $281,000. Why must this cost so much?

Dr. PETERSON. This is again to engage in a study and review of the problems of mental retardation of the Nation.

You will remember initially the President appointed a Commission which studied under the chairmanship of Dr. Mayo the problems of the mentally retarded. Out of that planning grants were made available. Now facilities and other program content has been undertaken. The Administration has, with the advice and counsel of the professional

community, determined that it is essential that another look at this total problem be conducted by a President's commission.

Mr. FLOOD. What has the Commission been doing? What will it do?

Mr. CARDWELL. We have the Executive Director of the Commission with us, Mr. David Ray.

Mr. RAY. As you said, the Commission was appointed in May of 1966. This is my first opportunity to present a budget to your committee.

When we first started off it was sort of a pass the hat type of operation, which I think we are all against. The first budget was really financed by the Office of Economic Opportunity, Department of Labor, and HEW. We were caught in the staff freeze and we were asked to try and get along with seven positions with detailed staff. We have been operating with about 14 or 15 people——

Mr. FLOOD. What is your budget for this current year?

Mr. RAY. $316,000, which is really not for a full 12 months operation. We feel this is our first chance to present a budget based on the needs.

Mr. FLOOD. What have you been doing besides presenting a budget?

Mr. RAY. That is a very good question.

Mr. FLOOD. That is why I asked it.

Mr. RAY. We divided ourselves into a number of study groups. One of the things we have been commissioned with is to monitor the national scene. What are we getting for the $300 million the Federal Government is putting into mental retardation? How is this reaching the consumer? We are trying to find this out by a series of in-depth studies, a series of regional forums.

We are conducting an advertising campaign on mental retardation to acquaint people with the problems of the mentally retarded.

Mr. FLOOD. You have been doing this?

Mr. RAY. Yes. I have for the record, since there was no time earlier, a report of the President's Committee, about four pages I would like to leave with you if it would be all right.

Mr. FLOOD. We shall place that report in the record at this point.

(Report follows:)

PRESIDENT'S COMMITTEE ON MENTAL RETARDATION PROPOSED BUDGET FY 1967–68

Nearly six million American families are stricken with the lifelong effects of mental retardation. Because of its chronic lifetime nature, mental retardation cuts across every aspect of American life, economic, legal, educational, social and cultural. It affects and is affected by programs in housing, education, medical and behavioral research, employment, health, welfare and rehabilitation.

Expenditures for the mentally retarded by the Department of Health, Education, and Welfare have grown from $103+ million in FY 64 to $334+ million in FY 67. Other Departments' commitments to the mentally retarded total many additional millions. The States are investing an estimated $550 million annually in residential care, special education and other specialized services. Voluntary resources devoted annually to this field are estimated at greater than $25 million. The loss to the Nation's economy through dependency and limited achievement and production is several billion dollars.

President Johnson in his Executive Order establishing the President's Committee on Mental Retardation on May 11, 1966, described the functions of the Committee as follows:

"(*a*) The Committee shall provide such advice and assistance in the area of mental retardation as the President may from time to time request, including assistance with respect to:

(1) evaluation of the adequacy of the national effort to combat mental retardation;

(2) coordination of activities of Federal agencies in the mental retardation field;

(3) provision of adequate liaison between such Federal activities and related activities of State and local governments, foundations, and other private organizations; and

(4) development of such information, designed for dissemination to the general public, as will tend to reduce the incidence of mental retardation and ameliorate its effects.

(*b*) The Committee shall mobilize support for mental retardation activities by meeting with, and providing information for, appropriate professional organizations and groups broadly representative of the general public.

(*c*) The Committee shall make such reports or recommendations to the President concerning mental retardation as he may require or the Committee may deem appropriate. Such reports shall be made at least once annually."

The President's Committee in its initial meetings has already envisioned staff activities in multiple facets of this problem, requiring manpower consderably beyond that projected before the Committee was formed. The Committee has divided itself into a Steering Committee and three working groups: for legislation, a review of the state of the Nation in the field of mental retardation, and consideration of bold new approaches to eliminate mental retardation and development of dynamic programs for those already afflicted. Staff work for these committees and working groups is accomplished by a core staff of seven and a detailed staff of eight (including consultants and detailed personnel from other agencies).

The President's Committee anticipates the establishment of such additional working groups or subcommittees on coordination, development of a national center for information in mental retardation, joint efforts by industry and labor, a model training facility for mentally retarded workers in jobs of the future, and Federal-State-local relationships.

The President's Committee has established relationships with the Department of Housing and Urban Development and the National Aeronautics and Space Administration. Major joint projects with these agencies are being developed including the planning for human services in new and rebuilt cities, as well as application of NASA's human development research findings to the field of mental retardation. Membership on the Committee includes the Secretaries of Health, Education, and Welfare and the Department of Labor and the Director of the Office Economic Opportunity. Coordination of the activities of these Departments is a responsibility of the President's Committee.

In order to carry out the mission and goal of the Committee in these many activities, a minimum core staff of seventeen is required. Additional supportive services to the Committee activities are to be provided through use of consultants and specialists from other agencies detailed to the Committee.

The proposed 1968 budget for the President's Committee on Mental Retardation is $597,000. This increase is based in part on the fact that the present allocation of $316,000 was not for a full twelve months operation at maximum strength.

The proposed budget increases funds to use for contracts, reporting services, etc. Contracts will include studies undertaken by universities (and other nonprofit organizations) on behalf of the Committee.

The Committee has specifically been charged with developing better public understanding on the part of the citizens concerning the retarded. Even though the Advertising Council project will probably not be a Committee obligation in 1968, there will be other projects that will expand the public information functions of the Committee, such as:

(1) Development of newsletters, booklets, and films.

(2) Holding regional forums and meetings.

(3) Exhibits for use at national meetings.

(4) Preparation of material that can be utilized on television and radio.

(5) Preparation of material for newspapers and magazines.

The staff will be responsible for preparation for and implementing a minimum of four full Committee meetings, sixteen subcommittee or task force meetings and six regional forums. Regional forums are planned to take place in six cities strategically located throughout the Nation for the purpose of assessing the impact of mental retardation programs, gaps, impediments and progress as

viewed by the citizens and professionals on the local scene. The second purpose is to provide for visibility and public awareness of the problem of mental retardation and productive efforts to combat it. Each regional forum will require two to three weeks advance staff work in each region and city where the forum is to be held.

In addition, staff will be responsible for:

(1) Preparation of position papers on subjects and issues as requested by the Committee.

(2) Conducting studies requested by the Committee.

(3) Speeches for regional and national conferences.

(4) Writing speeches for members of the Committee.

(5) Analysis of data submitted to the Committee.

(6) Liaison with program staff of a variety of governmental and nongovernmental agencies.

Mr. FLOOD. Mr. Michel?

RURAL HEALTH CARE

Mr. MICHEL. Let me first follow up with the chairman's line of questioning with respect to this concerted effort which apparently will be made in the rural areas. On the Agriculture Subcommittee, we heard similar testimony in the last several years. There has been a great exodus from the farm to the cities, some 800,000 a year.

Here we are facing that kind of a picture and now you are coming in on the other side. For land sakes, if we got by before with that many more people on the farm and with the increasing numbers coming into the city, why do we at this time have to embark on a program for those moving out of rural areas? It cannot be any more urgent now than it was before just on the strength of population shifts. What do you have to say about that?

Dr. PETERSON. The very fact that there have been these population losses from rural areas has also accelerated and made more acute the delivery of health care to those who remain in these rural areas, because health professional personnel have also moved out. The acceleration of this trend has exceeded even that of the movement of individuals out of rural communities.

Mr. MICHEL. Is this connected with the problem of getting doctors to serve rural communities?

Dr. PETERSON. Yes. I would like to ask Dr. Wharton, who is here, and in whose division this program is located to indicate his analysis of this problem.

Dr. WHARTON. We have seen examples in several instances of ways in which communities have been able to group resources in order to produce an environment which physicians will not leave and which will provide the kinds of services that the patients in the rural environment need.

We see the budget which we have requested as one which will be multiplied significantly in the development of such actions. One particular situation is in Oklahoma. This was not a product of our effort, but is the kind of thing we would work on. In this situation private and public capital combined are producing a health service center in a strictly rural environment which is keeping physicians and patients there so they are well provided for.

Mr. MICHEL. I can point particularly to a little community called Hopedale, Ill., where several enterprising doctors have recruited par-

ticipation of the community by way of issuing certificates, to develop a tremendous hospital out there. It is a real community effort without a single dime of Federal or State money. It can be done if people are interested in providing a health facility.

Dr. WHARTON. Our purpose is to assist in an acceleration of that kind of development.

Mr. MICHEL. I think you can get stimulation among the private sector to do this. Won't you merely be stimulating people to come and ask us for more help?

Dr. WHARTON. In some instances it can be resources of the community itself. I mentioned Wakita, Okla. They have identified another area in southeastern Oklahoma which has exactly the same kinds of needs but which is not as affluent as the Wakita area.

They believe that with titles 18 and 19 of the Social Security Act, Hill-Burton, and certain other new provisions for services and payment for services to people, they would be able to afford to establish a health service center in that area.

MIGRANT HEALTH PROJECTS

Mr. MICHEL. I notice that in 1967 we will support about 100 migrant health projects. How many actual migrant workers are involved here?

Dr. WAGNER. About 300,000 migrants will be receiving services.

Mr. MICHEL. How much money is involved in that effort alone?

Mr. WHARTON. $7,200,000.

Mr. MICHEL. You are talking about the current fiscal year, 1967. How does that compare with what was spent in 1966?

Dr. WHARTON. There was $3 million spent for that purpose in 1966, and services in the project were to 250,000 migrants.

Mr. MICHEL. So, we more than doubled in 1967 over 1966.

Dr. PETERSON. That is correct.

Mr. MICHEL. Now what is planned in 1968?

Dr. PETERSON. We are going up by approximately $900,000 in 1968.

Mr. MICHEL. Covering any more workers?

Dr. PETERSON. We will cover more workers and we will also expand the program to include a larger number of migrants for in-patient hospital care in those situations in which they are not able to receive it under other programs.

Dr. WHARTON. In 1967, we estimate there will be 4,200 hospitalizations supported from those funds, hospitalizations which for all practical purposes did not previously occur. In 1968, we estimate there will be 5,700 hospitalizations for these funds.

FAMILY PLANNING

Mr. MICHEL. One other question comes to mind. In partial answer to the chairman on the farm subject, I think you said part of the money was to be used to train doctors in what is to be done with respect to family planning.

I probably should have interrupted at the time. It just struck me, if our M.D.'s do not know what can be done or should be done so far as family planning, what are we learning in our medical schools?

Surely you did not really mean some of this money is going to train doctors for that very elementary thing.

Dr. PETERSON. No. The training that is needed here is with reference to the newer elements of family planning that are becoming available currently. For example, in genetic counseling——

Mr. MICHEL. What can a husband and wife do about genetics? That is set.

What is the use spending money when we haven't any prospect of changing things at all?

Dr. PETERSON. I think it is possible that many people who may not know of their problems in this area and who can be advised of the difficulties prior to the time they learn it through tragedy, may wish to take advantage of such advice and counsel.

You are quite correct in terms of this being a highly personal decision and one in which there certainly would be nothing other than making such information available on a highly professional personal basis.

RESEARCH GRANTS FOR FAMILY PLANNING

Mr. MICHEL. I see on page 20 of the justifications that you support about 43 new grants resulting from enactment of medicare and other health legislation. How much do you plan to spend on family planning services under research planning grants?

Dr. PETERSON. These research projects are awarded on the basis of the applications of individual investigators. Whether there would be any that could come to this particular research program is highly unlikely.

Mr. MICHEL. Is that a categorical "No"?

Dr. PETERSON. There might be a related project here. However, the National Institutes of Health is the principal resource for support of investigations in this area.

Mr. MICHEL. Why are there funds for family planning services under two different headings?

Mr. CARDWELL. It may be shown in the summary of changes and then again in the detailed explanation.

RURAL HEALTH SPECIALISTS

Mr. MICHEL. Let us go back to the rural health program. In what 10 States are you planning to assign rural health specialists?

Dr. WHARTON. We are working with the Interdepartmental Task Force on Rural Health representing our own Department, the Department of Agriculture, OEO, the Departments of Labor, Interior, Housing, and Urban Development, and the Appalachian Regional Commission, to select these areas. We have proceeded to the point where we are now ready to begin action in three areas. I simply cannot tell you what the others will be.

We have established criteria with this task force for the selection of the communities in which to carry out this activity. The criteria depend upon population, income levels, and absence of health service facilities.

Mr. MICHEL. Do we know specifically in how many States they will be? Have you an idea?

Dr. WHARTON. At present there are three States for which we are discussing this.

Mr. MICHEL. Where did I get the figure of 10?

Dr. WHARTON. That is for the next fiscal year, sir. We are working with three at this time, sir.

Mr. MICHEL. In 1967?

Dr. WHARTON. That is right, sir.

Mr. MICHEL. This is the budget for 1968, however. Where are the 10 States that you are thinking of working with in 1968?

Dr. WHARTON. The selection of the areas would have to be on the basis of those criteria we have worked out with the interagency task force and the interest of the States in having the program.

Mr. MICHEL. I cannot find the place, but in the justifications you mention 10 States, so, obviously, some conclusion has been drawn up to this point which would lead you to say 10.

Dr. WHARTON. We believe this is a reasonable rate of program development, sir.

Mr. MICHEL. Are we doing more in Appalachia or the Midwest, in the breadbasket of the country, or where?

Dr. WHARTON. It would be throughout the country. There are such areas in northern New England, the Great Plains States, in the Midwest, in the Southwest, and in the South Atlantic States.

Mr. MICHEL. How long will it take to find out what the comparative cost might be of doing an effective job in different sections of the country?

Dr. WHARTON. This is part of the work which the interagency task force is carrying out with the States.

Mr. MICHEL. What are we looking for down the road? How long will it take them to come up with their findings?

Dr. WHARTON. In the first place, the development of effective health services in these areas is not something which will occur in a very short period of time. The development of even a plan such as the one I mentioned before in Oklahoma has required about a year of groundwork and on the 1st of May they expect to turn the first spade of soil. However, they do have very confident predictions of the extent of services that will occur in the area and where the money will come from. Therefore, they know about what economic base they will be operating on.

Mr. MICHEL. Maybe I am laboring under a misapprehension here, but do you not propose two pilot projects in each State?

Dr. WHARTON. Not necessarily, sir.

Mr. MICHEL. One pilot project in each State?

Dr. WHARTON. This would depend upon the characteristics of the area, the ease of transportation, the distribution of resources.

Mr. MICHEL. Do not the justifications someplace give us some indication that you are basing the requested money on two pilot projects per State?

Dr. PETERSON. I think that is with reference to the experience we are having in this year's program, where we have pilot projects that are giving us the basis upon which we are projecting our budget requirements.

Mr. MICHEL. We are going to be doing more next year than this year.
Dr. PETERSON. Yes.

RURAL COMMUNITY DEVELOPMENT SERVICE

Mr. MICHEL. Have you folks had any consultation with the Office of Rural Community Development Service? It is not a large operation because we have not funded their expansionary proposals in the Agriculture Subcommittee, because it was not well justified. I have just heard in a roundabout way that it is hoped to transfer some of the activities of RCDS from Agriculture over into the Department of HUD as a means of getting around those of us who obviously did not think it was worth its salt when it was proposed to us.

They professed before our other subcommittee that they were planning to do all these things, including health and whatnot, in these small rural communities. I could not conceive that they were equipped to do that, and I was wondering if you people, who are knowledgeable in your professions, have any rapport with that group.

Dr. WHARTON. As I said before, we are working with the Department of Agriculture, the Office of Economic Opportunity, Labor, Interior, HUD, and the Appalachian Regional Commission in this area.

Mr. MICHEL. We cannot always tell, but I suspect we simply write the law and define some ground rules, but we know the executive can do a lot of things over which we have no control. So, you might be aware that HUD will probably have this Office of Rural Community Development Service. I hope they will not run at cross-purposes with you.

Dr. PETERSON. I think we ought to say that the Surgeon General has assigned to the Department of Agriculture one of our senior medical officers who is located in the Department as our liaison to refer our program interests into the agricultural area, and, similarly, to bring back to us those elements of programing that would appear to be of health concern.

In the year in which this has been going on, I think we have enjoyed significantly improved program understanding and of mutual development than had previously been the case.

Mr. MICHEL. Inasmuch as the Surgeon General does have a man assigned to deal with the Department of Agriculture, have they asked for any consultation on where these pilot projects will go?

Dr. PETERSON. Yes.

Dr. WHARTON. We are in constant consultation on this.

Mr. MICHEL. Are any of these pilot projects in Appalachia?

Dr. WHARTON. No, sir. That is a separate program.

Mr. MICHEL. Separate and apart from yours?

Dr. WHARTON. We are working with them. The same kind of standards are being developed.

Mr. MICHEL. Is it better that way?

Dr. WHARTON. I think so, because they have very specific ground rules under which they are to operate. With respect to the Congressman's concern about the relationships with other agencies, we have found no problem at all in our relationship to the Department of Housing and Urban Development. Last year, for example, we participated with them in supporting a study by a legislative commission

of the State of Kansas to review the nature of health services in Kansas. We think this has been a very good forward step.

Dr. STEWART. May I interject myself here. These relations become a little confusing, since everybody is in the health game these days. We have a liaison with the Department of Agriculture in the rural programs. We also have staffed the Health Committee of the Appalachian Commission since its inception, and have worked with them on developing the health programs in Appalachia. We are also serving as a staff for HUD, right now particularly around the group practice development in HUD.

So, we have a relationship with these three areas through the Bureau of Health Services. We have a constant flow of people and information at all times.

Mr. KELLY. You remember when the Secretary was here he talked about the problem of coordination with HUD, particularly in connection with the model cities program. It is very clear that you cannot administer the kinds of programs that have been established in HUD without having a close working relationship with HEW, or else duplication of programs will result. So, the Secretary has created in the Office of the Secretary the Community Planning Center in which all of our operating agencies can focus their attention within HEW and work with the Department of Housing and Urban Development on the model cities program.

I was very pleased to be in a meeting quite recently at which one of the Assistant Secretaries of HUD asked me to report back to Secretary Gardner that, despite the large and complex programs of HEW, they had found it easier to coordinate their programs with us and work them out on a mutual basis than they had anyplace else in the Federal Government. He stated further that HUD did not have any desire to duplicate these HEW programs, but rather to find a way to effect coordination of HUD aspects of the program, the physical planning and redevelopment of cities, with HEW aspects of the program, health, education, and welfare, and social services. It is not an easy problem to work out.

Dr. WHARTON. I would like to bring out one other example. We are participating with HUD in the Norfolk metropolitan area in assisting that area to plan for the establishment of a number of neighborhood service centers. It is probable that somewhere around six such centers will be constructed. The purpose is to provide decentralization of services at the neighborhood level, and yet maintain appropriate relationships to other centers in each instance so that more economical and more effective services will be provided at the community level.

In the process of this joint effort, eight Norfolk neighborhoods have been defined as potential sites, three Portsmouth neighborhoods, and six in the city of Chesapeake. We are working closely with the State health departments and with the health, welfare, and recreation council of the area on how these services can be financed. Voluntary and public agencies in a number of instances have already pledged themselves to staff and support these centers. We think this is a very constructive development.

UNOBLIGATED FUNDS

Mr. MICHEL. Let us go back to the earlier part of the justifications. How much of this unobligated balance was held over because of Presidential deferment? Give me the reason for it. I see you have $8.25 million, by footnote on page 6, available from 1966.

Mr. BAHN. None of the funds in this account were held over because of Presidential deferment. As of February 28, most of that unobligated balance for university affiliated projects had been used.

Mr. CARDWELL. They were no-year construction funds which were available until expended, Mr. Michel.

Mr. BAHN. We had obligated $16 million of the $10 million available in 1967 plus the $8 million carryover.

Mr. MICHEL. How will that differ in fiscal year 1967? Have you a projection on the unobligated balance in the current fiscal year?

Mr. BAHN. We anticipate no unobligated balance carryover from 1967 to 1968 for the university affiliated program. There are some unobligated balances in the community service facilities, about $10 million.

Mr. MICHEL. Ten this year and eight last year.

Mr. BAHN. The $10 million for community services are 2-year funds. The $8 million available from last year is related to the university affiliated program.

Mr. KELLY. These funds are in the nature of construction grants. Congress makes these funds available to us in total in order that we can initiate the activity.

Mr. MICHEL. I am attempting to establish whether this is the norm.

Mr. KELLY. The program of hospital construction established the traditional pattern which accounts for the preponderance of the unobligated balances.

MAN-YEARS OF OVERTIME

Mr. MICHEL. How much would you estimate was involved in overtime as far as man-years are concerned in fiscal year 1967? It is significant?

Mr. BAHN. About 3 man-years. It is not significant.

Mr. MICHEL. How about 1968?

Mr. BAHN. It is about the same.

LISTING OF APPROVED RESEARCH GRANTS BY PROGRAM

Mr. MICHEL. Do we have a breakdown of research grants which actually go to community health planning, rural health services, family planning, et cetera?

Dr. PETERSON. We could provide for the record a listing of presently approved research grants, if this is desirable.

Mr. MICHEL. There are not too many to be included in the record, are there?

Dr. PETERSON. I do not think so, sir. We can provide them.

(The information follows:)

RESEARCH GRANTS APPROVED IN FISCAL YEAR 1967

Title of project	*Investigator and institution*
Administrative Science and Medical Care. This research program is pursuing studies in the areas of health program organization, resource allocation, and roles and relationships of the health professions.	Albert F. Wessen, Ph. D., Washington Univ., St. Louis, Mo.
Research in Medical Care. This research program is exploring promising research leads about these basic elements of medical care: health services manpower; service needs and utilization; program development, operation, and evaluation.	Jerry A. Solon, Ph. D., University of Pittsburgh.
Research in Medical Care and Hospital Administration. Under this research program a series of studies are ongoing in the following areas: standards of health and medical care, prepayment for medical and hospital care, and organization and evaluation of ambulatory medical care.	Isidore S. Falk, Ph. D., Yale University.
Evaluation of Public Health Practices. This multidisciplinary effort will devise methods of evaluating public health programs and of assessing the behavioral factors involved in the acceptance of these programs.	Vlado A. Getting, M.D., Univ. of Michigan.
Medical Care of Infants and Preschool Children. This project is attempting to determine the amount and kind of medical care now actually being received by infants and preschool children and the barriers to fuller use of facilities that are presently available.	Rowland L. Mindlin, M.D., Medical and Health Research Association of New York City, Inc.
Vital and Health Statistics Monographs. This grant has permitted detailed exhibitions and analysis of data from the 1960 census, along with information on trends in morbidity and mortality which will result in the publication mainly in 1968 of 17 volumes on the major diseases in the U.S.	Mortimer Spiegelman, M.B.A., American Public Health Association, N.Y.
Medicine and Medical Organization in Soviet Russia. The aim of the research is to give a comprehensive and up-to-date picture of Soviet medicine and medical organization.	Mark G. Field, Ph. D., Boston University.
Perception of Patients' Cognitive Needs. This project is investigating patients' views of what information they need to adhere to a medical regimen and the personal factors influencing these views. Patients' perceptions of their needs for medical information are being compared with the views of physicians and nurses about the information they should convey to patients.	Joan S. Dodge, Ph. D., Cornell University.

Patterns of Utilization of Health Services. This project will study factors related to decisions of small town and rural families regarding the use of health services provided by professional and non-professional personnel.	Edward W. Hassinger, Ph. D., University of Missouri.
Health Services and Urban Planning Relationships. The aim of this exploratory project is to identify existing and potential links between urban planning and the planning of health service.	William W. Nash, Jr., Ph. D., Mass. Institute of Technology.
An Experiment in Bringing Family Planning to the Poor. This project is designed to measure the extent to which low-income families make increased use of a medical service—a family planning clinic—when two modifications are made in current operating practices.	Robert H. Hardt, Ph. D., Planned Parenthood Center, Syracuse.
Teenage Drinking in the Context of Community Life. This grant funds one part of a comprehensive, longitudinal study of one community directed towards knowledge and understanding about alcohol use and attitudes, about problems related to alcohol use and consequent responses, and about planned intervention and its impact.	Selden D. Bacon, Ph. D., Center of Alcohol Studies, Rutgers—The State University Brunswick, N.J.
Provision of Demographic Bibliography and Information. This grant supports publication of the "Population Index," a bibliographical quarterly published by the Princeton Office of Population Research, which presents a guide to current literature in demography and relevant social and biological sciences.	Ansley J. Coale, Ph. D., Princeton Univ.
Patterns of Illness Behavior and Medical Practice. This project proposes to study the health and illness behavior of physicians with respect to the provision of medical care for themselves and their families.	Charles E. Lewis, M.D., Univ. of Kansas Medical Center.
Patient Utilization of Clinics at a Medical College. This project aims to determine why patients who need specialized care do not reach competent practitioners who are equipped to give it.	C. Earl Albrecht, Jefferson Medical College.
Household Activity Patterns and Community Health. This research seeks to develop an approach to the analysis of household activity patterns in metropolitan areas. This will have significance in the development of guides for the delivery of health services and the location of health facilities.	Stuart F. Chapin, Jr., M.C.P., Univ. of North Carolina.

International Comparative Study of Medical Care. Studies of this research program will attempt to determine: (1) how medical care is used by different parts of the population in relation to disease and disability; (2) the kind of medical care (as defined by type of doctor and hospital) which is selected by different segments of the population; and (3) how the outcomes of medical care relate to patient, doctors, and hospital characteristics.	Osler L. Peterson, M.D., Harvard Univ. Medical School, Boston.
Patterns of Medical Care Organization, Comparative Studies. This program of research will study varying patterns of medical care organization. The quantity and quality of services received by people, their costs, and the attitudes experienced by both recipients and providers of service.	Milton I. Roemer, M.D., Univ. of Calif., Los Angeles.
Planning Community Health, Resources for Disasters. This grant supports a computer-based simulation of community coordination of medical resources for the care of mass casualties. The purpose is to test computer techniques for community health planning.	Leonard A. Duce, Ph. D., Texas Hospital Association, Austin.
Utilization of Health Resources by Welfare Recipients. The purpose of this project is to determine the demographic and psycho-social characteristics related to the utilization of health and medical services by an urban population below the poverty line.	Lawrence Podell, Ph. D., Social Welfare Research Council, Inc., New York.
Patterns of Community Health Services____ This exploratory study will formulate hypothesis for new approaches to the organization of community health services that will take into account the differences in community needs and community resources that are apparent between the various types of communities—rural, rural-urban, urban-suburban, metropolitan, and megalopolis.	Wilson D. Steen, Ph. D., Univ. of Oklahoma Medical Center, Oklahoma City.
Interagency Relations in Provision of Health Services. The specific intention of this study is to ascertain how interagency relations affect the entire control of disease, including diagnosis, initiation into the treatment cycle, and the quality and comprehensiveness of care provided.	Robert L. Eichhorn, Ph. D., Purdue Univ., Lafayette.
Medical Care and Patient Care Program_____ This is a research program of related studies focused on personal health services. Its aim is to describe, relate and evaluate needs, demands, utilization, satisfaction, outcomes and organization of personal health services provided in hospitals, clinics, physicians' offices, health departments and elsewhere.	Kerr L. White, M.D., The Johns Hopkins University, Baltimore.

A Program of Research in Patient Care. This program project grant supports research in patient care in three main areas: 1) medical management of patients; 2) roles of health personnel in relation to patients; and 3) organization of services.	George G. Reader, M.D., Cornell Univ. Medical College, New York.
Personal Health Services: Utilization and Charges. This study is examining the accuracy of medical care cost and utilization data collected through household surveys that rely on long recall periods.	Regina Loewenstein, A.M., Columbia Univ., New York.
Health Administration Studies—University of Chicago. This program grant supports research on the health service system. This includes studies based on sociology, social-psychology, operations research, economics of medical care, and organizational research related to the functioning of the health services system.	George Bugbee, A.B., Univ. of Chicago, Chicago.
Community Service Research and Development Program. This project is a cooperative effort by a Department of Preventive Medicine in a Medical School with a County Health Department seeking to evaluate existing community service programs provided by local official and voluntary agencies.	Harry A. Sultz, M.P.H., Research Foundation of the State University of New York, Albany.
Economics of Health and Medical Care. This exploratory project will undertake economic studies in program development and evaluation in public health and medical care.	William D. Bryant, Ph. D., Univ. of Mo., Columbia.
Health Care and the Family: A Three Generational Study. This research will examine intensively health attitudes, values, beliefs and practices through a sample of 100-125 families linked through three generations and residing within fifty miles of the Twin City and Metropolitan Area. The project will study the effect of past and current health practices, experiences, and the impact of illness on family structure.	Theodore J. Litman, Ph. D., Univ. of Minnesota, Minneapolis.
The Nursing Home Industry in the State of Washington. This project will study the breadth, structure, context and dynamics of the nursing home industry in the state of Washington by using economic analyses.	Frank J. Kottke, Ph. D., Washington State Univ., Pullman.
The Process of Planning for Areawide Health Services. This is a study of the dynamic aspects of areawide planning for health services.	Douglas R. Brown, M.D., Sloan Institute of Hospital Administration, Cornell Univ.
Pattern Variations in Out-of-Hospital Medical Care. This project will study the effects of certain physician or patient characteristics on the pattern of therapeutic and diagnostic care provided.	Alfred W. Childs, M.D., Univ. of Calif., Berkeley.

A Study of Clients and Health Organizations. This is a theoretical study to develop a better understanding of how large scale action programs in the health field might be implemented.	William R. Rosengren, Ph. D., Western Reserve Univ., Cleveland.
Diffusion of Innovation in Medicine. This is a study of the process by which physicians modify their diagnostic or therapeutic activities in response to information produced by medical research.	Curtis P. McLaughlin, D.B.A., Harvard Univ., Boston.
Illness and the Utilization of Medical Aid. This project seeks to determine those factors associated with resistance to seeking medical help when illness occurs.	Derek L. Phillips, New York University.
Economic Returns to Health Services. This project will collect data about health services received by a sample population in relation to the individual's earning level.	Robert L. Robertson, Jr., Mount Holyoke College, Mass.
Administration in Contrasting Medical Care Systems. This project will study the administrative roles in 3 different medical care systems—the U.S., England and Canada.	Rodney F. White, Ph. D., Cornell Univ., New York.
Nursing Homes: Federal Stimulus and Industry Response. The general purposes of this project are to explore the impact of federal legislation on economic activity in the nursing-home industry.	Joseph W. Garbarino, Univ., of Calif., Berkeley.
An Economic Research Program in Health. Examples of specific economic studies to be undertaken by this project are: the demand for medical care and for the components of care, factors affecting the supply of health care, and price and output determination in the medical care market.	Paul J. Feldstein, Ph. D., Univ. of Mich., Ann Arbor.
A Prescription Order Information Retrieval System. Socio-economic information will be obtained by this grant by personal interview on a random sample of patients on whom prescribed medication information has already been collected. This information will be used to conduct a study involving various socio-economic factors associated with the utilization of and expenditures for prescribed medication.	Joseph D. McEvilla, Univ. of Pittsburgh.
Patient Care Research Development in a Medical School. This is an exploratory grant designed to explore the potential for research in community health in an urban medical school by focusing upon care provided by an outpatient clinic.	Bryan Lovelace, Jr., M.A., Northwestern University.

Research Potential of Study of Medicolegal Deaths. This exploratory grant seeks to develop common terminology and standardization of the methods of collecting medicolegal data and possibly lead to the development of a separate death certificate for coroners and medical examiners.	Rudolph J. Muelling, Jr., M.D., University of Kentucky Research Foundation, Lexington.
Referral-Consultation Process among Physicians. This project will establish the volume of referral-consultations made and received by practitioners with different characteristics, and analyze the physician's decision-action process in making referrals.	Roy Penchansky, D.B.A., Univ. of Michigan.
Adaptive and Emotional Response to Health Dangers. This project will explore the kinds of communications that can successfully alter an individual's attitudes and practices in the health area.	Howard Leventhal, Ph. D., Yale University.
The Role of the Family Physician in Family Planning. To study the part played by the family physician in relation to family planning and the effect that his active participation or lack of interest in this has on the views, habits, and satisfaction of his patients.	Ann Cartwright, Ph. D., Institute of Community Studies, London.
Prospective Fertility of Rural-Urban Migrants. The purpose of this research is to determine the effects of migration upon fertility.	John J. Macisco, Jr., Georgetown Univ.
Health Services System Simulation..... This proposal is to define the specific scope of a simulated total health services system.	Robert A. Shapiro, Ph. D., University of Oklahoma Research Inst., Norman.
Public Acceptance of Prepaid Group Practice. The project is designed to study differential public acceptance of group practice prepaid medical care plans in terms of various characteristics of the plans and in terms of basis attitudes of the potential subscribers to such plans.	Charles A. Metzner, University of Michigan.
Transition and Adaptation of the Health Insurance Industry. This project will study the impact of a federally sponsored medical care program on the private health insurance industry.	Robert C. Goshay, Ph. D., University of California, Berkeley.
Development of an Integrated Health Records System. The overall objective of this exploratory grant is to study the best way to organize a record system for the new Gouverneur Health and Hospital Center which will satisfy the daily needs and requirements for the four city departments and the voluntary institutions concerned.	Lester J. Rosner, Medical and Health Research Association of New York City, Inc.

Medical Care Utilization Research Project. This study will attempt to identify the significant determinants of medical care utilization.	Merwyn R. Greenlick, Kaiser Foundation Institute, Oakland, Calif.
Exploring Community Influences on Patient Care Process. This exploratory study will examine the effect of social and cultural factors present in the community on the process of care for patients seen at a rehabilitation hospital.	Alan S. Meyer, Ph. D., Burke Rehabilitation Center, White Plains, N.Y.
Economic Efficiency of Medical Services Markets. This grant will study the economic efficiency of various markets comprising the medical services industry.	Carl M. Stevens, Harvard University.
Economies of Scale in Outpatient Medical Organizations. This project will examine the economies of scale that exist in large, as opposed to small, private practice organizations, to learn more of the degree of substitutability of paramedical personnel or medical equipment for physician input time.	Richard M. Bailey, University of California, Berkeley.
Exploration of Medical-Welfare Project. This exploratory project will examine the medical and sociological barriers retarding the development of health and independence of families receiving welfare by developing closer involvement with the family by both the physician and social worker.	Jay F. Harris, M.D., Upstate Medical Center, Syracuse, N.Y.
A Population Research Laboratory at Brown University. This program grant will develop a population laboratory including a sample of the population of Rhode Island. This will permit collection of data re the socio-economic characteristics of the population, the amount of illness in the population, and the utilization of medical services.	Sidney Goldstein, Ph. D., Brown University.
Development of Survey Research Center Capabilities. The center will undertake epidemiological surveys and community health studies involving field investigations of human populations as a means of assembling data on health and health related matters.	Leo G. Reeder, Ph. D., University of California, Los Angeles.
A Comparison of Specialty Clinic and Continuous Care. This study will determine if continuous medical care by the same physician will improve patient compliance with a long-term oral medication regimen, as compared to the usual specialty clinic care rendered by part-time physicians.	Milton Markowitz, M.D., Children's Medical and Surgical Center, Johns Hopkins Hospital.

Medical Care Utilization in a Rural Region.. This study will examine the utilization of health services in one area of Vermont. This is part of an international study of the utilization of medical care.	John H. Mabry, Ph. D., University of Vermont.
Explorations in Health Services---------- Among the topics to be studied by this grant, are: 1) a determination of ethnic differences in frequency and style of reporting pain and nature of professional staff response; 2) the role of the volunteer hospital worker; 3) the determinants of patients' entries into hospital psychiatric services.	Eliot Freidson, Ph. D., New York University.
Health Resource Allocation, Utilization and Costs. This project will provide base line information for the initial design of a comprehensive, hospital-based, municipal medical care program to serve the residents of a low income neighborhood in New York City.	Eleanor Snyder, Medical and Health Research Association of New York City, Inc.
Longevity in Offspring of the Long lived----- By studying the offspring of nonagenerians this project will secure data on the hereditary factors in long life.	Edmond A. Murphy, M.D., Johns Hopkins University, Baltimore.
Personal Influence and Participation by Older Adults. The principal objective of this study is to develop more effective procedures to involve older adults in voluntary associations and community health services.	Nicholas Babchuk, University of Nebraska, Lincoln.
Program Evaluation of Local Public Health Departments. The purpose of the study is to determine the extent to which, and ways in which, organizational and administrative structures and behavior influence the nature and effectiveness of local public health practices in the U.S.	Dennis J. Palumbo, Ph. D., Brooklyn College.
Developing a Community Laboratory for Health Studies. This study will analyze the characteristics of the population and the medical resources available to the population in selected areas of St. Louis, in order to facilitate planning for more effective health services.	Robert H. Felix, M.D., St. Louis University.
Community Power, Health Policy, and Administration. This study will relate various hypotheses regarding community leadership and decision-making to the processes by which public health policy and programs are formulated and implemented in the Omaha, Nebraska metropolitan area.	Harry Reynolds, Municipal University of Omaha.

Research Program in Economics of Health—This project, conducted by health economists, seeks to study the economic costs of diseases, to apply cost-benefit analysis to the health field, to examine expenditures for health and medical care by source, and investigate the economics of medical research.	Herbert E. Klarman, Ph. D., The Johns Hopkins University.
The Social Settings of Medical Care—This study will emphasize how the cross-national variations in the social structure are connected to the cross-national variations in the organization of medical care.	William A. Glaser, Ph. D., Columbia Univ.

The above listing includes new fiscal year 1967 grants awarded as of March 31, 1967, and all non-competing continuation grants for fiscal year 1967. Additional new grants will be awarded later in the fiscal year, obligating all fiscal year 1967 research grant funds.

CENTERS FOR EXPERIMENTAL RESEARCH

Mr. MICHEL. Where do you plan to locate the three centers for experimental research in the organization and delivery of health services referred to on page 21?

Dr. PETERSON. We have not selected the place where those will be located.

Mr. MICHEL. How long will it be before you have some idea?

Dr. PETERSON. We would be in a position to submit those situations that would be under consideration within a matter of a month after the appropriations have come to us.

Mr. MICHEL. What size community are you looking for?

Dr. PETERSON. In general, we are looking for larger urban situations in which are located a medical school, a university teaching hospital, a basic biomedical research capability, and a strong university research and behavioral science program with a population base large enough to provide the community laboratory in which studies would be undertaken. This we would estimate usually will not be found in a community of less than approximately 500,000 people.

Mr. MICHEL. I cannot help recalling several of the remarks of the chairman. When we were talking about regional centers for heart, cancer, and stroke about 2 years ago. Some of us were of the opinion that these would be more or less geographically centered around the country easily accessible to the population around these so-called centers.

Then we come to facilities of this kind. It seems the bigger the community and the more resources it already has, the more it attracts them. I guess the big get bigger. I do not know if we can say properly that the small get smaller. This is a creature of our own making, is it not?

Dr. PETERSON. It is to a significant degree, Mr. Michel. Remember, however, that in this program we are specifically looking to a facility which can conduct research. Its obligation does not go beyond that to considerations of the problems of the relationships of community hospitals that surround it, the continuing education of the medical profession, the professional institutional relationships that would make for the interchange of patients, and the exchange of

medical professional personnel that does characterize a principal concern and broader interest of the regional medical programs.

It is true that the type of community within which we would expect to find the institutional, academic, and research capabilities that will go into these programs will in general be the larger communities.

RESEARCH FELLOWSHIPS

Mr. MICHEL. What is the maximum amount that we use in a year for the 27 proposed research fellowships?

Dr. PETERSON. These research fellowships usually are made through a specific allocation of funds to each. If they are predoctoral, it is about $5,000 plus $500 for each dependent. For a postdoctoral fellowship, that increases by about $3,000. So, the postdoctoral fellow gets about $8,000 plus $500 for each dependent. This is a standard award that is made to these applicants.

Mr. MICHEL. When you use the term "standard," to what standard are you referring? Who makes the standards?

Mr. CARDWELL. It is uniform.

Dr. PETERSON. Uniform would be a better term.

Mr. MICHEL. Following that up one step further, is that "uniform" in relation to other fellowships in allied fields, regardless of what department of Government may be involved?

Dr. PETERSON. Yes.

EFFECT OF RECENT HEALTH LEGISLATION ON WORKLOAD OF MEDICAL FACILITIES

Mr. MICHEL. Can you give us an idea of the increasing load new health legislation has created on our medical complex of hospitals, and so forth, or is that a volume in itself?

Dr. PETERSON. It is a fairly substantial volume. However, I think Dr. Cashman spoke briefly to this a while back. In terms of the program of titles 18 and 19 of the Social Security Act, the principal elements that are included in this, we have seen an increase in general in the neighborhood of about 5 to 10 percent above previous levels of 65-and-over patients in hospitals participating in the program. In those situations in which title 19 has been activated, I am not sure, Dr. Cashman, whether we have any accurate data as yet on the per diem occupancy rates.

Dr. CASHMAN. No, sir.

Mr. MICHEL. Before we leave your earlier point in what period of time has it risen 5 to 10 percent?

Dr. PETERSON. Since title 18 was activated, January a year ago.

Dr. CASHMAN. The percentage of over age 65 in the hospitals has gone up from the previous 25 to 30 percent, which was our prediction.

Mr. MICHEL. Looking ahead another year or 18 months, what do you foresee? That is assuming there are no additional changes other than what we have to digest right now.

Dr. PETERSON. I would personally expect very little change in the occupancy rate of title 18 beneficiaries, for several reasons. First, we will begin to see the effects of other methods and modes of treatment which will make it possible, by putting patients in home care situations

or in extended care facilities, to maintain levels of occupancy in hospitals that are not appreciably greater than at the present time.

The other fact is that I do not see, on the basis of our experience, that the backlog of unattended need as reflected in hospitalization has done more than give us our present levels of increase, and it ought now to be escalating only as the population who are beneficiaries escalate and utilize the plan. I would not anticipate significantly greater loads of patients in hospital care.

HOSPITAL COST INCREASES RELATED TO MEDICARE STANDARDS

Mr. MICHEL. Is there any way of estimating what hospital cost increases can be attributed to bringing them up to the standards required by medicare?

Dr. CASHMAN. I think as the Social Security Agency and the fiscal intermediaries deal with hospitals on an end-of-the-year audit basis, we will be able to see what it does cost to provide the quality of services specified in the program.

Mr. MICHEL. I will ask the question next year.

That is all, Mr. Chairman.

Mr. FLOOD. Mr. Casey.

AID FOR NURSING HOME FACILITIES

Mr. CASEY. Dr. Peterson, is there any Federal aid of any type, either low-interest loans or grants or what have you, for nursing home facilities?

Dr. PETERSON. To construct nursing home facilities?

Mr. CASEY. Or for their operation, either one.

Dr. PETERSON. For operation there is none except those funds that they receive as reimbursement in payment for patient care services provided to either State or Federal beneficiaries who are in their institutions.

Mr. CASEY. In other words, that would be under either medicare or welfare or related assistance?

Dr. PETERSON. That is correct.

Mr. KELLY. There are several forms of assistance for construction.

Mr. CASEY. There are several forms of assistance?

Dr. PETERSON. That is correct.

Mr. CASEY. Is that geared just to homes for the aged?

Dr. PETERSON. No, sir.

Mr. CASEY. It is not?

Dr. PETERSON. No, sir.

Mr. CASEY. Is that through Housing and Urban Development?

Dr. PETERSON. And Small Business Administration.

Mr. KELLY. And Hill-Burton.

Dr. PETERSON. Hill-Burton has grants directly to nonprofit institutions and agencies building nursing homes. However, for profit, proprietary homes that are not eligible for Hill-Burton receive low-interest loans form the Small Business Administration and HUD.

Mr. CASEY. In your experience, do you not find there to be quite a shortage of nursing homes for those who do not participate in welfare or old-age assistance or medicare?

Dr. PETERSON. There are areas of the country in which there are very serious shortages of beds in the nursing home, extended care, chronic disease, homes for the aged category. In some other areas, however, we are finding that actually they are beginning to feel that they are building close to the numbers of beds that are needed.

I think California, for example, is a State where they are feeling that private industry plus public building have now brought them very close to their estimated bed requirements.

Mr. CASEY. With reference to California, possibly the fact that they are participating heavily in the medicaide section might account for this generation of more nursing homes out there. Would you think that would contribute to it?

Dr. PETERSON. It might contribute somewhat. On the other hand, to build an acceptable, accreditable, certifiable facility would not be something that would probably have been thought of and constructed and put into operation since the passage of the social security amendments. These probably were initiated in the planning stage substantially prior to that legislation.

With reference to the overall national picture, there are about 658,000 long-term beds available in the Nation as a whole. Of these, about 418,000 are acceptable beds by State standards relating to structural or functional obsolescence. Estimates indicate the need for adding an additional 130,000 beds and modernizing or replacing another 188,000 beds.

Mr. CASEY. How about the cost? Is it becoming more reasonable? I say reasonable because my experience has been that when you found a decent place, it was pretty high for a man of ordinary income.

I am thinking of one particular instance in my hometown, a man who was a Federal employee, whose wife had encephalitis. She was in a coma for years. This man had drained his resources to the extent he was so deeply in debt that he finally just gave up and committed suicide. It drove him to that point. He had a good job, so he could not draw any welfare. There was no State fund or Federal fund to which he or his wife were entitled to help him bear this burden. Her condition was of such a nature that she was asleep all the time. He had her in one of the local hospitals. Of course, they kept urging that he find someplace else so as not to take up a hospital bed. He could not find any decent place to care for his wife for any reasonable amount.

Of course, I know that is an extreme case, but by the same token, I am sure there are other instances, and I was just wondering if there is some way to encourage someone to look after a person in that situation either through grant programs or what have you.

Dr. PETERSON. It is our feeling that patients who require this sort of care, hopefully, will be made eligible for support under the title 19 program of the social security amendments where long-term custodial care of a health nature is required. The title 18 program, the social insurance portion, may only provide for 100 days of care in a facility in which therapy or ongoing treatment is one of the essential needs of the patient, rather than just a maintenance level of health care and observation.

We look forward to the time when all States have activated their eligibility to participate in a title 19 program. The type of problem you have cited will be less prevalent then than at the present time.

Mr. CASEY. Dr. Jaslow, I understand, is here.

Dr. PETERSON. He is here.

DR. JASLOW COMMENDED BY TEXAS DEPARTMENT OF MENTAL HEALTH AND RETARDATION

Mr. CASEY. I have a glowing account of you, Dr. Jaslow, which I shall not fill the record with, but I assure you it is here, from Dr. Charles Barnett, who is Deputy Commissioner of the Texas Department of Mental Health and Mental Retardation. I should not say this is all about you. He has a paragraph or two about you, but most of this is boosting your request for appropriations. He assures me that it was not solicited by you; that it is on his own.

I wanted you to know that they in the Texas Department of Mental Health and Mental Retradation are deeply appreciative of the assistance they have received from you and the Department. Naturally, they look forward to more assistance and cooperation. They wanted you to know the assistance you have been giving them is not unappreciated. They have a pretty comprehensive program going on at the present time, which in my opinion is a great step toward better facilities and better treatment of the mentally retarded in my home State.

Dr. JASLOW. Thank you sir. Texas is developing a very dynamic program in mental retardation. Commendation by someone as highly respected and knowledgeable as Dr. Barnett is a great honor.

ADDITIONAL PERSONNEL FOR MEDICAL CARE ADMINISTRATION

Mr. CASEY. On page 26 you are asking for 44 new positions. Is this limited to the certification of the hospitals, laboratories, and extended care facilities?

Dr. PETERSON. Dr. Cashman would like to answer that.

Dr. CASHMAN. No, sir. We assisted in the initial certification activities and are continuing ongoing recertification to assure that various institutions and agencies maintain the standards.

The reason for the increase is to move ahead in two very important areas. One is the consultation role and the other is what we refer to as coordination, another part of the role of the State agency in the medicare program.

With regard to consultation, when the various institutions were surveyed a number of them were found to have serious deficiencies. A number of categories of certification were provided so that we could——

Mr. CASEY. I think you mentioned a while ago that you try to assist them to come up to the standards. I was wondering, if some of your previous work was tapering off on the initiation of the health insurance program, and why you need to increase the personnel by almost 20 percent.

Dr. CASHMAN. We need continuing attention to recertification at a given level of activity to move the program ahead. In order to take full advantage of the certification we need to assist the States as they

attempt to provide consultation to the individual providers of service so they will bring their facilities up to the standards that have been set.

Also, there is the opportunity now to try to get the most out of our health dollar and assure the most effective use of our health manpower and facilities through coordinating activities. It will take a number of people to work with the States in this regard. When you break down the 44 positions and see what they do and where they work, it really does not seem so tremendous. We are asking for 27 positions for our regional offices. We have nine regional offices, so this provides an average of three employees per regional office. We are requesting eight positions that we wish to assign to States to assist them in this regard. We have found State assignees have been very valuable in the medicare program. In those States where we had assignees the original certification went much smoother than in States with no assignees.

Then we will need nine positions for headquarters, to initiate this particular activity.

Mr. CASEY. How many of them are located here in the main office, and how many of them are outside in the States?

Dr. CASHMAN. Nine in headquarters and 35 in the field.

Mr. CASEY. I am talking of the total of 265 positions under "Medical care administration." As I understand it, the 44 you ask for will be mostly out in the field.

Dr. CASHMAN. We have about a 60-40 ratio. Sixty percent of our staff are at headquarters, and 40 percent in the field.

Dr. PETERSON. At the present time.

Mr. CASEY. These additional 44 would go in the field?

Dr. CASHMAN. Thirty-five of them would go in the field.

Mr. CASEY. That is all, Mr. Chairman.

ALLIED AGENCIES PROJECT IN PEORIA

Mr. MICHEL. Doctor, I wonder if you are aware of the $1.5 million of Federal grants through the Public Health Service which is now going into my home community of Peoria to establish an allied agencies project. One-third of the money will be raised locally. Within the next couple of weeks they will break ground on the new concept of bringing together under one roof, the mentally retarded, the crippled children, the cerebral palsied, cystic fibrosis, et cetera, to try to develop a community effort with shared facilities to bring down the costs.

I think it signaled something unique for the future. We are hoping for really good results to come from this.

I thought you ought to be aware of what we are doing. Up to this point it was started without any Federal or State money, but on our own. The only place we had to go was an old, dilapidated, condemned school to handle some 600 children in the Peoria area. Now at least we are getting assistance with the facility. From this point on, I am sure we will develop a tremendous program.

That is all, Mr. Chairman.

Mr. FLOOD. Thank you, gentlemen.

JUSTIFICATION MATERIAL

COMMUNITY HEALTH SERVICES

Amounts available for obligation

	1967	1968
Appropriation or estimate	$128,280,000	$64,448,000
Transfer from social security trust funds	3,512,000	4,075,000
Transfer to "Operating expenses, Public Building Services," General Services Administration (79 Stat. 531)	−324,000	
Comparative transfer from "Medical care service"	10,385,000	
Comparative transfer from "Chronic diseases and health of the aged"	[1] 6,302,000	
Comparative transfer from "Mental health research and services"	8,972,000	
Comparative transfer from "Hospital construction activities"	[2] 25,206,000	
Comparative transfers from other accounts for President's committee on "Mental retardation"	316,000	
Comparative transfer to "Comprehensive health planning and services"	−17,277,000	
Comparative transfer to "Health manpower"	−74,182,247	
Appropriation available from prior year	−27,055,753	
Total, comparable new obligational authority	64,134,000	68,523,000

[1] Excludes $630,343 unobligated balance brought forward.
[2] Excludes $7,810,344 net unobligated balance, brought forward.

Obligations by activity

	1967 estimate		1968 estimate		Increase or decrease	
	Positions	Amount	Positions	Amount	Positions	Amount
1. Medical care administration and community health:						
(a) Grants:						
(1) Research	------	$5,323,000	------	$7,958,000	------	+$2,635,000
(2) Fellowships	------	150,000	------	250,000	------	+100,000
(3) Training	------	500,000	------	800,000	------	+300,000
(4) Migrant health services	------	7,200,000	------	8,100,000	------	+900,000
(b) Direct operations	574	12,351,000	710	15,459,000	+136	+3,108,000
(1) Medical care administration programs	376	8,467,000	430	10,155,000	+54	+1,688,000
(2) Community health programs	198	3,884,000	280	5,304,000	+82	+1,420,000
Subtotal	574	25,524,000	710	32,567,000	+136	+7,043,000
2. Mental retardation:						
(a) Grants:						
(1) Research	------	53,000	------	126,000	------	+73,000
(2) Hospital improvement	------	8,972,000	------	8,972,000	------	------
(3) Construction:						
a. University affiliated	------	[1] 10,000,000	------	10,000,000	------	------
b. Community services facilities	------	[2] 15,000,000	------	15,000,000	------	------
(4) Mental retardation implementation grants	------	[3] 2,750,000	------	------	------	−2,750,000
(b) Direct operations	79	1,633,000	89	1,858,000	+10	+225,000
Subtotal	79	38,408,000	89	35,956,000	10	−2,452,000
Total obligations	653	63,932,000	799	68,523,000	+146	+4,591,000
Unobligated balance, reserve	------	202,000	------	------	------	−202,000
Total, comparable new obligational authority	653	64,134,000	799	68,523,000	+146	+4,389,000

[1] Excludes $8,256,209 unobligated balance available from 1966.
[2] Includes $445,865 net difference between unobligated balances beginning and end of 1967
[3] Excludes $630,343 unobligated balance available from 1966.

Obligations by object

		1967 estimate	1968 estimate	Increase or decrease
	Total number of permanent positions	653	799	+146
	Full-time equivalent of all other positions	21	21	
	Average number of all employees	584	689	+105
11	Personnel compensation:			
	Permanent positions	$5,716,000	$7,136,000	+$1,420,000
	Positions other than permanent	205,000	210,000	+5,000
	Other personnel compensation	26,000	27,000	+1,000
	Total personnel compensation	5,947,000	7,373,000	+1,426,000
12	Personnel benefits	632,000	742,000	+110,000
21	Travel and transportation of persons	882,000	1,022,000	+140,000
22	Transportation of things	79,000	95,000	+16,000
23	Rent, communications, and utilities	227,000	368,000	+141,000
24	Printing and reproduction	145,000	229,000	+84,000
25	Other services	523,000	629,000	+106,000
	Project contracts	4,819,000	6,048,000	+1,229,000
	Payment to "Public Health Service" management fund	475,000	507,000	+32,000
	Payment to "National Institutes of Health" management fund	16,000	16,000	
26	Supplies and materials	114,000	138,000	+24,000
31	Equipment	125,000	150,000	+25,000
41	Grants, subsidies, and contributions	58,388,687	51,206,000	−7,182,687
	Total obligations	[1] 72,372,687	68,523,000	−3,849,687

[1] Includes $8,440,687 net unobligated balance brought forward:

Construction grants	$7,810,344
Implementation grants	630,343

Summary of changes

1967 enacted appropriation	$128,280,000
Comparative transfers from—	
"Chronic diseases and health of the aged"	6,302,000
"Hospital construction activities"	25,206,000
"Mental health research and services"	8,972,000
"Medical care services"	10,385,000
Other accounts for President's Committee on Mental Retardation	316,000
Comparative transfers to—	
"Comprehensive health planning and services"	−17,277,000
"Health manpower education and utilization"	−74,182,247
Transferred from "Social security trust fund accounts"	3,512,000
Transferred to "Operating expenses, Public Buildings Service," General Services Administration (space rental)	−324,000
Appropriation available from prior year	−27,055,753
Unobligated balance, reserve	−202,000
1967 total estimated obligations	63,932,000
1968 estimated obligations	68,523,000
Total change	+4,591,000

	Base		Changes from base	
	Positions	Amount	Positions	Amount
INCREASES				
A. Built in: 1. Annualization of 73 new positions and program costs authorized in 1967				$463,000
B. Program:				
1. Medical care administration and community health:				
(a) Research grants		$5,323,000		2,635,000
(b) Research fellowships		150,000		100,000
(c) Research training grants		500,000		300,000
(d) Migrant health grants		7,200,000		900,000
(e) Health insurance operations	221	3,467,000	44	723,000
(f) Health economics	34	915,000	10	634,000
(g) Rural health program	3	155,000	67	814,000
(h) Initiation of family planning services program			15	500,000
(i) Pro rata share of Public Health Service management fund		408,000		32,000
2. Mental retardation;				
(a) Research grants		53,000		73,000
(b) President's Committee on Mental Retardation activities	7	316,000	10	281,000
Total program increases			146	6,992,000
DECREASES				
A. Nonrecurring items of equipment and program absorption to accommodate requirements for funding the President's Committee on Mentale Retardation				−98,000
B. 1 less day of pay in 1968 (261 days in 1967; 260 days in 1968)				−16,000
C. Mental retardation implementation grants		2,750,000		−2,750,000
Total decreases				−2,864,000
Total net changes requested			+146	+4,591,000

EXPLANATION OF CHANGES

1. Medical care administration and community health

Research grants.—An increase of $2,635,000 is requested which will provide for continued research to develop and put into actual practice new health service developments. The increase will provide for 10 additional continuation grants and 3 new grants above the 1967 level. In addition, the increase will support at least 3 centers for experimental research in the organization, delivery, and utilization of health services.

Research fellowships.—An increase of $100,000 is requested to provide for the award of approximately 27 fellowships in 1968 compared with about 18 in 1967.

Research training grants.—An increase of $300,000 is requested which will provide for an estimated five new grants in 1968.

Migrant health grants.—An increase of $900,000 is requested which will provide for approximately ten new projects and expansion of services available in current projects. In 1968, approximately 110 projects will be supported.

Health insurance operations.—An increase of $723,000 and 44 positions is requested to expand capabilities to assess and develop means of improving and coordinating medical care programs and strengthen the activities related to the professsional health aspects of the Health Insurance program.

Health economics.—An increase of $634,000 and 10 positions is requested for the expansion of the health economics program. The increase will provide for studies of the supply, demand, cost and use of health services in order to make economics a viable element in health programming.

Rural health program.—An increase of $814,000 and 67 positions is requested for expansion of a rural health program to provide improved health services to rural residents in cooperative pilot projects involving local communities. Rural health specialists will be assigned to ten selected States, and local community development health workers will be employed in two communities in each of these States.

Family planning services program.—An increase of $500,000 and 15 positions is requested to initiate a program directed toward organization and improvement of family planning services.

2. *Mental retardation*

Research grants.—An increase of $73,000 will provide for 2 new grants in the areas of efficient delivery of services and the interrelationship of mental retardation to other health disciplines.

President's Committee on Mental Retardation.—An increase of $281,000 and 10 positions is requested in 1968 to provide for adequate staffing of the President's Committee to carry out the functions described by President Johnson in his May 11, 1966, Executive Order establishing the President's Committee on Mental Retardation. Nonrecurring program costs of $56,000 result in a net increase of $225,000 for this activity in 1968.

Authorizing Legislation

Public Health Service Act

The legislative authority in section 301 of the Public Health Service Act which provides for the award of grants for research, research training, and fellowships is included in the section of the justifications under the tab, "Preamble Paragraph" in Volume V.

MIGRATORY WORKERS HEALTH SERVICES

SEC. 3. (a) Section 310 of the Public Health Service Act is amended by striking out "for the fiscal year ending June 30, 1963, the fiscal year ending June 30, 1964, and the fiscal year ending June 30, 1965, such sums, not to exceed $3,000,000 for any year, as may be necessary" and inserting in lieu thereof "not to exceed $7,000,000 for the fiscal year ending June 30, 1966, $8,000,000 for the fiscal year ending June 30, 1967, and $9,000,000 for the fiscal year ending June 30, 1968".

MENTAL HEALTH

SEC. 303. (a) In carrying out the purposes of section 301 with respect to mental health, the Surgeon General is authorized:

(1) to provide training and instruction and to establish and maintain traineeships, in accordance with the provisions of section 433(a);

(2) to make grants to State or local agencies, laboratories, and other public or nonprofit agencies and institutions, and to individuals for investigations, experiments, demonstrations, studies, and research projects with respect to the development of improved methods of diagnosing mental illness, and of care, treatment, and rehabilitation of the mentally ill, including grants to State agencies responsible for administration of State institutions for care, or care and treatment, of mentally ill persons for developing and establishing improved methods of operation and administration of such institutions.

(b) Grants under paragraph (2) of subsection (a) may be made only upon recommendation of the National Advisory Mental Health Council. Such grants may be paid in advance or by way of reimbursement, as may be determined by the Surgeon General; and shall be made on such conditions as the Surgeon General finds necessary.

PUBLIC LAW 88-164

TITLE I

*PART B—PROJECT GRANTS FOR CONSTRUCTION OF UNIVERSITY-AFFILIATED FACILITIES FOR THE MENTALLY RETARDED

AUTHORIZATION OF APPROPRIATIONS

SEC. 121. For the purpose of assisting in the construction of clinical facilities providing, as nearly as practicable, a full range of inpatient and outpatient services for the mentally retarded and facilities which will aid in demonstrating

*NOTE.—Extension of this authority is part of the Administration's 1968 legislative program. Ten million dollars is included for this purpose in the estimate.

provision of specialized services for the diagnosis and treatment, education, training, or care of the mentally retarded or in the clinical training of physicians and other specialized personnel needed for research, diagnosis and treatment, education, training, or care of the mentally retarded, there are authorized to be appropriated $5,000,000 for the fiscal year ending June 30, 1964, $7,500,000 for the fiscal year ending June 30, 1965, and $10,000,000 each for the fiscal year ending June 30, 1966, and the fiscal year ending June 30, 1967. The sums so appropriated shall be used for project grants for construction of public and other nonprofit facilities for the mentally retarded which are associated with a college or university.

PART C—GRANTS FOR CONSTRUCTION OF FACILITIES FOR THE MENTALLY RETARDED

AUTHORIZATION OF APPROPRIATIONS

SEC. 131. There are authorized to be appropriated, for grants for construction of public and other nonprofit facilities for the mentally retarded, $10,000,000 for the fiscal year ending June 30, 1965, $12,500,000 for the fiscal year ending June 30, 1966, $15,000,000 for the fiscal year ending June 30, 1967, and $30,000,000 for the fiscal year ending June 30, 1968.

TRANSFERRABILITY OF FUNDS

132(c) Upon the request of any State that a specified portion of its allotment under this part be added to the allotment of such State under Part A of title II, and upon (1) the simultaneous certification to the Secretary by the State agency designated as provided in the State plan approved under this part to the effect that it has afforded a reasonable opportunity to make applications for the portion so specified and there have been no approvable applications for such portion, or (2) a showing satisfactory to the Secretary that the need for the community mental health centers in such State is substantially greater than for the facilities for the mentally retarded, the Secretary shall, subject to such limitations as he may by regulations prescribe, promptly adjust the allotments of such State in accordance with such request and shall notify such State agency and the State agency designated under the State plan approved under part A of title II, and thereafter the allotments as so adjusted shall be deemed the State's allotments for purposes of this part and part A of title II.

TITLE II

COMMUNITY MENTAL HEALTH CENTERS ACT

TRANSFERRABILITY OF FUNDS

202(c) Upon the request of any State that a specified portion of its allotment under this part be added to the allotment of such State under part C of title I and upon (1) the simultaneous certification to the Secretary by the State agency designated as provided in the State plan approved under this part to the effect that it has afforded a reasonable opportunity to make applications for the portion so specified and there have been no approvable applications for such portion or (2) a showing satisfactory to the Secretary that the need for facilities for the mentally retarded in such State is substantially greater than for community mental health centers, the Secretary shall, subject to such limitations as he may by regulation prescribe, promptly adjust the allotments of such State in accordance with such request and shall notify such State agency and the State agency designated under the State plan approved under part C of title I, and thereafter the allotments as so adjusted shall be deemed the State's allotments for purposes of this part and part C of title I.

Explanation of transfers

	1967 estimate	1968 estimate	Purpose
Transfer from social security trust funds.	$3,512,000	$4,075,000	To implement Public Health Service functions related to title XVIII of the Social Security Act.
Transfer to "Operating expenses, Public Building Service," General Services Administration.	−324,000	----------	Transfer of rental costs for leased space.
Comparative transfer from "Medical care services"	10,385,000	----------	To fund medical care administration activities and other programs that are designed to improve community health.
"Chronic diseases":			
New obligational authority	5,671,657	----------	To fund adult health and aging and mental retardation programs with other community health oriented programs.
Unobligated balance	630,343	----------	
"Mental Health Research and Services."	8,972,000	----------	To fund mental retardation grants for hospital improvement and training with other mental retardation programs.
"Hospital Construction Activities":			
New obligational authority	17,395,656	----------	To fund mental retardation direct operations and construction grants with other mental retardation programs.
Unobligated balance	7,810,344	----------	
Other accounts for "President's Committee on Mental Retardation."	316,000	----------	To consolidate all mental retardation programs.
Comparative transfer to [1]—			
"Comprehensive Health Planning and Services."	−17,277,000	----------	To fund comprehensive health related programs in the new program created by Public Law 89-749.
'Health Manpower Educational Utilization":			
New obligational authority	−101,238,000	----------	To fund training programs for health personnel in 1 appropriation.
Forward financing	27,055,753	----------	

[1] Reflects the reorganization of the Public Health Service.

Community Health Services

General Statement

Consistent with the intent of the recent Public Health Service reorganization to bring together functionally related programs, this appropriation includes most of the health services programs previosuly funded in the "Community health practice and research" appropriation, the "Medical care services" appropriation, and the mental retardation programs previously financed from a variety of appropriations.

The appropriation is divided into two major program components: "Medical Care Administration and Community Health" and "Mental Retardation." The first component covers activities directed toward improving the quality, quantity, effectiveness, and availability of health and health protection services in all settings. It includes new approaches for planning and organizing for the delivery of health services in urban and rural areas. It also includes the provision of professional and technical backup to the Social Security Administration in its administration of Title XVIII of P.L. 89-97 (the Social Security Amendments of 1965). It serves as a focal point within the Public Health Service for drawing upon the many skills and resources needed to effectively implement the Medicare program. The Mental Retardation programs are primarily concerned with the planning, construction, development, operation and improvement of health and rehabilitation resources for the mentally retarded.

To carry out these activities, we are requesting a budget of 799 positions and $68,523,000. This represents an increase of 146 positions and $4,591,000 over 1967.

Medical Care Administration and Community Health

Research grants

1967 estimate	$5,323,000
1968 estimate	7,958,000
Increase	+2,635,000

Estimated grant requirements

	1967 estimate		1968 estimate		Increase	
	Number	Amount	Number	Amount	Number	Amount
1. Noncompeting continuations	46	$2,924,000	56	$4,337,000	+10	+$1,413,000
2. New grants	40	2,249,000	43	2,321,000	+3	+72,000
3. Research centers			3	1,000,000	+3	+1,000,000
4. Supplementals	(8)	150,000	(16)	300,000	+(8)	+150,000
Total	86	5,323,000	102	7,958,000	+16	+2,635,000

An increase of $2,635,000 is requested for support of community health and medical care research grants in 1968.

If all persons are to have available to them the health services they need, resources for providing the services must be brought more closely in line with demand. In order to shorten the time required to do this, we must find ways of more effectively using current resources. Some professional competencies are virtually untapped; others are needlessly squandered. Research on the organization and delivery of health and medical services could be one of the most promising means of developing methods to improve the quality and extend the availability of patient care.

With the amount requested, we would support about 43 new grants—many resulting from enactment of Medicare and other health legislation. Other grants will be in the area of community health planning, including the interrelationship of public and private resources. Problems peculiar to the organization and delivery of health services both in rural communities and large, rapidly developing urban areas will receive special emphasis. Other problems to receive attention are those involved in the provision of family planning services.

Current studies in these areas are illustrated by the following: One project has as its objective, exploration of the various ways in which a selected number of outpatient medical organizations combine high cost specialized resources (such as physicians) with lower cost more general purpose resources (such as paramedical personnel and specialized medical equipment). The project will be useful for determining the degree to which other resources are being successfully substituted for physician's time in providing outpatient medical care. A second project is examining operating public health services systems to determine what methods of organization and administration most significantly contribute to the effectiveness of local public health services. We are particularly interested in analyzing the relationship between specific community conditions and effective health service organization. This project should provide knowledge which will aid the public health administrator in planning and organizing more effective public health services. A third example is a project dealing with economic research in health within a framework of area wide planning for health care facilities. The project will provide information on the demand for medical care and where it is provided, factors affecting the supply of health care, and health and its relation to the economy. In particular, the long range value will be to develop accurate ways of measuring the economic effects of changes in the population's health levels and the costs and benefits of proposed health expenditures in various areas (hospitals, medical education, public health programs, etc.)

In 1968, one of our major goals will be to establish at least three centers for experimental research in the organization, utilization, and delivery of health services. Such centers would correspond to clinical research centers in the field of clinicial medicine. By supporting these centers, we will be obtaining highly competent research groups to concentrate on problems of planning and providing comprehensive medical care and community health services. The incentive of a center type grant enables the university to make commitments which can attract and retain top research personnel to work on these problems. In short, we are obtaining excellent research competency on a broad base, rather than a specific research project. The regular review mechanisms insure the technical competency and adequacy of the projects proposed under these center type grants. We propose to invest $1,000,000 in this program.

Research fellowships

1967 estimate	$150,000
1968 estimate	250,000
Increase	+100,000

Currently supported fellowships are directed at predoctoral training for those persons interested in pursuing careers in research on the organization and provision of health services. Individuals presently supported under this program are working in such areas as Planning for Community Health Needs, Geographic Distribution of Health Agencies, and development of Community Health and Welfare Services.

In 1967, approximately 18 predoctoral fellowships will be awarded. By 1968, we expect to award a number of postdoctoral fellowships as well. Approximately 9 additional fellowships will be supported by the increase of $100,000. A few of these fellowships will require one year support only, but most of them will require support for as much as 3 years.

The research fellowship program is intended to complement the well established pattern of research grants and research training grants which have proved so productive for other programs of the Public Health Service. Research fellowships consist of direct support to qualified individuals who enroll in health services related doctoral training programs. Success of the research program is dependent upon the availability of qualified investigators.

Research training grants

1967 estimate	$500,000
1968 estimate	800,000
Increase	+300,000

Estimated grant requirements

	1967 estimate		1968 estimate		Increase	
	Number	Amount	Number	Amount	Number	Amount
1. Noncompeting continuations	8	$500,000	8	$600,000	.....	+$100,000
2. New grants	.....	.....	5	200,000	+5	+200,000
Total	8	500,000	13	800,000	+5	+300,000

The short supply of well-trained research investigators equipped to deal with the special problems involved in research in public health practice, community health services, and medical care administration is the most critical factor in the advancement of such research. These grants serve to improve research training and support faculty to guide research training, in many critical health areas. For example, a current project underway at the University of Michigan deals with research training in public health administration. Another at Brandeis University in Massachusetts is training researchers to work on problems in medical sociology. The University of California is training researchers in the study of educational problems in public health.

If significant research breakthroughs are to be achieved in the improvement of health and medical care services in the community, we must develop and support increased research in this field. This training program could be a key to accelerating such accomplishments.

The increase of $300,000 in 1968 will make it possible to extend this training program to include five new projects.

Migrant health services

1967 estimate	$7,200,000
1968 estimate	8,100,000
Increase	+900,000

An increase of $900,000 is requested in 1968 to permit the initiation of an additional ten projects and expansion of the services projects currently in operation in order to provide more comprehensive care, including hospitalization, for migrant families. In 1967, approximately 100 projects in 37 States are being supported. These projects provide family health service clinics, nursing visits to families in migrant camps, health education and the services of sanitarians working with migrants and property owners. In addition to providing basic clinic services, housing and environmental conditions are upgraded and migrants are taught how better to care for themselves so that diseases and injuries are less likely to occur. Through a program initiated in 1967, a number of migrant health projects will be providing in-patient hospital care for migrant workers and their families.

We are constantly seeking new and more effective ways of providing needed health care for migrants. For example, projects in Texas and Florida now provide health services to the migrant before he sets out from his home base. This facilitates the detection and treatment of illness while it is easiest to reach him. These projects also carry on health education efforts to enable the migrant and his family to take better care of their health needs while they are away from home.

Migrant agricultural laborers and their families are among the most deprived groups in the nation. The purpose of this program is to raise the level of migrant health to that of the general population. At present only about 1 out of every 4 migrants is receiving health care at some time during the year through the migrant health program. Moreover, programs to provide needed hospital in-patient care for migrants have only recently been initiated. The increase requested for 1968 will enable positive progress toward this program's goal by: (1) increasing the number of migrants reached; (2) increasing the quality and quantity of out-patient care being received by migrants served by the program; and (3) increasing the current initial level of in-patient hospital care being provided to migrants through this program.

Direct operations

	1967 estimate		1968 estimate		Increase	
	Positions	Amount	Positions	Amount	Positions	Amount
Personnel compensation and benefits	574	$5,883,000	710	$7,302,000	+136	+$1,419,000
Other expenses		6,468,000		8,157,000		+1,689,000
Total	574	12,351,000	710	15,459,000	+136	+3,108,000
SUMMARY OF PROGRAM						
Medical care administration programs:						
(1) Health insurance operations	221	3,467,000	265	4,387,000	+44	920,000
(2) Standards and methods	24	1,223,000	24	1,242,000		+19,000
(3) Health economics	34	915,000	44	1,575,000	+10	+660,000
(4) Nursing home services	27	764,000	27	782,000		+18,000
(5) Home health services	22	637,000	22	662,000		+25,000
(6) Adult health protection	48	1,461,000	48	1,507,000		+46,000
Total	376	8,467,000	430	10,155,000	+54	+1,688,000
Community health programs:						
(1) State and urban health services	94	1,595,000	94	1,632,000		+37,000
(2) Health communications	37	1,032,000	37	1,046,000		+14,000
(3) Health services for migrant workers	50	787,000	50	811,000		+24,000
(4) Rural health	3	155,000	70	1,000,000	+67	+845,000
(5) Family planning services			15	500,000	+15	+500,000
(6) Physical fitness program	14	315,000	14	315,000		
Total	198	3,884,000	280	5,304,000	+82	+1,420,000
Total, direct operations	574	12,351,000	710	15,459,000	+136	+3,108,000

Medical Care Administration Programs

Health insurance operations

	1967 estimate	1968 estimate	Increase
Positions	221	265	+44
Amount	$3,467,000	$4,387,000	+$920,000

Certification by State agencies of hospitals, independent laboratories, extended care facilities, and home health agencies was initiated in 1966 and continued into 1967. The first recertifications, including those institutions presenting the most serious problems, will be underway before June 1967. The Division of Medical Care Administration has had a major role in this activity. Training and consultation have been and will continue to be provided to State agency personnel to prepare them for these tasks. Some personnel have been assigned to State agencies on a continuing basis. During the final weeks of the initial certification operations, additional personnel were assigned for short periods to State and regional offices to help meet the deadline. Regional office staffs reviewed State Agency recommendations and advised the Social Security Administration on certification decisions.

Throughout this period, the Division provided intensive consultation, particularly in the interpretation of the Conditions of Participation and how providers might correct deficiencies and expand and improve their services. Many small, non-accredited hospitals failed to meet certification requirements, and some were given a conditional certification calling for correction of deficiencies within a specified period of time. Principal problems were staffing patterns and qualifications of nurses, medical staff organization, inadequate record keeping and storage and dietary management. Pharmacy controls were often inadequate. Older structures were not able to meet the physical plant requirements, particularly in States with weak licensure programs. But, as a consequence of devising methods to meet the Conditions of Participation, many will improve the quality of care they provide. Some may be able to draw upon existing expertise or share services of specialists in such areas at pathology, radiology, nutrition, and medical records.

In the latter weeks of 1966, the Division began to compile a national inventory of hospitals, home health agencies, independent laboratories and extended care facilities, including their status under the Health Insurance Program. This basic information will be available soon and will be extremely useful in constructing regional and local community profiles, pin-pointing deficiencies of all providers and determining the nature and timing of program planning.

CERTIFICATION, CONSULTATION, COORDINATION

Ultimately, State agency operations will consist of what we have labeled the "Three C's"—certification, consultation, and coordination. Up to this point, the Division and the State agencies have concentrated primarily on the certification and consultation processes.

Our central office drafted the Conditions of Participation for hospitals, extended care facilities, home health agencies and independent laboratories in Medicare. We administered the supplemental grant appropriation to finance the establishment of new home health agencies and the upgrading of existing agencies that would not otherwise have been certifiable. We supported the recruitment and training of needed personnel, to staff the participating organizations. During this period, the regional offices worked intensively with State agencies in achieving understanding of this vast, complex and fast-moving undertaking. The States applied the Conditions of Participation to individual providers and concentrated on assuring that the Conditions were met or that consultation was instituted toward that end.

In 1968, State operations will continue on certification and consultation. The third function—coordination—will be receiving increased attention. Unless there is effective coordination of health services and resources, one of the most important promises of the Health Insurance for the Aged Program will not be fully realized. The Congress intended that the patient receive care of good quality in the most appropriate setting, and to that end, authorized a wide range

of benefits. Real coordination will mean (a) the best use of the health dollar (b) the most effective use of health manpower and facilities, and (c) the greatest opportunity for improvement in quality of care.

State agencies are charged with the responsibility and are given some financial support to coordinate Title XVIII with other health activities at the State level. There also are provisions, again backed by financial incentives, which will encourage coordination of services within communities. But coordination will not come easily and will require substantial support. There are not pat methods. Therefore, it is essential that alternative approaches be explored and that effective methods be devised if the implementation of these provisions is to result in vital working relationships between providers of services and agencies. To this end, the Division in 1968 will foster experiments, demonstrations, and studies, to obtain utilization and cost data under circumstances where there are no financial barriers to the use of home health and extended care services. These studies will cover persons of all ages.

In order to carry out these activities, we will require increases of 44 positions and $723,000 which will provide 27 positions for strengthening regional offices and providing them with the capability for working closely with State agencies, providers of service, and other community resources; 8 positions for assignment of professional health personnel to States and communities; and 9 positions for activities as described above in improving State agency operations, assistance to smaller hospitals in raising quality of care, and coordination of services. Included in the increase is $200,000 for contract studies and demonstrations. The estimate also includes $187,000 for built-in costs related to the annualization of 39 positions new in 1967 and $10,000 for the Division's pro-rata share of the Public Health Service management fund.

Standards and methods

	1967 estimate	1968 estimate	Increase
Positions	24	24	
Amount	$1,223,000	$1,242,000	+$19,000

Standards, such as those developed for Medicare, represent the single most effective method available to assure a constantly higher quality of medical care nationwide. Therefore, standards, per se, are or should be constantly under review and, where changed, should take reasonable account of the capabilities of providers of health services to comply with them. We believe the standards developed for Medicare during the last 18 months for hospitals, independent laboratories, home health agencies, and extended care facilities are reasonable. Although there is a tendency to set and keep standards at a minimal level in order to qualify an adequate number of providers, such standards do not preclude higher standards in those States whose stage of development exceeds that of other States. The ultimate goal, of course, would be a single set of standards set high enough to assure quality health services throughout the country. In 1968, we will continue to evaluate the effects of the Medicare standards. Special studies will be continued to see how satisfactory the standards are in assuring adequate care to patients, how existing standards should be modified, what additional standards are needed, and how standards affect utilization. Particular attention will be paid to relationships between standards established under Titles XVIII and XIX.

Responsibility for developing and evaluating Conditions of Participation for the Health Insurance Program leads to a natural concern with State licensure programs. To see how the two activities may be complementary, work will continue in 1968 on the relationships between licensure programs and the certification process. Independent laboratories offer an unusual developmental opportunity since so few States have licensing or improvement programs for such laboratories although they are widely used throughout the country. The Division will continue to work closely with the National Communicable Disease Control Center in this area. The Medicare program's requirement for "proficiency testing" (a continuing program of testing actual performance by sending test samples to laboratories), for laboratories with directors who are not fully qualified by education, offers an opportunity to State agencies to protect all patients from the hazards of inaccurate laboratory procedures.

Many State agencies will be sorely taxed to carry out their dual responsibilities for licensure and certification of institutions and agencies. Since the competency of their staffs varies widely, training programs will be promoted in order to meet this immediate problem. Studies to determine effective staffing patterns, work responsibilities, and expeditious ways for carrying out these responsibilities will be given priority.

The effect of the Medicare requirements on national voluntary standard-setting programs has been highly encouraging. For example, in developing the Medicare standards for non-accredited hospitals, the program used as a model the standards of the Joint Commission on Accreditation of Hospitals. The Joint Commission, which has long regarded its standards as minimal, now finds that it will be possible to up-grade its requirements, since the Federal government has now adopted these minimal standards for its programs. Similarly, the American Osteopathic Association, in order to gain acceptance of its hospital accreditation program by the Medicare program, has up-graded all its requirements to a point either equal to or exceeding the Medicare standards. This is the kind of relationship and partnership we hope will continue to develop between official and voluntary standard-setting activities.

ORGANIZATION OF SERVICES

To date, the Division has concentrated on standard-setting activities. Increasing attention is planned in 1968 for other areas of organization and administration which affect quality, cost and effectiveness of health services. Increasing numbers of people are receiving medical care in emergency rooms, outpatient clinics, and health centers. These ambulatory settings have not kept pace with the demands being placed upon them by the public. Moreover, outpatient clinics are becoming increasingly specialized, so that even in these organized settings, patients are shunted from one clinic to another with no central source responsible for coordinating the care or assuring continuity of services received. Improved organization and administrative practices are needed to assure that quality service is provided in these settings and that continuity of care is promoted. The Division is working with the American Hospital Association to encourage the focussing of attention, by hospital administrators, on this issue.

Another activity that will contribute to quality and continuity is the joint work with Lemuel Shattuck Hospital, Boston, to evaluate the effect of establishing an out-patient center to which general practitioners may bring their patients for a specialty work-up and consultation.

The importance of record systems in coordinating care for patients has led to arrangements with two large teaching hospitals to re-structure their out-patient record systems to increase their capability for this.

UTILIZATION REVIEW

The utilization review process, one of the prominent features of the Health Insurance Program, has considerable potential for improving quality and continuity of care and better utilization of all the resources providing service to beneficiaries. But much work is needed to realize the potential of utilization review which is not yet widely understood.

The requirements in the Health Insurance Program were drafted with the utmost flexibility permitted by law in order to encourage experimentation. The Division will encourage such experiments, evaluate their effectiveness, and make information about successful methods widely available. It will particularly emphasize community-wide and area wide plans in 1968. Several are already underway; notably, with the American Association of Homes for the Aged, the Montgomery County Medical Society in Maryland, and with the Genesee Valley Medical Foundation in New York State. The Foundation is the research arm of the medical societies of the 14-county area composing the Rochester Regional Hospital Council. It is developing procedures to be followed by local plans; is providing consultation to local medical, hospital, and nursing home groups; and in some instances will carry out the actual review process. Another experiment just getting underway is with the Hospital Utilization Project of Pittsburgh, long known for its pioneering work with hospitals, and now making its service available to extended care facilities.

Many small hospitals and almost all extended care facilities will need help in implementing utilization review plans. The Division will work intensively with

State agencies, fiscal intermediaries and professional associations and organizations such as the American Hospital Association, American Medical Association, American Nursing Home Association, American Association of Homes for the aged, and the Joint Commission on accreditation of Hospitals so that they too may provide the needed assistance. It will sponsor training sessions for institutional administrative staffs and fiscal intermediary staffs as well as State agency staffs.

Knowledge of the most effective ways of carrying out utilization review will be gained from the kinds of working relationships described above, and also through a research activity now being developed, in consultation with the Division, by the American Hospital Association.

An increase of $19,000 is requested for built-in costs relating to the annualization of 5 new positions in 1967.

Health economics

	1967 estimate	1968 estimate	Increase
Positions	34	44	+10
Amount	$915,000	$1,575,000	+$660,000

The American people and the entire health profession are concerned about the costs of health services. We are proposing a group of long-needed studies which will help us to understand better than ever before the economic factors affecting health costs, and how these factors may be brought to bear on recognized problem areas.

In 1968, specific studies will be directed at (a) the net additional cost of arranging and delivering truly comprehensive services which takes into account the hidden costs attributable to fragmentation and duplication of services and resulting inertia on the patient's part; (b) techniques for determining the current level of spending for health in the several States and relating it to measures of the States' fiscal capacity; and (c) determination of true costs in the health services industry contrasted with the charges made by providers of services and related to specific segments of the population paying them.

A saving to a tax-supported program or to a health insurance premium may actually only shift part of the cost to those least able to bear it; as a result, the same individuals may forego needed services that might have helped prevent larger outlays later. This way of looking at health programs and goals calls for cost-effectiveness study techniques whose value in the health field is now recognized.

DETERMINING THE COSTS OF COMPREHENSIVE CARE

A body of studies will be pursued to determine the net additional costs of arranging and providing comprehensive health services for the American people. One group of these studies will focus on costs of health institutions and relationships between costs and types of services provided. Included in this group will be the studies already underway related to nursing homes. Increased attention will be given to home health services.

One organizational pattern which has been proved successful as a means for relieving the heavy burden carried by physicians is group practice. Investigations of the economics of group practice, the cost and advantages of cooperative activities among prepaid group practices, and the optimum size and composition of staffs will be continued and the establishment of more groups will be encouraged. Technical assistance will be provided to the Department of Housing and Urban Development in connection with organizations contemplating the operation of group practice facilities and applying for mortgage loan insurance under P.L. 89–754, the Demonstration Cities and Metropolitan Development Act of 1966. We plan a stepped-up activity using our mechanisms of publications, contracts and technical assistance to be responsive to the mounting interest in the potentials of group practice to provide comprehensive care and reduce fragmentation of services. Part of our effort will go toward working with existing group practice plans in providing care to disadvantaged people and in broadening the scope of their services. The findings will have immediate applicability in other settings.

A pilot study of the cost of educating and training dentists, including the cost of establishing a dental practice, is underway. A series of producer cost studies modeled on this pilot will be undertaken.

DETERMINING SPENDING LEVELS IN STATES

As the States move ahead to carry out the "Comprehensive Health Planning and Public Health Services Amendments of 1966," one of the first requirements will be determination of the current level of spending for health within a State and the Federal, State, local and private resources channeled into this effort. Only with knowledge of these resources and the health services objectives of the myriad programs now in existence can planning for better use of existing health resources and projections of future needs proceed. We will develop methodologies for compiling such information by carrying out such an activity on a cooperative basis in one or more States. In this activity our inventory of providers of service will be an invaluable resource. To be most useful, the cooperative methodology studies should focus on a progressive industrial State where a wide variety of resources are channeled into health and a State where low income and lack of resources inhibit adequate health care for the population.

One of our major concerns in these studies will be the relationship of reimbursement to orderly investment of capital in health facilities. Another will be the design of reimbursement formulate that stimulate rather than inhibit efficient operation of our Nation's hospitals and nursing homes. The decision by the Congress that reimbursement under Titles XVIII and XIX shall be based on actual cost was a large forward step. We must find a way to help hospitals control costs without reducing the quality of care.

The studies of relationships between cost and type of service will be relevant to how spending levels in States are determined. It will be years, rather than months, before the full import to the economy of the methods of reimbursement used in connection with Medicare will be understood. Building upon activities of 1966 and 1967, we expect in 1968 to examine in depth the major components of cost and their influence upon providers of service and third party payors. Guidelines will be developed during 1968 for a formula which recognizes the joint and separate concerns of providers and public purchasers under Titles XVIII and XIX.

STUDIES OF HEALTH INSURANCE

Even though considerable strides have been made in removing economic barriers which deter people from obtaining health services, some remain. Some health services still are infrequently included as insurance benefits. Therefore, a major component of the program will continue to involve studies of voluntary health insurance. Emphasis will be placed upon coverage of comprehensive services, including psychiatric care. The results of these studies will provide reliable acturial data useful to health insurers in determining premium charges.

Studies already initiated point toward savings in dollars and manpower when appropriate alternatives to existing private health insurance benefits are included in the insurance. For example, making psychiatric services available by insuring them appears to reduce patient use of other kinds of doctors and of hospitals; and gets patients back on the job more rapidly. When nurses and social workers interpret a busy doctor's orders to chronically ill patients, the patients are more likely to understand and follow those orders; deterioration of condition is prevented with savings in hospital bills and physician time. The potential contributions of home health services and extended care facilities to reducing the total costs of an illness will be the subject of a series of studies in appropriate settings. The cost and benefits for third parties and for the economy of prompt initiation of rehabilitation will be analyzed through cooperative studies with the insurance industry. Fortunately, we are finding the health insurance industry increasingly receptive to working cooperatively with Government.

An increase of 10 health economic positions and $634,000 in new program will be required in 1968 to carry out these activities, including $525,000 for contract studies and investigations. The estimate also includes $26,000 for built-in costs relating to the annualization of 4 positions new in 1967.

Nursing home services

	1967 estimate	1968 estimate	Increase
Positions	27	27	
Amount	$764,000	$782,000	+$18,000

Nursing homes are becoming a more important element among our health care resources. Medicare has made this so. The mounting impact of chronic illness has made this so. The need for less expensive care facilities has made this so. The needs of our geriatric population—and their sons and daughters—have made this so. This trend is likely to continue, even to accelerate.

All kinds of nursing homes need help to assume their new role. For Medicare to work most effectively, there must be available to a community good extended care facilities to provide the full range of benefits. There also must be good working relationships between the hospitals and extended care facilities.

In moving forward its program to improve all kinds of homes providing nursing care, the Division first must concentrate upon those homes which could qualify as extended care facilities under Title XVIII. In working with potential extended care facilities, the Division must follow the priorities used in working with all health resources: first, to do what needs to be done to help homes qualify as extended care facilities; and second, to help them maintain and improve their services.

In 1967, bi-regional conferences were held to assist State agencies to prepare for certification of extended care facilities to participate in Medicare. Consultation and assistance were provided with respect to such problems as utilization review, transfer agreements, patient care policies, and staffing requirements. These will be followed up in 1968 with conferences on licensure, recertification and improving services to patients.

The Division continues to encourage the development of hospital-nursing home relationships. A community hospital which serves as the resource center for 15 nursing homes is receiving contract support and has provided a valuable prototype. An institute sponsored by this hospital was attended by administrators from 34 hospitals and 107 nursing homes. In 1967 and 1968, variations of this demonstration will be extended to additional hospitals and nursing homes in different geographic locations. Through this and other mechanisms, the Division will encourage increased physician interest in the direct care of nursing home patients and in patient care policy formulation.

Potential providers of extended care services under the Health Insurance Program already are aware of an acute shortage of the professional health personnel necessary to qualify under Medicare. The Division has initiated three pilot demonstrations for reactivating health personnel in order to help overcome this problem. The techniques and procedures developed through these demonstrations will assist national, State, and local agencies to recruit persons with needed skills from the inactive and retired health manpower pool.

The Division is sponsoring a series of short-term training programs to prepare professional health personnel including dietitians, pharmacists, nursing personnel, social workers and therapists, to work more effectively on a part-time or consultant basis with nursing homes and small hospitals. A training program for nursing home administrators has also been developed. This program, which has been tested at three university seminars attended by 150 administrators, will be made available in the coming year to State agencies.

Finally, we will continue to collect and analyze data on extended care facilities for the purpose of estimating future bed and personnel needs as well as program planning. This activity will be strengthened by the series of nursing home studies begun in 1966 and carried out in 1967 and 1968.

An increase of $18,000 is requested for built-in costs relating to the annualization of 5 new positions in 1967.

Home health services

	1967 estimate	1968 estimate	Increase
Positions	22	22	
Amount	$637,000	$662,000	+$25,000

During 1966 and 1967, a major emphasis of the Division program has been on accelerating the development of home health agencies and helping as many agencies as possible to qualify for participation in the Health Insurance for the Aged Program. Much has been accomplished through the formula grant program in assisting States in establishing and expanding home health programs and services.

The involvement of practicing physicians and their professional associations is essential to the effective growth and utilization of home health services. Working with the leading organizations of physicians and with national organizations sharing a community of interest in home care, the Division will support and help this partnership to carry out planned activities designed to produce, over the coming year, a body of physicians more aware than ever before of the advantages of supportive home health services, and a more substantial role for home health care in this Nation.

Yet the challenge in 1968 will be greater: namely, making progress in bringing to all areas home health services of good quality and in sufficient quantity. There are areas in which population groups live in localities not served by the resources of a nearby large city, in which personnel are not readily available, or in which there are too few persons to support a home health agency. Many of our cities do not yet have a single home health agency and some of the large cities do not have enough programs to meet the need. Staff activities during 1968 will be directed toward identifying improved administrative methods and successful patterns of service which can be adapted to these rural and urban communities. It is not enough that agencies simply exist in communities where the aged live; the agencies must be well enough staffed to provide all the service required by the people of all ages. They must be encouraged to improve the quality of services provided and it is in these areas that the activities will be concentrated in 1968.

The conditions which home health agencies must meet in order to participate in Medicare constitute the first set of national standards for home health services. Many agencies, especially smaller ones, will not know how to best implement or take advantage of these. The Division will assist them by making available operational tools. For example, it will collect and disseminate prototypes of written policies and record systems required in the Conditions of Participation. It will consider how best to carry out the required evaluation of the agency's program.

Efforts must continue to be made to see how non-professional personnel, such as home health aides, may be used appropriately and effectively and receive the required professional supervision. The need for supervision in the home is even greater than in hospital care, and it is more difficult to provide. The Public Health Service collaborated with the Office of Economic Opportunity and the Adminstration on Aging in 1966 and 1967 in developing a group of pilot training projects to train poor, older individuals to become home health aides. Special institutes were held for the project directors and chief training coordinators. Evaluation of the effectiveness of training activities is basic to revisions in the training program content for home health aides and development of national standards.

In order to increase the effectiveness of home health services, training opportunities for community planners, administrators and service personnel are needed. Seven training centers for home health and related services are in operation.

While already providing invaluable services, these centers are interested in further expanding their offerings. Applications for both long-term and short-term training grants from existing programs will be encouraged to the fullest to accomplish this. To supplement these mechanisms, the Division will continue to assist centers (1) to employ staff to plan, conduct and coordinate training activities and (2) to extend training opportunities to both professional and supporting personnel providing particularly out-of-hospital services.

Medical, nursing and social factors must be taken into account in selecting patients able to benefit from home health services. Also essential is the ability to discharge or promptly transfer patients to more suitable settings. One study, being carried out under contract, is directed toward developing a method for evaluating patient needs. Further study will be undertaken in order to develop a system of matching a patient's need for care to the levels of care available in the community.

Information, referral, and counselling services are essential if patients are to to referred most expeditiously to the setting appropriate for their care throughout the Nation. There were 75 identifiable programs carrying out this function in 1966. In 1967, the Division will publish an inventory of these programs. It also will explore the potential of these programs to serve as effective community planning agents. As a result of these efforts, guidelines as to the development, organization, staffing and utilization of these programs will be developed.

In 1968, the Division will continue to seek to stimulate additional work in these several areas.

An increase of $25,000 is requested for built-in costs relating to the annualization of 5 new positions in 1967.

Adult health protection

	1967 estimate	1968 estimate	Increase
Positions	48	48	
Amount	$1,461,000	$1,507,000	+$46,000

HEALTH PROTECTION

A project funded by the Public Health Service and conducted by the Kaiser Permanente Health Plan has demonstrated the feasibility of automating and computerizing tests and processes which provide indicators of the presence of asymptomatic chronic and other diseases in an individual.

This information provides the physician in advance of his examination of a patient with the laboratory data he needs to make his medical judgments. Included are significant indicators of heart diseases, cancer, kidney diseases, vision and hearing defects, chronic respiratory conditions, and several other abnormalities.

The large-scale use of such an automated system should eventually make feasible regular and comprehensive health appraisal for all our aging citizens. Such periodic health appraisal is the primary available key to the maintenance of health for this high-risk population. The early medical management of diseases, which early detection makes possible, can prevent or delay illness and disability. When compared to the high costs of treating long-term illness and disability discovered belatedly, dollars spent in early detection are a sound investment.

To provide experience in, and demonstrate, *community* application of the Kaiser Permanente multiphasic health testing program, small projects have been started in four large cities. Preliminary planning, equipping and staffing will be largely completed in 1967. During 1968 we will have the first opportunity to observe and tentatively appraise the actual provision of health protection services to significant numbers of people.

HEALTH COUNSELING

In Peoria, Illinois, Milwaukee, Wisconsin, and New Orleans, Louisiana, the Social Security Administration is cooperating with the Public Health Service in developing a method of positive health counseling for retirement benefit applicants. Preliminary evaluation indicates that counseling does motivate significant numbers of persons to begin programs of active health maintenance. During 1967, four additional projects will be started in other locations in order to gain experience with various other socioeconomic groups. Meaningful evaluation, based upon this broader and more representative experience, will begin in 1968. Particular attention will be given to studying the feasibility of using non-professional personnel as counselors.

EDUCATION

The 1967 educational program concentrates on developing specific courses in applied gerontology for practicing physicians. These courses, developed around specific disease processes or body systems, are designed for presentation in particular settings and for particular lengths of time.

During this period, three more Gerontology centers will be established in schools of continuing education. The 1968 program will be based on these activities. Detailed courses prepared in 1967 will be used in the Gerontology Centers, and monographs will be developed from the courses for experimental direct mailing to physicians. Under contract, short-term educational programs under the auspices of national organizations will be carried out in hospitals, medical society meetings, and the like. One or two productions suitable for educational or closed-circuit television will be planned.

An increase of $46,000 is requested for built-in costs relating to the annualization of 8 new positions in 1967.

Community Health Programs

State and urban health services

	1967 estimate	1968 estimate	Increase
Positions	94	94	
Amount	$1,595,000	$1,632,000	+$37,000

In 1968, State and Urban Health Services funds will provide continued support for intramural and directed contract studies, analyses and evaluations aimed at identifying gaps and weaknesses in current methods of planning for and providing health services. These studies will furnish the necessary tools with which States and communities can effectively implement and improve their planning and services programs. The knowledge and techniques to be developed under this program are essential to the continuing development of effective systems for the organization and delivery of health services throughout the nation.

Work presently underway in this program includes a joint effort by three Virginia cities to establish neighborhood health facilities. Another project involves consolidating a variety of basic data presently being gathered by a number of agencies in one city. This includes data on housing, income levels, education, disease, incidence, and traffic flow. Although these data could be very useful in developing and providing health services, there is usually no coordinated system for making it available in a timely and meaningful fashion. Development of an integrated information system will pinpoint health problems within the city and permit all agencies concerned to more effectively meet the health needs of the people.

A project is being initiated with a school district which will provide referral and counseling services to school children through an intensive school health referral program. The project will provide for after hours counseling of parents in their homes. We expect to demonstrate that for a relatively small investment, intensive referral and counseling services by qualified school nurses can significantly improve the success of efforts to obtain treatment for conditions disclosed during regular school health examinations.

An increase of $37,000 is requested for built-in costs relating to the annualization of 5 new positions in 1967.

Health communications

	1967 estimate	1968 estimate	Increase
Positions	37	37	
Amount	$1,032,000	$1,046,000	+$14,000

Health Communications programs are vital to the development of comprehensive public health services in communities throughout the nation, since such services often can be developed in a community only as citizens are made aware of the need and are stimulated to take effective action.

In 1966 and 1967, guidelines for community education and action to improve health services were and are being developed by an expert group. Initial efforts to field-test these guidelines in one community are planned for 1968. This model community action program will emphasize effective methods of developing broad professional and citizen participation in planning for, obtaining, supporting, and appropriately using comprehensive health services. This program will subsequently serve to train representatives of other communities.

In addition, several pilot projects in patient education using new educational techniques will be supported in 1968. We know, for example, that motion pictures have a much greater appeal and teaching potential than a simple pamphlet. A study will be made of the effectiveness of 8mm color sound film, in quick-load-

ing, non-rewind, cartridge viewing machines placed in waiting rooms for patients' free use. Evaluation studies will be carried out on the effectiveness of patient education in private physician's offices and in clinic waiting rooms, using programmed education techniques. These would include and compare the effectiveness of programmed text books of simple design and the use of teaching machines.

An increase of $14,000 is requested for built-in costs relating to the annualization of 2 new positions in 1967.

Health services for migrant workers

	1967 estimate	1968 estimate	Increase
Positions	50	50	
Amount	$787,000	$811,000	+$24,000

In 1968, the program of health services for migrant workers will continue to furnish technical consultation and assistance to migrant health project grants to improve the effectiveness and efficiency of their operations and provide coordination within and between project areas. The development of innovations, such as the use of health aides drawn from the migrant worker population to assist in local projects, will be fostered in projects, and studies to test their effectiveness will be made. Conferences and seminars of local project workers from different locations will be held to exchange ideas and information relating to similar problems and successful approaches to these problems. In addition, these meetings will promote coordination between the projects, identify vital research subject areas and qualified researchers, and develop improved systems and methods of identifying migrants and their migration patterns. A work group on migrant referral forms and systems comprised of selected project representatives will continue the evaluation of communication systems to improve continuity of health care along major migrant streams.

In-depth research on migrant housing needs, design and construction features, costs, and availability will be continued through contracts to help improve migrant housing conditions. The cooperative agreement with the Department of Agriculture in the field of short-term occupancy housing will be continued. In 1968, the demonstration stage of this project will be completed and evaluations of the acceptability of various test models will be initiated.

In addition, a contract will be initiated for a series of discussion-type health education films for use with migrant families to complement the series which is already available. This additional series will be geared to the problems of (1) accidents and safety, (2) prenatal and postnatal care, (3) communications and communicable disease control, and (4) utilization of health services.

An increase of $24,000 is required for built-in costs relating to the annualization of 5 new positions in 1967.

Rural health

	1967 estimate	1968 estimate	Increase
Positions	3	70	+67
Amount	$155,000	$1,000,000	+$845,000

In 1968, we are requesting an increase of $814,000 and 67 positions to implement the recommendations of the Rural Development Committee. This Committee, composed of Secretarial-level representatives from the various Federal agencies concerned with rural development, has charged the Public Health Service with responsibility for establishing a broad program of rural health pilot projects and for developing a National Rural Information and Communication Center. All of the work planned is based on a close working relationship with the Department of Agriculture and other interested agencies at both the Federal and local levels.

During 1967, the first year of funding for the rural health program, small rural health pilot projects will be started in two or three selected rural communities. In 1968, using knowledge and experience gained in 1967, we will begin

an expanded program of rural health pilot projects. Rural health specialists will be assigned to each of ten selected States, and local community development health workers will be employed in two communities in each of these States. This staff, in conjunction with representatives of the Department of Agriculture, will work with State and local groups in the development of programs to bring comprehensive health services to the people in rural areas. The rural health specialists and community development workers will be responsible for working with these State and local groups: (1) to see that the problems and needs of rural people are brought into broad State health planning programs; (2) to appraise general health needs of rural areas in the State; (3) to assist in the development of local community surveys of needs and resources; and (4) to devise rural health service improvement studies or demonstrations to be carried out under contract or grants.

In order to support the major effort undertaken in the pilot project field program, the 1968 request also provides for an essential headquarters staff with broad responsibility for program planning and development, technical assistance, program direction, interagency coordination of services, and program evaluation. The staff will assist in the initiation of individual pilot projects, coordinate their efforts, and assure that information and techniques found to be useful in one rural area are made available to projects in other areas. Staff members will furnish information, consultation, and evaluate project activities.

The proposed increase will provide an operating budget of $160,000 and 14 positions for the Rural Information and Communication Center. This program will initiate a variety of experimental approaches aimed at improving access to and use of information in selected rural areas. These Rural Information and Communication Centers will help to determine the kinds of health information rural people need and effective ways of providing this information.

An increase of $31,000 is requested for built-in costs relating to the annualization of 3 positions new in 1967 and a pro-rata share of the increase in the Public Health Service management fund.

Family planning services

	1967 estimate	1968 estimate	Increase
Positions		15	+15
Amount		$500,000	+$500,000

Family planning services offered through the individual or combined efforts of public, voluntary and private agencies need to be recognized and encouraged as an essential component of the total health services available in communities. Experience in family planning programs indicates that this service has broad socio-medical implications for the family through its effect on their utilization of other health services and general approach to health. Conversely, the provision of family planning services is facilitated by other community health programs which can serve as channels for participation in family planning programs.

The 15 positions and $500,000 proposed for 1968 are needed to initiate a program of family planning services. The first year emphasis in this program will be on evaluating the great variety of approaches now being used in providing family planning services. These include separate clinics, family planning as part of a comprehensive health program, and family planning tied to maternal care centers. To date, very little has been done to genuinely evaluate and compare these different approaches for effectiveness and efficiency. Such evaluation is essential in view of the demand for and probable increase in Federal and local monies that will go to provide such services in the next few years.

Our concern goes beyond the basic concept of giving assistance in planning family size. We plan to conduct epidemiological studies of the dynamics of the family, its dimensions and characteristics and the ecological significance of such factors in the provision and use of family planning services. A truly comprehensive program must address itself to related problems such as a reduction in the production of predictably defective infants. Current medical knowledge, if properly applied through a system of comprehensive family planning services, can significantly reduce the incidence of diabetes, mongoloidism, PKU-caused mental retardation, and other congenital disabilities in new born children.

Physical fitness program

	1967 estimate	1968 estimate	Increase
Positions	14	14	
Amount	$315,000	$315,000	

During 1968, the President's Council on Physical Fitness will devote its efforts largely to refining and strengthening those programs already developed. The Presidential Physical Fitness Awards Program will be continued, including annual revision, printing and distribution of official information and application forms. Promotions of this program will be undertaken through the schools and the communications media.

One national advertising campaign, coinciding with the beginning of the school year, will be carried out promoting the Presidential Physical Fitness Award. A second campaign, urging communities to open their school sports and recreation facilities for evening, weekend and summer use will be started in January and will continue through the spring. Both campaigns will be developed at a minimal cost to the government with substantial voluntary assistance.

Leadership training clinics for physical education and recreation personnel will be held to acquaint teachers, school administrators, youth serving groups, and recreation agencies with the latest information on physical fitness, new teaching methods and modern conditioning techniques.

The program will continue to publish and disseminate physical fitness information such as news releases and newsletters and will up-date and revise existing publications. New pamphlets and mailing pieces will be developed as new films, publications and other fitness aids become available.

The Council plans to develop a local action program supporting the campaign to open up school sports and recreation facilities to the public. The major cost of this program, as well as the time and effort required to promote the program in local communities, will be borne by volunteer non-Federal sources. The Council hopes to similarly multiply its financial and manpower resources with cooperative efforts in other areas.

Mental Retardation

Research grants

1967 estimate	$53,000
1968 estimate	126,000
Increase	+73,000

Estimated grant requirements

	1967 estimate		1968 estimate		Increase	
	Number	Amount	Number	Amount	Number	Amount
1. Noncompeting continuations	2	$53,000	2	$51,000		−$2,000
2. New grants			2	75,000	+2	+75,000
3. Supplementals						
Total	2	53,000	4	126,000	+2	+73,000

With the increasing emphasis being placed on Federal programs for the initiation and support of services for the mentally retarded, it is imperative that appropriate research activities be undertaken to improve the delivery of these services.

Research is needed to explore such areas as (1) the relationship between health programs which may include medical, dental, nursing, nutritional and social services and the various levels of mental retardation, and (2) the demon-

stration of more economical and efficient ways of providing and delivering services to the mentally retarded in various settings, such as care services in the home, homemaker services, day care centers, nursing homes, hospitals, information and referral centers and coordinating community care programs.

Hospital improvement grants

1967 estimate	$8,972,000
1968 estimate	8,972,000
Increase	----------

This program provides support for demonstrations of improved methods of care, treatment, and rehabilitation of the mentally retarded in State institutions and for inservice training for personnel who are employed in such institutions. Its objectives are to strengthen therapeutic services and improve the quality of patient care, and to increase the contributions that these insitutions can make as an integral part of the comprehensive community mental retardation programs of the future.

In 1967, approximately 100 grants are being awarded at a cost of approximately $6,790,000 for demonstration projects. The major emphasis of this activity is on improving treatment, training and rehabilitation programs for the severely retarded patient within the institution. The grants are also supporting alternatives to twenty-four hour hospitalization such as day care, and methods of coordinating hospital and community services to the patient and his family.

While the program is still too new for a formal assessment of its impact on patients, it is already clear that many of the severely retarded, custodial patients are responding positively to the new treatment programs. This response is raising expectancies of what can be accomplished with "Chronic" patients.

In 1967, approximately 100 grants are being awarded at a cost of approximately $2,182,000 for inservice training projects. The major emphasis of this activity is to increase on a continuing basis the effectiveness of available staff in residential facilities for the mentally retarded in order to translate rapidly increasing knowledge into improved service to people. Continuing education and on-the-job instruction are used in projects which focus on recreation techniques, self-help training, operant conditioning techniques, nursing care and other elements of the broad spectrum of residential care of the retarded.

The Hospital Inservice Training Program during the past two years has provided the impetus for intensive training for those involved in direct care of the mentally retarded.

Through this increase in knowledge and skills of the resident care personnel there has been an improvement in care and treatment of the mentally retarded residing in institutions. The Inservice Training Program has also provided an effective increase in skilled manpower in the area of mental retardation.

A total of $8,972,000, the same level as 1967, is requested for this two-pronged program.

Mental retardation facilities construction program

	1967 estimate	1968 estimate	Increase
Grants for construction of university affiliated facilities for the mentally retarded	$10,000,000	$10,000,000	----------
Grants for construction of facilities for the mentally retarded	15,000,000	15,000,000	----------
Total	25,000,000	25,000,000	----------

The "Mental Retardation Facilities Construction Act of 1963," provides a two-pronged approach to the construction of service facilities for the mentally retarded and authorizes the appropriation of funds for (a) project grants to assist in the construction of facilities for the mentally retarded which are associated with a college or university and (b) formula grants to assist public and other nonprofit agencies in the construction of community facilities for the men-

tally retarded. A total of $25,000,000, the same level as 1967, is requested for 1968 as indicated in the following:

1. *University affiliated facilities.*—To assist in the construction of public or other nonprofit facilities for the mentally retarded which are associated with a college or university, the amount of $10,000,000 is requested in 1968. This request is contingent on approval of the Congress of legislation to extend the present authority that expires on June 30, 1967. These facilities will provide a full range of inpatient and outpatient services for the mentally retarded and will provide the clinical basis for training specialized personnel needed for research, diagnosis, treatment, education, training or care of the mentally retarded, and demonstrating the advantages of specialized services for the diagnosis, treatment, education, training and care of the mentally retarded.

This program provides a basis for significant advances in improving the lot of our six million retarded citizens. Many of the highly specialized services required for some retarded can best be provided through a multi-disciplinary approach available at a university center. In addition, such centers can demonstrate provision of specialized services and provide clinical training for desperately needed specialized personnel. These facilities will thus meet a need in the area of mental retardation comparable to that of teaching hospitals for the area of health services in general. Large numbers of professional and technical personnel are needed for currently existing programs which serve the retarded, and the demand will increase dramatically as new community facilities are constructed. If such personnel are to be available, they must come, in large part, from training programs in these university affiliated facilities.

2. *Facilities for the mentally retarded.*—The other element of this program is concerned with the construction of public and other nonprofit facilities to house services for the mentally retarded. Support is provided for new construction, expansion, remodeling, replacement, and equipping of facilities which are essential to the diagnosis, treatment, education, training, and care of the mentally retarded.

Acute needs for such facilities exist in all States and Territories. The construction of modern and efficient facilities in appropriate areas of each State assists communities to bring the benefits of modern techniques of health care, education, and training and rehabilitation to the retarded. All but one State and three Territories have submitted State Plans under this program. Eighty-nine projects have been approved out of the funds appropriated for 1965 which expired in 1966. These projects will provide facilities to serve 11,000 retarded persons not now being served. The Federal share for these projects included $1,500,000 which some States transferred from their allotments for construction of mental health centers. States also demonstrated their support for this program by greatly exceeding the matching requirements for grant funds.

Funds appropriated for 1966 and 1967 which are currently being committed to aid in the construction of specific facilities will produce approximately 165 projects. The sum of $15,000,000 is requested for 1968 to provide for the construction of approximately 100 additional projects.

ALLOCATIONS TO STATES

For construction of facilities for the mentally retarded

	1966 appropriation	1967 estimate	1968 estimate
Total	$12,500,000	$15,000,000	$15,000,000
Alabama	267,293	326,343	326,343
Alaska	100,000	100,000	100,000
Arizona	100,000	124,887	124,887
Arkansas	152,880	189,256	189,256
California	909,633	1,140,987	1,140,987
Colorado	111,447	137,315	137,315
Connecticut	132,677	166,133	166,133
Delaware	100,000	100,000	100,000
District of Columbia	100,000	100,000	100,000
Florida	353,113	435,550	435,550
Georgia	309,649	379,889	379,889
Hawaii	100,000	100,000	100,000
Idaho	100,000	100,000	100,000
Illinois	530,223	659,859	659,859
Indiana	279,634	345,375	345,375
Iowa	166,108	200,689	200,689
Kansas	133,612	163,775	163,775
Kentucky	229,059	281,433	281,433
Louisiana	259,351	318,461	318,461
Maine	100,000	100,000	100,000
Maryland	185,584	231,865	231,865
Massachusetts	271,092	334,056	334,056
Michigan	469,420	564,869	564,869
Minnesota	212,793	263,026	263,026
Mississippi	208,880	254,504	254,504
Missouri	248,846	306,985	306,985
Montana	100,000	100,000	100,000
Nebraska	100,000	107,631	107,631
Nevada	100,000	100,000	100,000
New Hampshire	100,000	100,000	100,000
New Jersey	332,899	415,751	415,751
New Mexico	100,000	100,000	100,000
New York	864,369	1,065,512	1,065,512
North Carolina	352,524	430,665	430,665
North Dakota	100,000	100,000	100,000
Ohio	576,376	704,584	704,584
Oklahoma	161,757	197,792	197,792
Oregon	105,848	130,540	130,540
Pennsylvania	643,725	783,823	783,823
Rhode Island	100,000	100,000	100,000
South Carolina	205,093	249,547	249,547
South Dakota	100,000	100,000	100,000
Tennessee	275,074	338,956	338,956
Texas	675,876	835,110	835,110
Utah	100,000	100,000	100,000
Vermont	100,000	100,000	100,000
Virginia	286,803	348,642	348,642
Washington	167,909	202,890	202,890
West Virginia	125,993	153,634	153,634
Wisconsin	242,173	297,852	297,852
Wyoming	100,000	100,000	100,000
Guam	6,337	8,749	8,749
Puerto Rico	240,200	295,622	295,622
Virgin Islands	3,637	4,886	4,886
American Samoa	2,113	2,557	2,557

NOTE.—198 allocations are tentative pending receipt of revised population and per capita income data.

Direct operations

	1967 estimate		1968 estimate		Increase	
	Positions	Amount	Positions	Amount	Positions	Amount
Personnel compensation and benefits	79	$696,000	89	$813,000	+10	+$117,000
Other expenses	----	937,000	----	1,045,000	----	+108,000
Total	79	1,633,000	89	1,858,000	+10	+225,000

Direct operations

	1967 estimate	1968 estimate	Increase
Positions	79	89	+10
Amount	$1,633,000	$1,858,000	+$225,000

Mental retardation is a public health problem affecting an estimated three percent of the population, or about six million children and adults in the United States. Because of its chronic lifetime nature, mental retardation cuts across every aspect of American life, economic, legal, educational, social, and cultural. It affects and is affected by programs in housing, education, medical and behavioral research, employment, health, welfare and rehabilitation.

Specific problem areas to be considered include the extent of regional variations in the incidence and prevalence of mental retardation; promotion of optimum care for retardates of various levels, ages and degrees of physical handicap, with improved efficiency of generalized and specialized services to the mentally retarded; and to identify which of the various approaches will increase the resources available to serve the retarded. The problem of regional variation will be approached through the regional office placement of mental retardation specialists having competence appropriate to particular regional needs. The regional office staff has increased from five mental retardation specialists in 1966 to nine mental retardation specialists in 1967. Data obtained through analysis of the program of grants to States for planning comprehensive action to combat mental retardation will prove to be invaluable in defining the extent of need by State and region.

TECHNICAL ASSISTANCE

Consultation services are provided on request to State and local officials, voluntary health agencies, and educational institutions that wish to initiate, improve, or expand mental retardation services and activities. Non-government experts are also utilized, as appropriate, to provide consultation to outside agencies and to assist in national program evaluation. In 1967, staff competence was increased in scope through the addition of specialists in health education, recreation therapy, institutional administration, architecture and facility planning.

An activity which the Division has supported is the development of reference laboratory standards for phenylketonuria (PKU) tests which will serve as criteria for States involved in PKU testing programs.

PUBLIC AWARENESS

The increasingly longer lifespan of the mentally retarded, with its important implications for future care, makes it imperative that we continue to raise the general and professional awareness of this chronic condition and of what can be done to alleviate it. Recent Federal activity and the breadth of State planning in mental retardation ensure a favorable reception to information efforts. There will be an intensification of activities to inform professional and lay audiences about service and manpower needs and opportunities in mental retardation programs. Based on evaluation of content and utilization of materials currently available, new publications will be planned, developed, printed, distributed and evaluated. Other publications will be revised to incorporate new information or to enhance their effectiveness with target groups. There will be an increase in the development and utilization of exhibits which will increase professional awareness of the problem.

One of the most pressing problems in the field of mental retardation is the critical shortage of all types of professional personnel. One answer to the problem is to train subprofessionals, parents, and volunteers to perform tasks often done by professionals. The development of training tools to help subprofessionals learn these skills is of prime importance.

A project is being carried out by a firm that specializes in health training materials for the development of filmstrips as a training tool, titles of which are "toilet training" and "self feeding". One strip is a step-by-step guide describing the training principles involved in teaching these skills to the mentally retarded child. This strip is designed for persons handling only one

mentally retarded child at a time and is written for the use of parents with average intelligence.

The second filmstrip is designed for those who deal with groups of untrained mentally retarded children who might be in day care centers, nursing homes, or residential institutions. There are no other such films available.

The use of this tool, along with such techniques as group discussions, question and answer periods, reading lists, and practice sessions will prove to be invaluable to the mentally retarded child and his parents.

A film entitled "Handle With Care" has also been developed. This film is designed to demonstrate the utilization of newer types of community resources. Requests for showing this film are in excess of the 160 copies which we were able to provide. A comprehensive film on techniques of institutional services is under development.

PRESIDENT'S COMMITTEE ON MENTAL RETARDATION

The President's Committee on Mental Retardation functions in three principal areas: (1) the provision of advice and assistance to the President concerning mental retardation; (2) the mobilization of support for mental retardation activities by meeting with, and providing information for, appropriate professional organizations and groups broadly representative of the general public; and (3) the development of reports or recommendations to the President concerning mental retardation as may be required or deemed appropriate by the Committee.

The staff will be responsible for preparing and implementing a minimum of four full committee meetings, sixteen task force subcommittee meetings and six regional forums. Regional forums are planned to take place in six cities strategically located throughout the nation for the purpose of assessing the impact of mental retardation programs, gaps, impediments and progress as viewed by the citizens and professionals on the local scene. The second purpose is to provide for visibility and public awareness of the problem of mental retardation and productive efforts to combat it.

The Committee has organized itself into a steering committee and working groups. Relationships have been established with other agencies concerning joint projects, including planning for human services in new and rebuilt cities, as well as application of NASA's human development research findings to the field of mental retardation. The Committee also coordinates activities relating to mental retardation of the Departments of HEW and Labor, and the Office of Economic Opportunity.

The increase of 10 positions and $281,000 for the President's Committee on Mental Retardation, will provide for developing better public interest in the problems of the retarded in order to promote a climate of understanding on the part of the citizens concerning the retarded. This is offset by a decrease of $56,000 for non-recurring program costs.

New positions requested, fiscal year 1968

	Grade	Annual salary
MEDICAL CARE ADMINISTRATION PROGRAMS		
Health insurance operations:		
Medical officer (9)	GS–16	$180,675
Public health program specialist	GS–15	17,550
Public health program specialist (19)	GS–14	287,014
Public health program specialist	GS–12	10,927
Do	GS–11	9,221
Do	GS–9	7,696
Do	GS–7	6,451
Clerical assistant (11)	GS–6	64,537
Total (44 positions)		584,071
Health economics:		
Public health program specialist	GS–15	17,550
Do	GS–14	15,106
Public health program specialist (2)	GS–13	25,746
Public health program specialist	GS–12	10,927
Do	GS–11	9,221
Clerical assistant	GS–6	5,867
Clerical assistant (2)	GS–5	10,662
Clerical assistant	GS–4	4,776
Total (10 positions)		99,855
COMMUNITY HEALTH PROGRAMS		
Rural health:		
Chief of branch	GS–15	17,550
Public health program specialist (3)	GS–15	52,650
Assistant chief of branch	GS–14	15,106
Administrative officer	GS–14	15,106
Public health program specialist (2)	GS–14	30,212
Engineer	GS–14	15,106
Medical officer	GS–14	15,016
Nurse	GS–14	15,106
Medical staff assistant	GS–14	15,106
Public health program specialist (11)	GS–13	141,603
Public health program specialist (8)	GS–12	87,416
Public health program specialist (6)	GS–11	55,326
Public health program specialist (4)	GS–9	30,784
Public health program specialist (2)	GS–7	12,902
Clerical assistant (10)	GS–5	53,310
Clerical assistant (7)	GS–4	33,432
Clerical assistant (2)	GS–3	8,538
Commissioned officers:		
Senior grade		12,944
Full grade (2)		21,746
Senior assistant grade (2)		20,666
Total (67 positions)		669,715
FAMILY PLANNING SERVICES		
Public health program specialist (2)	GS–14	30,212
Do	GS–13	25,746
Public health program specialist	GS–12	10,927
Do	GS–9	7,696
Do	GS–7	6,451
Clerical assistant (3)	GS–5	15,993
Do	GS–4	14,328
Commissioned officers:		
Director grade		16,919
Full grade		10,873
Total (15 positions)		139,145
MENTAL RETARDATION		
President's Committee on Mental Retardation staff:		
Public health program specialist (2)	GS–14	30,212
Management analyst	GS–14	15,106
Public health program specialist	GS–13	12,873
Do	GS–12	10,927
Clerical assistant	GS–7	6,451
Do	GS–6	5,867
Do	GS–5	5,331
Do	GS–4	4,776
Do	GS–3	4,267
Total (10 positions)		95,810
Total, 146 new positions, all activities		1,588,596

WEDNESDAY, APRIL 5, 1967.

HOSPITALS AND MEDICAL CARE

WITNESSES

DR. JOHN J. WALSH, DIRECTOR, DIVISION OF DIRECT HEALTH SERVICES
DR. HOWARD D. FISHBURN, CHIEF MEDICAL OFFICER, COAST GUARD
DR. GORDON S. SIEGEL, DIRECTOR, DIVISION OF FEDERAL EMPLOYEE HEALTH
ANDREW J. CARDINAL, EXECUTIVE OFFICER, DIVISION OF DIRECT HEALTH SERVICES
DR. CARRUTH J. WAGNER, DIRECTOR, BUREAU OF HEALTH SERVICES
RALPH BAHN, FINANCIAL MANAGEMENT OFFICER, BUREAU OF HEALTH SERVICES
DR. WILLIAM H. STEWART, SURGEON GENERAL
G. R. CLAGUE, ACTING CHIEF FINANCE OFFICER
JAMES B. CARDWELL, DEPUTY ASSISTANT SECRETARY, BUDGET

Object classification

[In thousands of dollars]

		1966 actual	1967 estimate	1968 estimate
	Personnel compensation:			
11.1	Permanent positions	36,683	42,253	46,499
11.3	Positions other than permanent	624	619	619
11.5	Other personnel compensation	1,253	2,393	2,470
	Total personnel compensation	38,560	45,265	49,588
12.0	Personnel benefits	4,774	5,695	6,182
21.0	Travel and transportation of persons	563	526	555
22.0	Transportation of things	615	674	713
23.0	Rent, communications, and utilities	1,100	1,136	1,156
24.0	Printing and reproduction	190	191	230
25.1	Other services	3,137	3,568	4,005
	Project contracts	38	91	826
25.2	Services of other agencies	1,617	1,833	1,833
25.3	Payment to "Public Health Service management fund"	296	351	467
26.0	Supplies and materials	5,389	5,720	6,498
31.0	Equipment	2,637	2,075	2,382
41.0	Grants, subsidies, and contributions	1,485	1,492	1,564
42.0	Insurance claims and indemnities	33		
	Subtotal	60,434	68,527	75,999
95.0	Quarters and subsistence charges	−369	−368	−368
99.0	Total obligations	60,065	68,159	75,631

Personnel summary

[In thousands of dollars]

	1966 actual	1967 estimate	1968 estimate
Total number of permanent positions	5,969	6,296	6,871
Full-time equivalent of other positions	133	90	90
Average number of all employees	5,621	6,100	6,653
Average GS grade	5.7	5.8	5.9
Average GS salary	$6,637	$6,829	$6,982
Average salary of ungraded positions	$5,770	$5,958	$5,960

Program and financing

[In thousands of dollars]

		1966 actual	1967 est.	1968 est.
	Program by activities:			
	1. Inpatient and outpatient care	54,645	62,044	68,340
	2. Coast Guard medical services	1,818	1,995	2,211
	3. Federal employee occupational health and safety	1,174	1,835	2,795
	4. Personnel detailed to other agencies	288	1,085	1,085
	5. Payments to Hawaii	1,200	1,200	1,200
	Total program costs, funded [1]	59,125	68,159	75,631
	Change in selected resources [2]	940		
10	Total obligations	60,065	68,159	75,631
	Financing:			
	Receipts and reimbursements from:			
11	Administrative budget accounts	−8,710	−11,771	−11,227
14	Non-Federal sources (42 U.S.C. 221)	−539	−563	−553
16	Comparative transfers to other accounts	8,114	8,536	
25	Unobligated balance lapsing	39		
	New obligational authority	58,969	64,361	63,851
	New obligational authority:			
40	Appropriation	58,980	61,643	63,851
41	Transferred to "Office of the Surgeon General, salaries and expenses" (42 U.S.C. 226)	−11		
42	Transferred from "Office of the Surgeon General, salaries and expenses" (42 U.S.C. 226)		60	
43	Appropriation (adjusted)	58,969	61,703	63,851
44	Proposed supplemental for wage-board increases		348	
	Proposed supplemental for civilian pay act increases		1,970	
	Proposed supplemental for military pay act increases (uniformed personnel, nonmilitary)		340	
	Relation of obligations to expenditures:			
10	Total obligations	60,065	68,159	75,631
70	Receipts and other offsets (items 11-17)	−1,135	−3,798	−11,780
71	Obligations affecting expenditures	58,930	64,361	63,851
72	Obligated balance, start of year	2,528	4,173	7,653
74	Obligated balance, end of year	−4,173	−7,653	−12,968
77	Adjustments in expired accounts	−8		
81	Balance not available start of year	17		
90	Expenditures excluding pay increase supplementals	57,293	58,324	58,435
91	Expenditures from wage-board supplemental		335	13
	Expenditures from civilian pay act supplemental		1,882	88
	Expenditures from military pay act supplemental (uniformed personnel, nonmilitary)		340	

[1] Includes capital outlay as follows: 1966, $1,624,000; 1967, $2,075,000; 1968, $2,382,000.
[2] Selected resources as of June 30 are as follows:

	1965	1966 adjustments	1966	1967	1968
Stores	839		583	583	583
Unpaid undelivered orders	1,130	1	2,329	2,329	2,329
Total selected resources	1,969	1	2,912	2,912	2,912

Mr. FLOOD. We now have Dr. John J. Walsh, Director, of the Division of Direct Health Services, of the Public Health Service, who deals with hospitals and medical care.

BIOGRAPHICAL SKETCH OF PRINCIPAL WITNESS

We have a biographical sketch of Dr. Walsh which we will insert at this point in the record.

(The sketch follows:)

Name: John J. Walsh, M.D.
Position: Director, Division of Direct Health Services.
Birthplace and date: New York, New York, July 31, 1924.
Education:
State University of New York, College of Medicine, 1944–1948; M.D.
Tulane University Graduate School, 1960–1965 (Ph.D. Candidate, Pharm.).
Tulane University Graduate Business School, 1964–1965.
Experience:
Director, Division of Direct Health Services, 1966–Present.
Medical Officer in Charge, New Orleans PHS Hospital, 1964–1966.
Chief of Medicine, New Orleans PHS Hospital, 1963–1964.
Chief of Research Activities, New Orleans PHS Hospital, 1958–1964.
Fellow in Cardiology, Tulane Medical School, 1956–1958.
Deputy Chief of Medicine, New Orleans PHS Hospital, 1956.
Asst. Chief of Medicine, New Orleans PHS Hospital, 1954–1956.
Resident, Internal Medicine, Seattle PHS Hospital, 1951–1954.
Medical Officer, U.S. Coast Guard, 1949–1951.
Association memberships:
Diplomate, American Board of Internal Medicine.
Fellow:
American College of Physicians.
American College of Cardiology.
American College of Chest Physicians.
American College of Clinical Pharmacology & Chemotherapy.
Member:
American Association of University Professors.
American Thoracic Society.
National Tuberculosis Association.
Society of Nuclear Medicine.
American Medical Association.
Special awards, citations, or publications:
Recipient of USPHS Commendation Medal.
Plaque for Distinguished Services for the Louisiana Tuberculosis Association.
Author or Co-Author of approximately 50 publications.

General Statement

Mr. Flood. I see, Doctor, you have a statement, which I suppose you would like to read.

Dr. Walsh. Yes, Mr. Chairman.

In 1798, President John Adams signed an act "for the relief of sick and disabled seamen." This legislation established the Marine Hospital Service, which became the foundation on which the Public Health Service Division of Hospitals was built. Over the years, other beneficiary groups were added, such as, PHS commissioned officers and their dependents, Coast Guard personnel and their dependents, Environmental Science Services Administration officers and crewmembers, persons afflicted with leprosy, and Federal employees injured in line of duty. In addition to these beneficiary groups, medical services are furnished, on a reimbursable basis, to members of the Armed Forces and their dependents, under the dependents' medical care program; foreign seamen; certain beneficiaries from other agencies, including the State Department, Immigration and Naturalization Service, Maritime Administration, Veterans' Administration; and others. Provision is also made for reimbursement to the State of Hawaii for the care of patients afflicted with leprosy.

Effective January 1, 1967, the Division of Hospitals was renamed the Division of Direct Health Services, as part of the Public Health

Service reorganization. In conjunction with this change, the two psychiatric and drug addiction hospitals located at Fort Worth, Tex., and Lexington, Ky., were transferred to the newly established National Institute of Mental Health in its new bureau status.

Though the primary mission of this Division is to provide comprehensive health services to its beneficiaries, it also has responsibility for the training of health services personnel; conducting clinical and health services research; and participation in community health service programs. In essence, its broadened responsibility is in keeping with the recognition by many authorities, including the National Commission on Community Health Services, that the hospital is, and should be, the focal point for all health services. Too, it represents the realization that Federal institutions area programs are functionally part and parcel of their community counterparts and that it is the sum of all of these which constitutes the true community health resource. Categorical Federal programs and mission oriented Federal institutions must be brought into the mainstream of regional and community medicine.

With these precepts in mind, it is our intention to utilize, to the fullest, our national network of clinics and hospitals to provide professional and facility support to the newer components of our Division: medical rehabilitation, poison control, and emergency health services. The existing, close professional, academic, and community ties enjoyed by these field stations will be of invaluable assistance in permitting us to bring such direct health services to the public and to discharge our responsibilities in these vital areas.

The goals of the new Division are not limited to meeting expanded responsibilities. We propose, rather, to put increased emphasis on the content of our programs by directing our efforts toward improving the quality, quantity, and efficiency of those direct health services, which are the primary mission of the Division.

Here, we have unique opportunities. The relatively small, well coordinated body of 10 general hospitals, the Carville hospital, and the 28 outpatient clinics represents a fully manageable system for the development and installation of improvements in patient care, training of health services personnel, and research.

INPATIENT AND OUTPATIENT CARE

In support of these programs, the 1968 estimates propose four major improvements in the quality of care as a second step in the program of improvement initiated by the Congress in 1967. These are—

1. Increases in staffing ratios for inpatient care from 150 to 158 employees per hundred patients, for outpatient care in hospitals from .96 to 1.01 employees per thousand visits and an increase from .79 to .82 employees per thousand visits in the separate outpatient clinics. This increase will require 290 positions and $2,326,000.

2. An initial project for modernizing our method of furnishing care by installing a multiphasic screening unit at our Staten Island, N.Y., hospital. By utilizing automatic equipment and computer techniques, this unit will provide complete information

for the diagnosis of a patient's condition and for the development of health guidance to assist him in maintaining good health. The estimates provide 46 positions and $400,000 for this purpose.

3. The sum of $564,000 is requested to support our requirements for drugs and patient supplies. This addition is needed to achieve a level of support consistent with the need to treat our patients with modern drug therapy and also to replace supplies formerly obtained from Department of Defense surplus but no longer available because of increased activity in Vietnam.

4. Eight positions and $69,000 are requested to improve patient care at our Carville hospital.

TRAINING PROGRAMS

In the light of the nationwide shortage of health personnel, an increase in our training programs is a worthwhile contribution toward supplying the acute and growing need for medical and related skills. The present request continues the increase in the number of medical and dental interns and residents and provides for training in pharmacy, medical records, and X-ray and laboratory techniques. Outside specialty training, intramural specialty fellowships, and instructional personnel complete the requirement. The total need is 53 positions and $839,000. Appropriate weight has been given in our ratio calculations to the contribution that these personnel will make toward the direct care of patients. The stimulus of such programs, together with the cooperative gain that will come from our growing affiliation with medical, dental, and other health professions schools, is a necessary component of our program.

RESEARCH PROGRAMS

Our affiliations with universities are not limited to training. In the area of research, we have substantial collaborative programs at Baltimore, Md., New Orleans, La., and Seattle, Wash. Increasing cooperation is evident at all stations where proximity permits the development of these essential relationships. Improvement in this area, however, requires the ability to contribute increased skills to the joint effort in which particular emphasis will be placed on the development of more efficient methods to provide better patient care at the least cost. To this end, the estimates propose an increase in our research staff of eight positions at a cost of $118,000.

OTHER INCREASES IN INPATIENT AND OUTPATIENT CARE

A total increase of $272,000 will provide $150,000 for increased consultant services, $44,000 for a higher ration allowance to meet increasing food costs, and $78,000 for other miscellaneous changes. Finally, eight positions and $100,000 will supply added depth to the headquarters staff in the program planning and budgeting area.

The total increase, including built-in costs for the inpatient and outpatient care activity amounts to 417 positions and $6,476,000.

COAST GUARD MEDICAL SERVICES

This program provides medical services to the Coast Guard aboard their vessels and at their shore stations. The major problem of the

Coast Guard program is provision of adequate medical and dental care to personnel widely dispersed in numerous small units, many of which are geographically and medically isolated. Increased Coast Guard strength, expanded stations, additional icebreaker responsibilities, and the requirement to furnish a greater proportion of the dental needs of coastguardsmen require an increase of 14 positions and $216,000.

DIVISION OF FEDERAL EMPLOYEE OCCUPATIONAL HEALTH AND SAFETY

The Division of Federal Employee Health was activited on June 1, 1966, to meet the problems and needs arising in protecting the occupational health of the 2,700,000 Federal employees, and the work safety of some 40,000 Public Health Service personnel.

Congress, in 1946, passed Public Law 658, authorizing the establishment of Federal employee health services. This law holds the Public Health Service responsible for providing consultation, standards, and evaluation of Federal employee health programs and services. The law also authorizes agencies, after securing such consultation, to enter into contractual and reimbursable agreements for the provision of needed services.

The occupational health of the Federal labor force has become a direct and rising cost of "doing business." Work-injury loss among Federal employees currently costs the Government in excess of $41 million annually in direct expenditures. Thirty percent of Federal employee retirements are for health disability. The use of 20 million days of sick leave per year by Federal employees can be translated into disablement that brings discouragement, hardship, and loss of productivity.

In June 1965, the President stated before the Cabinet:

Private industry in the United States discovered long ago that a good employee health maintenance program is a paying proposition. The Federal Government has not kept up with the examples set by private employers. I want that situation to change.

The Division is now operating 57 employee health units, serving some 361 Federal agencies and activities and about 93,000 Federal workers. Requests are on hand to open 30 new health units serving an additional 50,000 employees. Several major agencies have requested evaluation of their internal, ongoing employee health programs.

The 1968 budget estimate reflects an increase of $960,000 and 144 positions to operate the requested 30 new health units. Of the increase, $838,000 and 135 positions will be financed through reimbursement mainly from other Federal agencies. The remainder of the increase, $122,000 and nine positions, is requested in appropriations. This will provide for augmentation of headquarters staff in financial management, statistics, safety engineering, industrial hygiene, and safety inspection.

The estimates for 1968 amount to a total of 6,871 positions and $75,631,000 of which $63,851,000 is needed in appropriated funds, while $11,780,000 will be supplied from reimbursements.

This concludes my statement on hospitals and medical care. I am available to answer questions and Admiral Fishburn, Chief Medical Officer of the Coast Guard, and Dr. Siegel, Director of the Division of Federal Employee Occupational Health and Safety, are present to respond to questions you may have regarding their programs.

SUMMARY OF BUDGET REQUEST FOR HOSPITALS AND MEDICAL CARE

Mr. FLOOD. The adjusted appropriation for 1967 is $67,979,000. The request for 1968 is $75,631,000. That is an increase of $7,652,000 and 575 positions, most of which seem to be for the improvement of services, although $957,000 is for mandatory, or pretty nearly mandatory, increases in costs.

Dr. WALSH. Yes, sir.

Mr. FLOOD. How much, if any, of this increase is tied directly to your estimated increase in patient load and how much is tied to improvement of services?

Dr. WALSH. I would say the vast majority is tied into improvement of patient services and improving the quality of care we provide.

Normally we anticipate approximately a 5-percent increase in outpatient load in the course of a year. Our inpatient load remains approximately the same or increases by a small percent.

The positions requested are primarily needed to bring our patient care staffing up to acceptable levels.

EMPLOYEE PATIENT RATIO

Mr. FLOOD. You have a table on page 78 showing the current employee patient ratio by category proposed for 1968 and your eventual goal.

Will you place at this point in the record that table, with columns added for 1964, 1965, 1966, and the current Veterans' Administration statistics?

(Information follows:)

Improvement of staff in the general hospitals and the separate out-patient clinics

Fiscal year	Hospitals [1]		Separate out-patient clinics
	Employees per 100 in-patients	Employees per 1,000 out-patient visits to hospital out-patient department	Employees per 1,000 out-patient visits
1964	144.4	0.94	0.82
1965	145.0	.91	.80
1966	142.3	.92	.80
1967	150.0	.96	.79
1968	158.0	1.01	.82
Goal	203.0	1.15	1.00

[1] Average length of stay: 18.3 days.

NOTE.—Comparable information for the Veterans' Administration for fiscal year 1967 is as follows:
1. Average of the 6 Veterans' Administration hospitals with a length of stay less than 22 days, ratio is 155.4.
2. Average of the 12 Veterans' Administration hospitals with a length of stay less than 23 days, ratio is 148.6.

METHODS FOR DETERMINING HOSPITAL STAFFING NEEDS

Mr. FLOOD. How did you arrive at the figures in the column representing your goal?

Dr. WALSH. These are based on comparable studies in community hospitals. I think it is important to emphasize that the ratios in com-

munity hospitals do not include physicians and dentists, while our ratios do.

Secondly, the 1966 estimate of similar ratios in community hospitals was approximately 250 per 100 inpatients, and there have been some indications this has exceeded 300-plus in some areas. We don't feel our needs are of exactly the same comparability.

Mr. FLOOD. How much would your current budget have to be increased to meet such a goal?

Dr. WALSH. If I might give some background on this, Mr. Chairman.

One of the very major problems in the provision of health services is that heretofore there has not been well established, well documented, and well accepted methods to determine staffing needs to provide health care.

In the last few years such methodology has been evolving in certain areas, particularly at the University of Michigan. More recently in California, Connecticut, and various other areas, agencies and organizations are trying to develop what they feel is a reasonable method to determine staffing needs. Certainly this is of extreme importance since in hospital practice within the government approximately 80 percent of a hospital budget is for personnel costs while in community hospitals it approximates 60 percent since physicians' costs are not included.

The end result of these efforts is that for the first time there are becoming available methodologies to determine what staffing should be provided for a hospital in order to provide adequate patient care.

I would like to emphasize that these are relatively dull and unsophisticated tools. This is their initial usage, and they will be refined with time.

However, with this as a background, we have worked with the University of Michigan and also with the Committee on Administrative Services to Hospitals of California, in applying their methodologies throughout our hospital system.

The methodologies are currently in use in five areas—dietetics, housekeeping, pharmacy, laundry, and nursing. Similar techniques are being developed for the remaining functional areas of the hospital.

We are applying these methods and comparing them since their approach is somewhat different.

More recently the University of Michigan has released a methology to determine staffing needs for medical records and for outpatient departments. We are familiarizing ourselves with their techniques prior to applying them to our hospital system.

Application of the five available methodologies to our system indicated a shortage of approximately 180 personnel in nursing, about 80 in housekeeping, about 80 in dietetics, 20 in pharmacy, while the laundries were judged to be adequately staffed.

There is a further important qualification. While this methodology demonstrated that we have currently 180 less nursing personnel than we should have, the methodology does not include other than general medical and surgical wards. It does not take into account the staffing needs for an obstetrical service or a pediatric service . It does not include the staffing needs for intensive care units nor postoperative recovery rooms. Therefore on the basis of this preliminary study we estimate that our total nursing personnel needs are in the range of 300 to 350 at this time without a projected increase in patient load.

COST OF MEETING STAFFING GOALS

Mr. FLOOD. How much would your current budget have to be increased to achieve such a goal?

Mr. BAHN. About $10 million to increase the employee/patient ratio from 150 to 203 in general hospitals.

EMERGENCY HEALTH SERVICES

Mr. FLOOD. What connection, if any, is there between the emergency health service budgeted under this appropriation and the emergency health activities handled by the Independent Offices Appropriations Subcommittee?

Dr. WALSH. Health Mobilization?

Mr. FLOOD. Yes.

Dr. WALSH. The emergency health services which are the charge of the Division of Health Mobilization are concerned with large numbers of people who are victims of a major industrial or natural disaster. Examples of this are the Texas City catastrophe, hurricanes, massive fires, et cetera.

Emergency health services within our program involves individuals such as the victim of an automobile accident, the patient who goes into acute heart failure at home, or the patient who following a routine operation develops an unexpected catastrophic complication in the hospital. We are concerned with all types of emergency medical care on an individual basis.

Mr. CARDWELL. Health Mobilization program is Civil Defense oriented whereas this is direct medical care oriented toward the beneficiaries of this program.

DEMONSTRATION PROJECT WITH UNIVERSITY OF NORTH CAROLINA

Mr. FLOOD. Tell us about that demonstration project you have under contract with the University of North Carolina.

Dr. WALSH. The present contract involves a first or planning phase, during which the University of North Carolina will develop a plan to evaluate certain aspects of emergency health services.

By using two relatively comparable stretches of road in North Carolina, the program will evaluate a 24-hour a day central communications center; a continuous flow surveillance emergency truck that will be driving up and down the roads; finally, they will bring in areawide response of various aspects of emergency health services, including helicopter and surface ambulance services, and so on. The program also provides for evaluating and improving these services.

MANUAL REVISION

Mr. FLOOD. On page 82 you say in 1967 you will finish a complete revision of the manual, "The Ship's Medicine Chest and First Aid at Sea." You are asking for an increase of $30,000 for printing in 1968 but I do not see where you have any minus for the cost of revising this in 1967.

Mr. BAHN. I don't think any money was spent on that. It was revised by some of the staff, each preparing several chapters. The basic cost is in the printing of the manual.

MULTIPHASIC SCREENING PROJECT AT STATEN ISLAND HOSPITAL

Mr. FLOOD. Give us a little detail on this new project, the project at the Staten Island Hospital. You are asking $400,000 and 46 people.

Dr. WALSH. As you know, the Kaiser Foundation has had a multiphasic screening program in the Oakland area for some time. This is really the only program of this type. It has been in operation several years.

Secondly, the value of multiphasic screening is not only in upgrading the quality, quantity, and the availability of care but in the economic advantages accruing from the operation.

However, all of the ramifications of its advantages have not been demonstrated.

Our feeling is that with the establishment of this program at Staten Island we will come up with what you might call a second, or maybe a third generation of the first multiphasic program.

Mr. FLOOD. When was this set up at Staten Island?

Dr. WALSH. It has not yet been established. We feel it is essential we establish it as soon as possible for many reasons. No. 1, the research data which will come out of it is important. No. 2, the demonstration and teaching aspects will recruit and develop the appreciation of many more physicians and health administrators in utilizing these techniques. Also by incorporating it into the hospital program a significant increase in the quality and quantity of care will result.

Mr. FLOOD. What will the future year costs be?

Dr. WALSH. It will cost approximately $1 million.

What we are planning is to go into a 70-hour week operation during the second year. On a 40-hour a week operation we can handle approximately 25,000 patients. On a 70-hour a week schedule we can handle 50,000 patients. This will reduce our unit costs for the laboratory work estimated to run close to $90 in private laboratories and hospitals.

On the 40-hour week schedule it will cost about $23. On the 70-hour week schedule it will cost about $19.

FEDERAL EMPLOYEE OCCUPATIONAL HEALTH AND SAFETY

Mr. FLOOD. There is a big increase for what you call Federal employee occupational health and safety. It is from $1,835,000 and 203 positions to $2,795,000 and 347 positions.

I realize that in this case there will generally be reimbursement from other agencies, but you might tell us something about it.

Dr. WALSH. I think Dr. Siegel, who directs that program, can give you more specifics.

Dr. SIEGEL. The Federal employee health program increase represents primarily an increase in requests from other Federal agencies for occupational health services. They arrange for these services on a reimbursable basis.

The direct portions of the increase represent headquarters staff to provide consultation to Federal agencies and also reflect the internal public health service safety program for our own employees which was transferred into this program as of last July 1.

Federal agencies, and Federal agency directors, have been stimulated by the Presidential interest in occupational health in Federal establishments and also by the increasing health aspects of job relationships within the Federal Government.

This has created a demand for occupational health services, a markedly accelerated demand within the past 18 months.

As an example of an agency need which is relatively new in this area, the Food and Drug Administration is now arming some 300 enforcement inspectors with weapons. This is a new personnel problem for this agency, so to speak. They are concerned with getting proper periodic health evaluations of this group and have turned to us for assistance, advice, and services in this area.

The bulk of the requested increase, then, is in reimbursable occupational health services for other Federal agencies. Nine positions are requested in the increase for direct operations in consultation, and particularly in improving the internal safety program of the Public Health Service.

The Public Health Service, like most Federal agencies, is having a problem in controlling safety dollar loss and personnel loss related to its own internal operations.

TREATMENT OF LEPROSY

Mr. FLOOD. You have a grant to Hawaii for treatment of those afflicted with leprosy.

Dr. WALSH. Yes, sir.

Mr. FLOOD. $1,200,000. That is the same as in 1967.

Dr. WALSH. Yes, sir.

Mr. FLOOD. Is that problem going down?

Dr. WALSH. Yes, it is. Their patient load is dropping. Unfortunately, as with other aspects of health care, personal services charges and medication charges continue to go up. The number of patients in Carville, the number in Hawaii, and the number of known patients in this country is steadily decreasing.

Mr. FLOOD. How much is Hawaii spending for the same thing?

Dr. WALSH. Approximately $400,000, I believe. Total is about $1.6 million.

COAST GUARD MEDICAL SERVICES

Mr. FLOOD. Do you want to say anything about this 10 percent increase for your outfit, Dr. Fishburn?

Dr. FISHBURN. This represents primarily new programs. That is about half of the increase. During the course of the last 2 years the Coast Guard has taken over the Navy icebreaking responsibilities and are now operating 10 icebreakers versus two previously.

We have a new air station at Mobile, Ala., which required medical staffing.

The new base which was taken over was manned with only a skeleton staff last year. The request this year represents completion of that staffing. The phasing in will be completed during this fiscal year.

Mr. FLOOD. What part of the island do you occupy?

Dr. FISHBURN. The entire island. The 1st Army Headquarters there was moved to Fort Meade. The Coast Guard took over and is concentrating all of its New York City area activity on Governor's Island.

Mr. FLOOD. You are fortunate to have it.

Dr. FISHBURN. It may be. There are a lot of problems connected with it, also. The housing was the real plum for the whole thing. I think there are 553 sets of quarters existing with space available for more. Housing, particularly for the low income group and enlisted men, was a great problem in the New York area.

Mr. FLOOD. Do you feel you want to add anything on this Coast Guard increase?

Dr. FISHBURN. The Coast Guard is a military organization. We do have southeast Asia responsibilities, and some of those are appearing without previous planning.

Mr. FLOOD. Thank you, gentlemen.

JUSTIFICATION MATERIAL

Hospitals and Medical Care

Amounts available for obligation

	1967	1968
Appropriation	$61,643,000	$63,851,000
Transfer from "Office of the Surgeon General, salaries and expenses" (42 U.S.C. 226)	60,000	
Comparative transfer to "Mental health research and services"	[1]—7,846,000	
Comparative transfers from:		
"Chronic diseases"	171,000	
"Injury control"	539,000	
Proposed supplemental for:		
Wage board pay increases	348,000	
Civilian pay increases	1,790,000	
Military pay increases	340,000	
Advances and reimbursements from:		
Other accounts	10,384,000	11,227,000
Non-Federal sources	550,000	553,000
Total	67,979,000	75,631,000

[1] Excludes reimbursements of $1,400,000 in 1967.

Obligations by activity

	1967 estimate		1968 estimate		Increase or decrease	
	Positions	Amount	Positions	Amount	Positions	Amount
Inpatient and outpatient care	5,896	$61,864,000	6,313	$68,340,000	+417	+$6,476,000
Coast Guard medical services	125	1,995,000	139	2,211,000	+14	+216,000
Federal employee occupational health and safety	203	1,835,000	347	2,795,000	+144	+960,000
Personnel detailed to other agencies	72	1,085,000	72	1,085,000		
Payments to Hawaii		1,200,000		1,200,000		
Total	6,296	67,979,000	6,871	75,631,000	+575	+7,652,000

Obligations by object

	1967 estimate	1968 estimate	Increase or decrease
Total number of permanent positions	6,296	6,871	+575
Full-time equivalent of all other positions	90	90	
Average number of all employees	6,100	6,653	+553
11 Personnel compensation:			
Permanent positions	$42,253,000	$46,499,000	+$4,246,000
Positions other than permanent	619,000	619,000	
Other personnel compensation	2,213,000	2,470,000	+257,000
Total personnel compensation	45,085,000	49,588,000	+4,503,000
12 Personnel benefits	5,605,000	6,182,000	+577,000
21 Travel and transportation of persons	526,000	555,000	+29,000
22 Transportation of things	674,000	713,000	+39,000
23 Rent, communications, and utilities	1,136,000	1,156,000	+20,000
24 Printing and reproduction	191,000	230,000	+39,000
25 Other services	3,568,000	4,005,000	+437,000
Project contracts	91,000	826,000	+735,000
Services of other agencies	1,833,000	1,833,000	
Payment to Public Health Service management fund	351,000	467,000	+116,000
26 Supplies and materials	5,720,000	6,498,000	+778,000
31 Equipment	2,075,000	2,382,000	+307,000
41 Grants, subsidies, and contributions	1,492,000	1,564,000	+72,000
Subtotal	68,347,000	75,999,000	+7,652,000
Deduct quarters and subsistence charges	−368,000	−368,000	
Total obligations by object	67,979,000	75,631,000	+7,652,000

Summary of changes

1967 enacted appropriation	$61,643,000
Proposed supplementals:	
Wage board pay increases	348,000
Civilian pay increases	1,790,000
Military pay increases	340,000
Comparative transfer to "Mental Health Research and Services"	−7,846,000
Comparative transfers from—	
"Chronic Diseases"	171,000
"Injury Control"	539,000
Transferred from "Office of the Surgeon General, salaries and expenses" (42 U.S.C. 226)	60,000
1967 estimated reimbursements	10,934,000
Total estimated obligations, 1967	67,979,000
1968 appropriation estimate	63,851,000
1968 estimated reimbursements	11,780,000
1968 estimated obligations	75,631,000
Total change	+7,652,000

	Base		Changes from base	
	Positions	Amount	Positions	Amount
INCREASES				
A. Built-in:				
1. Annualization of new positions authorized in 1967				$228,000
2. Net additional cost of within grades ($186,000), incentive pay increases ($58,000) and reclassification increases ($137,000) (in-patient and out-patient care)				381,000
3. Social security contributions				7,000
In-patient and out-patient care $6,000				
Coast Guard medical services 1,000				
4. Annualization of 1967 wage board increases				161,000
5. Annualization of pay act increases				180,000
B. Program:				
1. Staffing for general hospitals	4,400	$33,870,000	254	2,044,000
2. Staffing for out-patient clinics	542	4,116,000	36	282,000
3. Improvement of training program	199	2,283,000	53	839,000
4. Direct research program	77	818,000	8	118,000
5. Supplies		3,005,000		564,000
6. Outpatient offices		661,000		56,000
7. Subsistence costs		1,166,000		44,000
8. Carville hospital staffing improvement	291	2,432,000	8	69,000
9. Consultant costs		1,019,000		150,000
10. Headquarters staff	87	1,031,000	8	100,000
11. Printing costs				30,000
12. Initiation of a program for the personalized health services project (multiphasic screening project at the State Island hospital)			46	400,000
13. Poison control research projects	11	387,000		72,000
14. Expansion of the emergency health services program	7	152,000	4	803,000
15. Cytopathological functions				67,000
16. PHS management fund	26	351,000		112,000
17. Coast Guard medical services program	125	1,995,000	14	215,000
18. Federal employee occupational health and safety program	203	1,835,000	144	738,000
Total, program increases			575	6,703,000
DECREASES				
A. Adjustment for increased reimbursements				−8,000
Total, decreases				−8,000
Total net changes requested			+575	+7,652,000

EXPLANATION OF CHANGES

General hospitals staffing.—An increase of $2,044,000 and 254 positions is requested to provide for improved inpatient and outpatient care in the general hospitals. This will increase the staffing ratios for inpatient care from 150 to 158 per hundred patients and for outpatient care in hospitals from .96 to 1.01 employees per thousand visits.

Clinic staffing.—An increase of $282,000 and 36 positions is requested to provide for increased outpatient visits and improved patient care in outpatient clinics. This will increase the staffing ratio from .79 to .82 employees per thousand visits in the separate outpatient clinics.

Training program.—An increase of $839,000 and 53 positions is requested to expand the internship and residency training program (16 positions and $266,000) and for instructional personnel, training of auxiliary persons, outside training, and Post Doctoral fellowships (37 positions and $573,000).

Research.—An increase of $118,000 and 8 positions is requested to continue our buildup of research competencies with special emphasis on a team approach to clinical and health services research.

Supplies.—An increase of $564,000 for supplies will help bring our supply support in line with our requirements.

Outpatient office costs.—The increase of $56,000 will provide for annualization of rate increase for fee basis schedules in certain states and the increase in visits to our outpatient offices.

Subsistence.—The increase of $44,000 will permit an increase in unit ration allowance of four cents in the general hospitals and five cents in the Carville hospital.

Carville Hospital.—An increase of $69,000 and 8 positions is requested to improve patient care at Carville.

Consultant costs.—The increase of $150,000 in the consultant area represents a step toward achieving comparability with other Federal and State fee schedules.

Headquarters.—An incarease of $100,000 and 8 positions will provide staff capability to meet the demands generated by the planning-programming-budgeting system being instituted in the Service, Department, and Governmentwide.

Printing costs.—The increase of $30,000 will provide funds for the initial printing of the revised publication of "The Ship's Medicine Chest and First Aid at Sea".

Personalized health services projects.—The increase of $400,000 and 46 positions will provide for the initiation of a multiphasic screening program at the Staten Island Public Health Service Hospital.

Poison control projects.—An increase of $72,000 is for one new research grant in 1968.

Emergency health services.—The increase of $803,000 in the Emergency Health Services program is primarily for project contracts. It will also provide 4 additional positions.

Cytopathological functions.—The increase of $67,000 is requested to carry on the cytopathological functions performed by the Division of Chronic Diseases in previous years.

Public Health Service management fund.—An increase of $112,000 will support this Division's pro rata share of the costs of Bureau management services.

Coast Guard medical services.—The increase of $215,000 and 14 positions will provide increased medical and dental support for expanded and relocated facilities and for increased workload for the Coast Guard operation.

Federal employee occupational health and safety.—An increase of 9 positions and $100,000 in appropriated funds will provide for augmentation of Headquarters' staff in financial management statistics, safety engineering, industrial hygiene, and safety inspection. A further increase of 135 positions and $638,000 will be in reimbursable funds to operate 30 new health units for Federal employees requested by their agencies.

AUTHORIZING LEGISLATION

Research grants

The legislative authority in section 301 of the Public Health Service Act which provides for the award of grants for research is included in the section of the justifications under the tab, "Preamble Paragraph" in Volume V.

Lepers

SEC. 331. * * * When so provided in appropriations available for any fiscal year year for the maintenance of hospitals of the Service the Surgeon General is authorized and directed to make payments to the Board of Health of Hawaii for the care and treatment in its facilities of persons afflicted with leprosy at a per diem rate, determined from time to time by the Surgeon General, which shall, subject to the availability of appropriations, be approximately equal to the per diem operating cost per patient of such facilities, except that such per diem rate shall not be greater than the comparable per diem operating cost per patient at the National Leprosarium, Carville, Louisiana.

Explanation of transfers [1]

	1967 estimate	Purpose
Transfer from "Office of the Surgeon General, salaries and expenses".	$60,000	Transfer of safety function formerly under the Division of Administrative Services to the Division of Federal Employee Occupational Health and Safety, under authority of 42 U.S.C. 226.
Comparative transfers from—		
"Chronic diseases"	171,000	To fund rehabilitation medicine program which will now be operated by this division.
"Injury control"	539,000	To fund emergency health services and poison control programs which will now be operated by this division.
Comparative transfer to "Mental health research and services".	[2] 7,846,000	Transfer of responsibility for the operation of the Fort Worth and Lexington psychiatric hospitals to the National Institute of Mental Health in connection with the reorganization of PHS.

[1] Reflects the reorganization of the Public Health Service.
[2] Excludes $1,400,000 in reimbursements.

INTRODUCTION

The 1968 estimates for "Hospitals and Medical Care" continue improvement of the programs of the Division of Direct Health Services in the areas of patient care, research, training and recruitment and community health activities.

Three community oriented programs, formerly operated by the Bureau of State Services, were brought into this Division as the result of the Public Health Service reorganization. The relocation of these programs, Rehabilitation Medicine, Emergency Health Services, and Poison Control, is in keeping with the recognition by many authorities, including the National Commission on Community Health Services, that the hospital is and should be the focal point for health services. Other planned improvements include strengthening the health care programs which serve our beneficiaries, expansion of ongoing clinical research studies, implementation of health services research directed to the development of more efficient and more economical methods for the delivery of health care, and finally, fuller utilization of our training potential in order to make available greater numbers of well qualified health services personnel in all categories for the Service and other Federal agencies.

In 1965, a distinguished committee, appointed by the Office of Science and Technology and chaired by Bethuel M. Webster, made a study of the Public Health Service general hospitals and recommended that they be significantly strengthened.

The Webster Committee report called for expansion of the mission and goals of the Division. The Committee's principal recommendations provided for—

(1) Operation of the general hospitals with greater emphasis on and expansion of direct patient care activities, training, research, and recruitment;

(2) Modernization of facilities to provide a suitable environment for the functions to be performed;

(3) The addition of and strengthening of training programs in sciences and services basic to medicine with increased participation and affiliation with universities and community health agencies.

As a result of this committee's report, a restatement of the goals of this hospital system provided for an orderly progress toward staffing, supplying,

equipping and modernizing these hospitals to the point where they would be "models of excellence." In accordance with this revised goal the 1967 budget provided a definite increase in the ratio of employees to inpatient and outpatient workload and provided funds to strengthen research and training programs.

The proposed goals of the program to provide planned patient care and the corresponding estimates for 1968 are shown below:

Type and base of patient care ratios	Staffing ratios		
	1967 allowance	1968 estimate	Proposed goal
Employees per 100 in-patients	150	158	203
Employees per 1,000 out-patient visits to the hospital out-patient department	.96	1.01	1.15
Employees per 1,000 out-patient visits to the separate out-patient clinics	.79	.82	1.00

The pattern of selective interchange of services now being carried on with the Veterans Administration and the Department of Defense Hospitals is desirable from the standpoint of government-wide economy, accessibility of care, and the furnishing of mission-oriented care to the various beneficiaries of the Public Health Service and those agencies. The present estimates reflect continuation of that pattern.

The training and recruitment mission of the Division of Direct Health Services should be expanded not only in the physician and dentist categories as is now proposed but also in other health skills which are needed for the public Health Service.

The operation of the leprosy hospital at Carville, Louisiana will be improved to a level consistent with that proposed for the General Hospitals. The two psychiatric hospitals are now transferred to the National Institute of Mental Health and are no longer a part of this submission.

Coast Guard medical services

Increased Coast Guard strength, expanded stations, additional icebreaker responsibilities, and the requirement to furnish a greater proportion of the dental needs of Coast guardsmen require an increase of 14 positions.

Division of Federal Employee Occupational Health and Safety

The Division of Federal Employee Occupational Health and Safety is responsible, under law, for providing all Federal Agencies with recommendations and evaluations of proposed Federal employee health services; the Division also provides clinical health services to Federal employees on a reimbursable basis. On July 1, 1966 this program covered 93,000 employees served in 57 clinics. The 1968 estimate provides for an increase in coverage to 143,000 employees at 87 facilities. The Division of Federal Employee Occupational Health and Safety is also responsible for the internal safety program for employees at Public Health Service installations and facilities. This responsibility covers over 40,000 employees in 2,000 buildings. The reimbursable operations will increase by 135 positions and $638,000 in 1968. Nine positions and $100,000 are needed for direct activities of the Division.

Personnel detailed to other agencies

This wholly reimbursable activity will remain unchanged.

Payments to Hawaii

The Federal contribution for the care of leprosy patients in Hawaii will remain at $1,200,000 in 1968.

1. *Inpatient and outpatient care*

	1967 estimate		1968 estimate		Increase or decrease	
	Positions	Amount	Positions	Amount	Positions	Amount
Personnel compensation and benefits	5,896	$46,908,000	6,313	$51,098,000	+417	+$4,190,000
Other expenses		15,324,000		17,610,000		+2,286,000
Subtotal	5,896	62,232,000	6,313	68,708,000	+417	+6,476,000
Deduct quarters and subsistence charges		−368,000		−368,000		
Total	5,896	61,864,000	6,313	68,340,000	+417	+6,476,000
Reimbursable obligations		−8,290,000		−8,298,000		−8,000
Direct obligations		53,574,000		60,042,000		+6,468,000

Basic program and workloads

The 1968 estimates reflect the continued operation and improvement of eleven hospitals, ten general and the leprosarium at Carville, Louisiana.

Care is also provided to beneficiaries of this program in 28 outpatient clinics and in the private offices of 122 contract physicians. Care of patients in other Federal hospitals and in community hospitals is also provided in this activity. In 1966, outpatient visits to the clinics and physicians totaled 715,436. In 1967 and 1968, the estimates provide for 745,050 and 767,250 respectively.

These hospitals and clinics are the primary source of medical care for about 400,000 beneficiaries. The major groups of these are American seamen, whose care and cure has been the mission of these installations since 1798, Coast Guardsmen and their dependents, Federal employees injured in the course of their work, and, at the Carville Hospital, patients suffering from leprosy.

The hospitals of this system provide an economical means of furnishing care on a reimbursable basis to the legal beneficiaries of other Federal agencies that lack facilities at our locations.

Three programs transferred to the Division of Direct Health Services in 1967 will substantially broaden its scope of activities and consequent impact upon the nation's health. These are: Rehabilitation Medicine, Emergency Health Services, and Poison Control.

In essence, our broadened responsibility is in keeping with the recognition by many authorities, including the National Commission on Community Health Services, that the hospital is, and should be, the focal point for health services. Also, it reflects the realization that Federal institutions' field programs are functionally part and parcel of their community counterparts and that it is the sum of all of these which constitutes the true community health resource. Categorical Federal programs and mission-oriented Federal institutions must be brought into the mainstream of regional and community medicine.

With these precepts in mind, it is our intention to utilize, to the fullest, our national network of clinics and hospitals to provide professional and facility support to the newer components of our Division: rehabilitation medicine, emergency health services, and poison control. The existing close professional, academic and community ties enjoyed by these field stations will be of invaluable assistance in permitting us to implement these health services and to discharge our responsibilities in these vital areas.

Rehabilitation Medicine

The new Rehabilitation Medicine Branch, which is concerned with the medical aspects of rehabilitation of all of the disabled population, has three functions: extramural, intramural, and liaison. Medical rehabilitation must precede and complement the vocational and educational rehabilitation of the potentially employable as well as constitute a major component of the comprehensive care of every disabled person.

Extramural activities, which comprised the bulk of the pilot program, are being expanded. Consultation to community health agencies and States will continue. A contract with Cornell University to develop teaching tools for physical and occupational therapists to utilize the consultative process in community programs is nearing completion. The educational material developed will be used in a series of training courses throughout the country. A contract,

ready for negotiation with another university medical school, will provide information about elderly patients with hip fracture. Based on these findings, clinical testing within the PHS hospital system should result in the development of improved patterns of comprehensive medical care for such patients. Another contract is aimed at developing a system of long-range care of the hemophiliac patient, including the special splinting needs of this group. In addition to contracts funded from direct operations, studies are also accomplished through research grants. A table on grants and examples of awards made in 1967 for this program is furnished under the caption "Community Service Programs" in a section that follows in this budget.

Intramural activities will be directed toward introducing comprehensive rehabilitation programs into the PHS hospitals. Initial efforts this fiscal year will establish a pilot program in cancer rehabilitation in the Baltimore Hospital to identify and plan for the special rehabilitation needs of this disease classification and to design a modest research project to evaluate effectiveness of the program. Also being planned is a comprehensive program in rehabilitation medicine at Seattle to be accomplished in a series of annual stages with the eventual aim of establishing a focus for intramural training of personnel in rehabilitation principles and techniques.

Liaison activities with other PHS program and with other agencies and organizations are steadily increasing as rehabilitation medicine is identified as a Service interest by others working in this area of medical care. In addition to conference attendance, representation at professional meetings, and speaking engagements, activities include a contract with a national professional rehabilitation organization to present a Symposium on the Clinical Management of Disability at the next annual meeting. Several publications developed on rehabilitation medicine subjects are contributing to the establishment of effective working relationships with agencies and organizations outside the Service.

Emergency health services

The broad objective of the Emergency Health Services Program is to minimize the consequences of accidental injury and other medical emergencies, regardless of the location of their occurrence, through encouraging, promoting and assisting the development of the highest quality emergency health services. This objective will be achieved when every community has available a coordinated system which will provide: (1) quality on-site emergency care; (2) safe and expeditious transportation; and (3) follow-up comprehensive hospital care. Thus, we are concerned equally with the accident victim, with the patient who suffers a heart attack at home, and with the patient who experiences a catastrophic complication incident to routine hospitalization.

The Public Health Service has exercised national leadership in assisting States and communities to evaluate, up-grade, and expand the provision of emergency health services. This program involves several phases:

1. Field studies to compile data on existing services, and to develop improved methods of care;
2. Technical assistance to improve capabilities for training professional, paramedical, and lay personnel;
3. Development of recommended standards and promotion of licensing programs for ambulance personnel; and
4. Development of State, area, and community plans for comprehensive coordinated systems to provide emergency care in all of its aspects.

The needs revealed by existing studies are of such magnitude that they merit immediate attention. Direct Federal assistance is required if emergency care and transportation services of a high and uniform quality are to be available promptly, efficiently and without undue economic strain upon the patient, his family, or those who provide the services.

There must be bold and imaginative testing and utilization of new techniques, systems of communications, systems of dispatching and coordination, and extensive up-grading of the capabilities of drivers, attendants, and other persons who provide first aid, transportation and supportive care en route to the hospital. Our approaches to the problem are being coordinated with the various activities of the Federal Highway Safety Agency. However, beyond these, we are concerned with the even larger problem of the nonaccidental medical emergency patient, who has more frequent need for all of the services required for the accident victim, whether these relate to initial care, transportation, or definitive care facility.

The President's Transportation Message of March 2, 1966, directed the Secretary of Health, Education, and Welfare, within existing legislation, to immediately initiate projects to demonstrate techniques for providing more effective emergency care and transportation to the injured.

As a result, an emergency health services demonstration project was negotiated under contract with the University of North Carolina. This project is administered jointly with the Bureau of Public Roads in the Department of Commerce and the Department of Health, Education, and Welfare in carrying out the President's directive. The scope of the work under this present contract covers the determination of the feasibility of the development of practical administrative guides for implementing Emergency Call and Surveillance Systems and an Emergency Health Services Support System necessary to provide timely and adequate care of, and assistance to persons involved in highway emergencies.

Poison control

The major objective of the Poison Control Program is to reduce the number and severity of injuries occurring annually, particularly by accidental ingestion of poisons by children. The National Center for Health Statistics estimates that over 500,000 accidental ingestions occur annually in children.

The morbidity and mortality of accidental poisoning can be minimized by reducing the incidence of accidental poisoning and by improving methods of diagnosis and treatment. Major elements of the poison control program include (1) technical assistance in establishing and operating regional poison control centers; (2) the maintenance of a national clearinghouse for information on diagnosis and treatment; (3) support of regional toxicological laboratories; and (4) the support, through research grants, of investigations in diagnosis and treatment.

The establishment in Denver of a staffed pilot regional poison control center in 1967 will make available to poison control centers, in addition to present services, the laboratory analyses of biological fluids and tissues of poisoning victims. It is planned to have four centers in operation by 1971. The centers will develop information on toxicity necessary to make immediate treatment of accidental poisonings more effective.

Reports received by the National Clearinghouse for Poison Control Centers show that many hospitals and clinics treating cases of accidental poisonings lack trained personnel and laboratory facilities necessary to determine the nature of products involved in the poisonings. The development of four regional poison control centers will partially meet this nationwide need for laboratory and diagnostic services to hospitals and clinics.

Increases totaling $6,476,000 for positions, supplies, and other expenses, are requested for the Inpatient and Outpatient Care Activity, as explained in the material which follows:

DIRECT CARE

Improvement of staff in the general hospitals and the separate outpatient clinics

The 1968 estimates propose another step toward the approved staffing goals representing our plan to operate the stations of the Division of Direct Health Services as "models of excellence." The present status, 1968 estimate and goal for each major activity is summarized in the table below.

Workload ratio factor	1967 estimate	1968 estimate	Goal
Employees per 100 inpatients	150	158	203
Employees per 1,000 visits to the hospital outpatient departments	0.96	1.01	1.15
Employees per 1,000 visits to the separate outpatient clinics	.79	.82	1.00

It will be seen that the 1968 estimates represent a start toward each of these goals. In addition, the 1968 estimates represent a level of inpatient care far below the average for general hospitals in the United States. The number of employees per 100 patients for all general hospitals in the United States was 246 in 1965,[1] more than 55% higher than our request for 1968. The comparison

[1] *Hospitals*, Journal of the American Hospital Association, Part 2, pp. 442–443, Vol. 40, No. 15, August 1, 1966.

becomes even more striking considering the fact that the civilian hospital staffs do not include attending physicians or dentists. Yet, the request is an appreciable and worthwhile step toward our goal. The total requirement to reach the proposed ratios represents an increase of 290 positions and $2,326,000.

Improvement of training program

Beginning with 1966, a program was initiated to utilize the full potential of the hospital system for the recruitment and training of physicians and dentists. At that time, this was calculated at a total addition of 237 trainees in these two professions. The current request continues this program with an increase of 44 residents and interns. This continues the rate of increase approved in 1967. In accordance with our usual practice, two-thirds of each resident and one-half of each intern are charged to patient care. The training request is accordingly shown as 16 positions and $266,000.

The potential of our hospitals to supply more of our nation's crucial need for health personnel requires effort in other areas. The present estimates propose increased training effort in Pharmacy, Medical Records, and x-ray and laboratory technicians. Outside training of physicians to acquire new specialty capabilities, the setting up of Post Doctoral Fellowships to provide in-house specialty practice and a strengthening of instructional personnel will round out our training effort. These additional items will require 37 positions and $573,000.

The following is a table showing numbers of personnel in the training program for Fiscal Years 1967 and 1968:

	1967	1968	Change	Training equivalency
Interns	179	191	12	6
Residents	226	258	32	10
All other trainees	198	238	40	22
Subtotal	603	687	84	38
Trainers (instructional personnel)	0	15	15	15
Total	603	702	99	53

Strengthening of research

To continue our buildup of research competencies with special emphasis on a team approach to clinical and health services research, eight positions and $118,000 are requested. This staff is intended to provide the basic competencies for such a team approach. It is intended that they will prepare protocols and carry out programs to be financed from grants from other parts of the Public Health Service and from other agencies.

Increase in patient supplies

Our low unit rate of issue of supplies has been a cause of concern. Disposables with the potential for better safety, utilization of manpower, and adequate aseptic control are practically unavailable. Pharmacy committees are obliged to take into undue account the price of proposed additions to our armamentarium of remedies and occasionally to reject a worthwhile addition on the basis of cost alone. An example of this is the new measles vaccine at $1.66 per injection.

Another factor in our need for additional supply support is the fact that free supplies from military excess are down $800,000 from receipts from this source in fiscal year 1964. This fall off results from the present Vietnam situation and is a major factor in our present situation. Our request represents an increase in unit cost and funds, as shown below:

Type of supply	Estimate, 1967	Requested, 1968	Fund increase
Inpatient	$2.06	$2.42	$323,000
Outpatient in hospitals	.88	1.06	166,000
Outpatient in clinics	.75	.85	75,000
Total			564,000

Increase in outpatient office costs

An increase of $56,000 will provide for annualization of the rate increases (for fee basis schedules used in states, primarily in Michigan and New York) and will cover the increase in visits to contract physicians in our outpatient offices.

Increase in subsistence rate

The wholesale price indexes reflect substantial rises last year in prices for farm products and processed foods. As a partial relief from this upward pressure, the allowance to the hospitals in 1967 was set at $1.08 a ration, one cent more than was budgeted. A further increase of four cents in the general hospitals and five cents in the Carville hospital is requested for 1968. The cost of this increase is estimated to be $44,000.

Carville hospital

The planned modernization of Carville includes improvement in patient care as well as in facilities. Staffing increases are proposed primarily to eliminate overtaxing the Sisters of Charity serving far beyond the ordinary work week in Nursing, Dietary, and Pharmacy and to provide improved services in Physical Medicine and Rehabilitation, Radiology, Medical Service, Research and Training. Implementation of this improved patient care program will require the eventual addition of 32 employees. As a first step, eight of these positions are requested for 1968, at a cost of $69,000.

Consultant costs

In the consultant area, we are faced with a consistent absorption of expense and actual reduction of program because the annual renegotiations of contracts with these fee-basis practitioners continuously raises the unit cost of such services. Even these renegotiations do not provide for fees comparable to the fees being paid by other activities in the communities where we have medical care facilities. Some of our consultants stay with us at these lower prices as a result of relationships established with members of our professional staff or for the status that the position of consultant to the Public Health Service gives them, but as the older ones leave or as economic pressures dictate contract changes, our costs continually rise. The seriousness of this need can be illustrated in the State of Michigan (where all consultant contracts call for adherence to a schedule for Government fees), which resulted in an increase of $25,000 in 1966 of expenses in our PHS hospital in Detroit and its service area. With the advent of increased calls for specialists services arising from Medicare, we are certain to feel upward pressure on our fee schedules. Our requested increase of $150,000 represents a step toward achieving comparability with established Federal and State fee schedules.

Another contributing factor is that the number of consultants needed and the frequency with which they are used are also increasing. With a projected eventual increase of 237 medical and dental interns and residents over the 1965 level, we need to be able to hire the teaching skills to broaden and re-enforce the training program. In addition, as a matter of basic medical care, our practitioners should have more ready access to the services of skilled consultants.

Headquarters staff

The request for Headquarters position increases is based upon the requirement to coordinate and administer the planning, programming, budgeting, and execution of programs of excellence and distinction. An increase of eight positions and $100,000 is requested for this purpose. The need is to provide staff capability to meet the demands generated by the planning-programming-budgeting system (PPBS) being instituted in the Service, Department, and Government-wide. With this added staff, we will be able to innovate, plan, and evaluate programs, with emphasis on operational or systems analysis of facility, personnel, and equipment requirements.

Printing cost for "The Ship's Medicine Chest and First Aid at Sea"

The official Public Health Service Manual for the use of ships that have no physician aboard is "The Ship's Medicine Chest and First Aid at Sea." This publication, which describes symptoms and advises on medication, including a listing of supplies, is now 17 years old except for a few "green page" revisions added almost ten years ago. To make this a current and useful publication, a complete revision is in process which will be finished in 1967. In order to provide for the initial printing, an increase in 1968 of $30,000 will be needed.

Personalized health services project

An important responsibility to develop and demonstrate new patterns of medical practice will begin with the installation of a Multiphasic Screening Program at the Staten Island hospital. Here, we will use automated disease detection methods to assist the physician in making a comprehensive evaluation of the patient's health condition. Examination time can be reduced from 2–3 days to approximately 2–3 hours, with uniformly high quality results.

The system will have a capability of handling up to 50,000 examinations per year, utilizing two 8-hour shifts per day, 240 days per year. Staffing requirements are patterned after the program operated by the Kaiser Permanente Foundation, Oakland, California. Included are technical operating staff to perform the tests and measurements, and supporting clerical staff to handle the health data and administrative data produced on a half-year basis. The project requires 46 positions and $400,000 which will provide the necessary equipment and contractual services during the 6-month period required to establish the program and to permit its full operation during the remainder of the fiscal year. Funds in the amount of $100,000 needed for alterations are requested in the "Buildings and Facilities" budget.

COMMUNITY SERVICE PROGRAMS

Rehabilitation medicine

	1967			1968		
	Grants	Amount	Positions	Grants	Amount	Positions
Research grants:						
Continuations	2	$85,000	----------	1	$30,000	----------
New	----------	----------	----------	1	55,000	----------
Subtotal	2	85,000	----------	2	85,000	----------
Direct operations	----------	86,000	5	----------	86,000	5
Total	2	171,000	5	2	171,000	5

The 1968 estimate includes the continuance of rehabilitation medicine programs implemented in 1967, with no request for increase in funds.

This program consists of extramural activities, research grants, and contracts with universities, hospitals, and other institutions, and intramural activities, strengthening current rehabilitation programs in PHS hospitals with the aim of introducing rehabilitation programs into all PHS hospitals. Examples of research grants are: Kinetic Studies of Normal and Abnormal Locomotion, Marquette School of Medicine; and Relearning Motor Skills in Hemiplegia; Error Analysis, New York University Medical Center.

The extramural program involves a variety of studies, such as reconditioning techniques in older persons to forestall disability, low back problems, normal and abnormal locomotion, hemophilia, and many others, either completed or in the process of development.

The intramural program, with a focus on the PHS hospitals, will explore interdisciplinary communications, systems of record keeping suitable for complex problems of rehabilitation patients, development of regional rehabilitation services, and the development of special training opportunities in rehabilitation medicine.

Emergency Health Services

Direct operations:	
Positions	7
1967	$152,000
Positions	11
1968	$955,000

The broad objective of the Emergency Health Services program is to minimize the consequences of accidental injury and other medical emergencies, regardless of the location of their occurrence, through encouraging, promoting, and assisting the development of the highest quality emergency health services.

The 1968 estimate proposes an increase of $803,000 in emergency health services. This is composed primarily of an increase in project contracts and will provide for four additional positions.

Project contracts are made with universities, hospitals, laboratories, and other public and private institutions and individuals for the development of better types of emergency treatment and delivery of emergency care. The increase is required for continuance of existing contracts and to further develop, on a national basis, with all groups concerned, a broad scope program, including communication systems, training of personnel, transportation methods, and hospital emergency room services. Examples of contracts are: Development of Administratives Guides for Implementing Emergency Call and Surveillance Systems and Emergency Medical Services Support System with the Department of Hospital Administration, School of Medicine, University of North Carolina; and Emergency Medical Identification with Health Officer, D.C. Health Department.

The four positions (Public Health Program Specialists) are to be used to support the States by providing technical assistance in conducting field studies and demonstrations and in expansion of training resources.

Poison control

Research grants	1967			1968		
	Grants	Amount	Positions	Grants	Amount	Positions
Continuations	5	$93,000		9	$207,000	
New	4	114,000		1	72,000	
Subtotal	9	297,000		10	279,000	
Direct operations		180,000	11		186,000	11
Total	9	387,000	11	10	465,000	11

This program supports eleven positions in direct operations, and requires an increase of $6,000 for built-in personal services costs in 1968. An increase of $72,000 is requested to support one new research grant in 1968.

Studies are conducted through research grants such as: Antidote for Snake Bite Venom, Utah State University; and Kinetics of Peritoneal Dialysis, University of North Carolina; contracts, such as a Feasibility Study on a Master Poison Control Center being conducted by the Metropolitan Denver Research Foundation, Inc.

An example of progress in the Poison Control Program is illustrated in the completion of a project which was the successful development of a technical aid, "A Guide for Teaching Poison Prevention in Kindergartens." Though this has been tested throughout the State of South Carolina, there is a need to establish the effectiveness of these techniques in reducing accidental ingestions by testing and evaluating them in other geographic areas where climate, population characteristics, and socio-economic conditions differ. This course of action will be pursued in 1968.

Cytopathological functions

An increase of $67,000 is requested to permit continuation of the uterine cancer detection services we provide for our beneficiaries. Now a recognized component of routine medical care, this program was initially established for teaching and demonstration purposes by the Division of Chronic Diseases, Bureau of State Services, which has funded the program in previous years, but will discontinue this support at the close of fiscal year 1967.

PHS management fund

The Bureau of Health Services, Office of the Bureau Director, provides program direction, program services, and handles business management functions for Bureau activities. It is financed by payments from the component Divisions to the PHS Management Fund on a pro rata basis. An increase of $112,000 is included in the 1968 estimate for its support.

Other changes

A total increase of $734,000 is needed for mandatory expenses of statutory salary increases, reclassifications, increased social security contributions, annualization of wage board and pay act increases, and new positions authorized in 1967. A table summarizing these expenses is as follows:

Mandatory expenses

1. Annualization of new positions authorized in 1967	$6,000
2. Net additional cost of within grades, incentive pay increases, and reclassification increases	381,000
3. Increase in social security contributions	6,000
4. Annualization of 1967 wage board increases	161,000
5. Annualization of pay act increases	180,000
Total	734,000

A decrease of $8,000 is reflected to offset the increase in reimbursements.

Average daily patient load, admissions, and outpatient visits by type of facility

	Hospitals		
	General	Leprosarium	Total
Average daily patient load:			
1966	2,314	293	2,607
1967	2,320	290	2,610
1968	2,330	290	2,620
Admissions:			
1966	46,429	143	46,572
1967	46,825	125	46,950
1968	47,050	125	47,175

OUTPATIENT VISITS

	Hospitals	Outpatient clinics	Outpatient offices	Total
1966	795,842	651,628	63,808	1,511,278
1967	818,000	677,550	67,500	1,563,050
1968	836,700	697,750	69,500	1,603,950

Average daily patient load by type of beneficiary—"Nonreimbursable"

	Actual, 1966	Estimate, 1967	Estimate, 1968
Total	2,102	2,074	2,076
American seamen	1,355	1,355	1,355
Coast Guard	208	207	210
Bureau of Employees' Compensation	99	90	90
Patients with leprosy	304	295	295
Special Study	106	100	100
All other	30	27	26

Comparative statement of reimbursements

	Actual, 1966			Estimate, 1967			Estimate, 1968		
	Average daily load	Rate per day	Amount	Average daily load	Rate per day	Amount	Average daily load	Rate per day	Amount
PHS hospitals other than psychiatric hospitals:									
Special study	35	$43.50	$556,439	43	$45.00	$706,300	43	$45.00	$708,200
Veterans	19	27.00	185,355	31	27.00	305,500	34	27.00	336,000
Foreign seamen	26	43.50	417,994	25	45.00	410,600	25	45.00	411,700
Immigration		27.00	3,159	1	27.00	9,900	1	27.00	9,900
Indians	13	27.00	125,388	13	27.00	128,100	13	27.00	128,400
Department of State—Dependents	1	43.50	12,262	1	46.00	16,800	1	46.00	16,800
Other (including emergency)	20	27.00	199,854	20	27.00	197,100	20	27.00	197,600
Department of Defense (Armed Forces)	117	27.00	1,150,848	121	27.00	1,192,400	123	27.00	1,215,400
Department of Defense (dependents)	199	43.50	3,158,320	203	[1] 46.00	3,408,400	203	[1] 46.00	3,417,700
Coast Guard, U.S. Public Health Service, and Environmental Science Services:									
Administration (dependents)	75	1.75	47,884	78	1.75	49,800	81	1.75	51,900
Administration officers		1.00	13,612		1.00	14,000		1.00	14,000
Outpatient visits			87,686			144,100			144,000
Miscellaneous (including details with PHS)			788,484			1,703,700			1,643,000
Total PHS hospitals other than psychiatric hospitals	505		6,747,285	536		8,286,700	544		8,294,600
Total psychiatric hospitals	216		[2] 1,191,401	215		[2] 1,400,200			
Total, operation of hospitals	721		7,938,686	751		9,686,900	544		8,294,600
Other inpatient and outpatient care			5,000			3,000			3,000
Subtotal, inpatient and outpatient care			7,943,686			9,689,900			8,297,600
Operation of health units			1,017,953			1,559,000			2,397,000
Personnel detailed to other agencies			287,361			1,085,000			1,085,000
Total, all reimbursements			9,249,000			12,333,900			11,779,600
Total (rounded)						12,334,000			11,780,000

[1] This is estimated to be a weighted rate on the following individual rates; obstetrical and maternity services: First 5 days of stay $60, 6th and subsequent days of stay; mother $45, infant $10, other than obstetrical and maternity service $45.

[2] These amounts are included in the comparative transfer to NIMH.

Estimated cost of contract and Federal hospitalization

	Actual, 1966	Estimate, 1967	Estimate, 1968
I. Contract hospitalization:			
A. Total:			
Hospitals	$18,271	$17,000	$17,000
Outpatient clinics and offices	962,208	1,003,000	1,006,000
Coast Guard	117,755	118,000	118,000
Total	1,098,234	1,138,000	1,141,000
B. Hospitals and clinics only:			
Average daily patient load	43	43	43
Total annual patient days	15,945	15,965	15,738
Average cost per patient day	$61.49	$65.00	$65.00
Total cost (rounded)	$980,479	$1,020,000	$1,023,000
C. Coast Guard: Emergency (hospitalization costs)	117,755	118,000	118,000
II. Federal hospitalization:			
Average patient load of hospitalization	102	111	111
Total annual patient days	37,215	40,515	40,626
Total cost (rounded)	$1,063,349	$1,165,000	$1,168,000
Adjustment to reach sec. 1311 certification	+38,087		
Fiscal year 1966 obligations	1,101,436		
III. Derivation of Federal hospitalization costs:			
A. American seamen in veterans and Department of Defense hospitals and Coast Guard in veterans hospitals:			
Average patient load of hospitalization	43	48	48
Total annual patient days	15,787	17,520	17,568
Approved reimbursable rate	$27.00	$27.00	$27.00
Total cost	$426,249	$473,040	$474,336
B. Officers of Coast Guard, PHS, and ESSA in Department of Defense hospitals:			
Average patient load of hospitalization	11	12	12
Total annual patient days	3,919	4,380	4,392
Approved reimbursable rate	$25.90	$25.90	$25.90
Total cost	$101,502	$113,442	$113,753
C. Coast Guard enlisted personnel in Department of Defense hospitals:			
Average patient load of hospitalization	39	42	42
Total annual patient-days	14,205	15,330	15,372
Approved reimbursable rate	$27.00	$27.00	$27.00
Total cost	$383,535	$413,910	$415,044
D. Total items A, B, and C:			
Average patient load of hospitalization	93	102	102
Total annual patient days	33,911	37,230	37,332
Total cost, other Federal hospitalization	$911,286	$1,000,392	$1,003,133
BALBOA HEIGHTS AND INDIAN HOSPITALIZATION			
E. Balboa Heights, days of hospitalization	1,926	1,825	1,830
Approved reimbursable rate	$43.00	$50.00	$50.00
Cost	$82,818	$91,250	$91,500
F. Balboa Heights, outpatient visits	4,838	5,000	5,000
Approved reimbursable rate	$9.50	$10.00	$10.00
Cost	$45,961	$50,000	$50,000
G. Indian hospitalization:			
1. PHS officers and dependents:			
Days of hospitalization	615	730	732
Approved reimbursable rate	$1.75	$1.75	$1.75
Cost	$1,076	$1,278	$1,281
2. American seamen and enlisted Coast Guard:			
Days of hospitalization	763	730	732
Approved reimbursable rate	$27.00	$27.00	$27.00
Cost	$20,601	$19,710	$19,764
H. Anchorage, Alaska:			
Outpatient visits	189	300	300
Approved reimbursable rate	$8.50	$8.50	$8.50
Cost	$1,607	$2,550	$2,550

NOTE.—Officers pay $1.10 subsistence charge, PHS pays the difference.

Summary of research estimates, 1967 and 1968

	Positions	Man-years	Amount
Estimate, 1967:			
Carville	11	10	$114,000
Hospitals other than Carville [1]	66	66	704,000
Other research programs [2]			292,000
Subtotal, direct funds	77	76	1,110,000
Reimbursable research	97	97	1,249,000
Total	174	173	2,359,000
National Institutes of Health grant supported research (1967 grants) [3]	105	82	918,400
Total, hospitals and medical care and National Institutes of Health	279	255	3,277,400
Estimate, 1968:			
Carville	11	10	$114,000
Hospitals other than Carville [1]	74	74	822,000
Other research programs [2]			464,000
Personalized health service project	46	23	400,000
Subtotal, direct funds	131	107	1,800,000
Reimbursable research	97	97	1,249,000
Total	228	204	3,049,000
IH grant supported research (1968 grants) [3]	105	82	918,400
N			
Total, hospitals and medical care, and NIH	333	286	3,967,400

[1] Includes 1 research position at headquarters.
[2] Amounts transferred from activities previously carried under the titles:

	1967	1968
Chronic diseases	$85,000	$85,000
Injury control	207,000	379,000
Total	292,000	464,000

[3] Authorized by: Sec. 210, Public Law 86-158, 1st sess., for 1960.

2. Coast Guard medical services

	1967 estimate		1968 estimate		Increase or decrease	
	Positions	Amount	Positions	Amount	Positions	Amount
Personnel compensation and benefits	125	$1,438,000	139	$1,579,000	+14	+$141,000
Other expenses		557,000		632,000		+75,000
Total	125	1,995,000	139	2,211,000	+14	+216,000
Reimbursable obligation						
Direct obligations		1,995,000		2,211,000		+216,000

The budget estimate provides for medical services to the Coast Guard aboard their vessels and at their air and other shore stations. Not included are costs funded by the Coast Guard such as space, utilities, medical and dental equipment, mobile dental units, furniture, office appliances, pay allowances and travel of Coast Guard personnel assigned to the program, etc.

Medical facilities at Coast Guard units are classified as infirmaries, dispensaries, or sick bays. The larger shore units have infirmaries staffed with medical and dental officers of the Public Health Service. Dispensaries are facilities at intermediate size shore units at which either or both medical and dental officers are assigned to duty. Sick bays are facilities aboard vessels and at smaller shore units. Sick bays are usually manned by hospital corpsmen, but vessels may have a medical officer assigned.

Full-time medical, dental, and ancillary staff are assigned where there are sufficient concentrations of personnel to make the operation of such facilities more economical to the Government. Small concentrations of personnel are provided medical and dental services by local contract physicians and dentists. Mobile dental units with a Public Health Service dental officer assigned are also used to provide dental services to Coast Guard personnel. The major problem of the Coast Guard program is provision of adequate medical and dental care to personnel widely dispersed in numerous small units, many of which are geographically and medically isolated.

The increase of 14 positions and $140,000 is to provide 5 positions in support of aviation activities, 6 in support of major shore activities, at Cape May, N.J., and Fort Jay, N.Y., and 3 in support of icebreaker operations.

The increase of 3 positions for the Cape May recruitment center is for dental officers. This will provide for a completion rate of 74% of dental services versus the present 60%.

The increase requested for the Coast Guard Base at Fort Jay, New York, is generated by the consolidation of major activities in the local area and the transfer of a major training command to this location. The positions provide for a medical officer, a nurse and a pharmacist.

In addition, an increase of $75,000 in supplies is requested for the following:

$25,000 Annual operation, Fort Jay.
$20,000 Annual operation, icebreakers.
$30,000 Increase to all units.

An increase of $1,000 is requested for increased social security rates.

3. Federal employee occupational health and safety

	1967 estimate		1968 estimate		Increase or decrease	
	Positions	Amount	Positions	Amount	Positions	Amount
Personnel compensation and benefits	203	$1,425,000	347	$2,174,000	+144	+$749,000
Other expenses		410,000		621,000		+211,000
Total	203	1,835,000	347	2,795,000	+144	+960,000
Reimbursable obligations		1,559,000		2,397,000		+838,000
Direct obligations		276,000		398,000		+122,000

Funds under this activity provide for the operation of the new Division of Federal Employee Health established by the Secretary June 1, 1966.

The work of the Division is based upon statutory authority and responsibility assigned to the Public Health Service under P.L. 658, August 8, 1946 (5 U.S.C. 150); the 1965 Presidential Policy Statement on Federal Employee Occupational Health; Bureau of the Budget Executive Circular No. A–72, June 18, 1965; and the responsibility of the Public Health Service to protect the safety of its employees and the public in the course of operations.

Funds and personnel made available for 1967 were limited to those transferred from the Federal Employee Health Program of the Division of Direct Health Services and the Safety and Fire Protection Section of the Division of Administrative Services in the Office of the Surgeon General.

The Division has established the following objectives:

(*a*) To carry out its responsibilities to provide consultation on the organization and establishment of employee health services to any Federal agency requesting advice; to provide standards and criteria for the furnishing of such employee health services; and, when requested, to assist agencies of the Government in the evaluation of such services.

(*b*) To organize, administer, and operate such Federal employee health service programs for participating Federal agencies on a reimbursable basis.

(*c*) To organize and implement an improved intramural occupational safety program for the Public Health Service and its employees.

Services authorized for Federal employees include emergency diagnosis and treatment of injury or illness occurring during the working hours; preemployment examination; in-Service examinations as the Department or agency head

determines to be necessary; administration of treatments and medications under certain circumstances; preventive services, to appraise and report work environment health hazards, health education, and specific disease screening examinations and immunizations; and, referral to private physicians, dentists and other community health resources. The goal is the provision of these services for all Federal employees who work in groups of 300 or more.

The operation of such programs provides a work laboratory for the testing and development of improved occupational health services and provides the Division with experience to maintain practical expertise as a consultant. The Division, on a reimbursable basis, now administers 57 employee health units, serving some 361 Federal agencies and 93,000 Federal workers. Requests are on hand to open approximately 30 new clinics serving an additional 50,000 employees. Consulting requests are increasing, for example, a request to evaluate the Employee Health Program of the Post Office Department.

The complexity and range of environments in which PHS employees must work dictates that specific skills must be applied to assessment and control of occupational hazards. The decision to add responsibility for PHS safety control to this Division's programs reflects recognition of the overall deficient status of PHS support for the safety of its employees. There is mounting concern over PHS rising losses related to operational activities.

Three additional positions in Headquarters are required to support statistical and other administrative needs associated with employee health program growth. Six positions are required to meet the safety control needs through development of services in safety engineering control, industrial hygiene, and safety inspection.

The 1968 budget estimate reflects an increase of 144 positions and $960,000. Of the increase, 135 positions and $638,000 will be in reimbursable funds to operate the requested 30 new health units. There will be an increase of 9 positions and $100,000 in appropriated funds for augmentation of Headquarters' staff in financial management, statistics, safety engineering, industrial hygiene, and safety inspection. In addition, $222,000 of which $200,000 will be in reimbursable funds is for annualization of new positions authorized in 1967.

Health unit operations and program estimates, fiscal years 1967 and 1968

Health unit and location	Fiscal year 1967					Fiscal year 1968				
	Number of agencies served	Number of employees served	Cost of unit (thousands)	Man-years	Notes	Number of agencies served	Number of employees served	Cost of unit (thousands)	Man-years	Notes
Atomic Energy Commission, Germantown, Md.	4	1,775	$46.0	4.4		4	1,800	$49.0	4.4	
AEC, Phillips Bldg., Bethesda, Md.	2	267	10.0	1.2		2	275	11.0	1.2	
Brown Bldg., Washington, D.C.	1	1,750	17.0	1.2		1	1,800	18.0	1.2	
Bureau of Engraving and Printing, Washington, D.C.	1	3,000	89.0	9.0		1	3,100	93.0	9.0	
Centennial Bldg., Washington, D.C.	3	283	13.0	1.2		3	300	14.0	1.2	
Coast Guard Bldg., Washington, D.C.	3	1,116	15.0	1.0		3	1,150	16.0	1.2	
Crystal Plaza Bldg., Alexandria, Va.	3	1,560	18.0	1.0		3	1,700	19.0	1.2	
E Street Bldg., Washington, D.C.	3	718	13.0	1.0		3	725	14.0	1.2	
Executive Office Bldg., Washington, D.C.	10	1,117	15.0	1.2		10	1,120	16.0	1.2	
Federal Office Bldg. No. 6, Washington, D.C.	4	1,900	27.0	2.4		4	1,900	29.0	2.4	
Internal Revenue Service Bldg., Washington, D.C.	5	3,439	65.1	6.5		5	3,450	68.0	6.5	
Labor Department Bldg., Washington, D.C.	3	1,555	24.0	2.2		3	1,550	25.0	2.2	
Lafayette Bldg., Washington, D.C.	11	3,050	37.0	2.6		11	3,100	38.0	2.6	
Madison Bldg., Washington, D.C.	1	1,059	17.5	1.2		1	1,059	18.0	1.2	
Maiatico Bldg., Washington, D.C.	2	720	14.0	1.2		2	725	15.0	1.2	
Matomic Bldg., Washington, D.C.	5	1,500	16.7	1.2		5	1,500	17.6	1.2	
National Archives Bldg., Washington, D.C.	1	488	13.4	1.2		1	500	13.4	1.2	
National Bureau of Standards (2 units), Gaithersburg, Md.	1	2,500	70.0	7.0	July 7, 1966 [2]	1	3,000	75.0	8.0	
Sills Bldg., Springfield, Va.	1	300	(1)		do. [2]	1	300	(1)	1.2	
National Labor Relations Board Bldg., Washington, D.C.	2	855	18.6	1.2		2	900	19.7	1.2	
Treasury Bldg. (3 units), Washington, D.C.	2	1,789	51.0	5.0		2	1,800	54.0	5.0	
Liberty Loan Bldg., Washington, D.C.	4	568	(1)	(1)		4	575	(1)	(1)	
Public Debt Bldg., Washington, D.C.	3	881	(1)	(1)		3	881	(1)	(1)	
Universal North Bldg., Washington, D.C.	6	1,509	15.2	1.5	July 1966 [2]	6	1,500	16.0	1.5	
Walker Johnson Bldg., Washington, D.C.	1	646	13.4	1.0		1	650	14.2	1.2	
Wallops Island:										
Unit No. 28, Wallops Island, Va.	1	625	68.0	4.0		1	650	71.0	4.5	
Unit No. 29, Wallops Island, Va.	1	(1)	(1)	(1)		1	(1)	(1)	(1)	
Federal Office Bldg. No. 8, Washington, D.C.	2	1,350	15.0	1.2		2	1,400	16.0	1.2	

See footnotes at end of table, p. 605.

Health unit operations and program estimates, fiscal years 1967 and 1968—Continued

Health unit and location	Fiscal year 1967					Fiscal year 1968				
	Number of agencies served	Number of employees served	Cost of unit (thousands)	Man-years	Notes	Number of agencies served	Number of employees served	Cost of unit (thousands)	Man-years	Notes
Franklin Square Bldg., Washington, D.C.	2	548	$14.0	1.2		2	550	$15.0	1.2	
General Accounting Office, Washington, D.C.	10	6,200	89.0	9.0		10	6,200	93.0	9.0	
General Service Administration, (maintenance), Washington, D.C.	5	3,100	39.5	3.0		5	3,100	41.0	3.2	
GSA (3 units):										
ROB No. 3, Washington, D.C.	4	3,925	67.0	7.0		4	3,925	70.0	7.0	
Federal Records Center, Alexandria, Va.	1	249	(1)	(1)		1	250	(1)	(1)	
Franconia warehouse, Springfield, Va.	2	222	(1)	(1)		2	222	(1)	(1)	
HEW (2 units):										
North building, Washington, D.C.	8	3,230	87.0	9.0		8	3,230	90.0	9.0	
South building, Washington, D.C.	6	1,710	(1)	(1)		6	1,750	(1)	(1)	
Tempo R building, Washington, D.C.	3	444	(1)	(1)		3	450	(1)	(1)	
Willste Bldg., Silver Spring, Md.	3	1,024	15.6	1.2		3	1,075	16.5	1.2	
Federal Bldg. (450 Golden Gate) San Francisco, Calif.	33	3,866	58.0	7.0	July 1966 [2]	33	3,900	63.0	7.5	
Federal Bldg. (49 4th St.) San Francisco, Calif.	4	1,633	15.3	2.0	do.[2]	4	1,650	16.2	2.5	
Federal Bldg., Los Angeles, Calif.	14	2,860	39.0	6.0		14	3,000	41.5	6.0	
Federal Center, Denver, Colo.	9	5,500	72.0	8.0		9	5,500	75.0	8.5	
Federal Office and Courthouse, Chicago, Ill.	34	3,000	58.0	6.0	July 1966 [2]	34	3,500	60.4	6.0	
Post Office and Courthouse, Boston, Mass.	9	1,033	16.0	1.0		9	1,033	17.0	1.0	
John F. Kennedy Bldg, Boston, Mass.	14	2,545	55.0	6.0	July 1966 [2]	14	2,550	60.5	6.0	
Federal Center, Waltham, Mass.	4	912	12.6	1.0		4	912	13.3	1.2	
Federal Bldg. (1500 East Bannister), Kansas City, Mo.	1	853	12.6	1.0	July 1966 [2]	1	853	13.3	1.2	
Federal Bldg. (601 East 12th), Kansas City, Mo.	12	3,733	70.0	6.0	do.[2]	12	4,250	74.0	6.0	
Federal Bldg. (Walnut St.), Kansas City, Mo.	12	504	13.4	1.0		12	500	14.0	1.0	
Belle Mead Bldg., Belle Mead, N.J.	2	407	9.5	1.0		2	400	10.0	1.0	
Church Street Bldg., New York, N.Y.	2	1,024	15.7	1.0		2	1,025	16.6	1.0	
Federal Bldg., Cincinnatti, Ohio	35	1,877	28.4	3.0		35	2,500	38.0	4.0	
A. & D. Bldg., Cincinnati, Ohio	1	1,670	19.0	2.0	July 1966 [2]	1	1,900	24.0	4.0	
Santa Fe Bldg., Dallas, Tex.	16	1,726	29.1	2.0		16	1,750	36.8	3.0	
Federal Bldg. (Taylor St.), Fort Worth, Tex.	20	2,000	34.0	4.0	July 1966 [2]	24	3,000	51.0	6.0	
Federal Center (Hemphill St.), Fort Worth, Tex.	7	590	13.4	1.0	do.[2]	7	600	15.0	1.2	

Federal Center (Vickery Blvd.), Fort Worth, Tex.					August 1966 [3]				
Federal Bldg., Charlottesville, Va	2	310	14.0	1.0		2	350	14.9	1.2
Total, 57 health units	361	93,000	1,599.0	151.0		365	97,335	1,713.9	163.0
Applications pending to open 30 units							45,665	723.1	110.0
Total, 87 units							143,000	2,437.0	273.0

[1] Included in data line, supra. [2] Opening date. [3] Closing date.

4. Personnel detailed to other agencies

	1967 estimate		1968 estimate		Increase or decrease	
	Positions	Amount	Positions	Amount	Positions	Amount
Personnel compensation and benefits	72	$919,000	72	$919,000		
Other expenses		166,000		166,000		
Total	72	1,085,000	72	1,085,000		
Reimbursable obligations		1,085,000		1,085,000		
Direct obligations						

This activity is completely reimbursable. Funds provide for Public Health Service personnel who are detailed to other Federal agencies, among which are the Bureau of Employees' Compensation, Environmental Science Services Administration, and Maritime Commission. Other objects of expense are also provided on a reimbursable basis when authorized by law.

The estimated number of personnel and net cost for all objects of expense by Agency are shown below:

	Actual 1966		Estimate 1967		Estimate 1968	
	Positions	Amount	Positions	Amount	Positions	Amount
Bureau of Employees' Compensation	10	$160,324	11	$175,000	11	$175,000
Maritime Administration	3	37,507	3	50,000	3	50,000
Environmental Science Services Administration	6	38,085	6	60,000	6	60,000
Pan-American Health Organization	1	10,888	1	15,000	1	15,000
National Aeronautics and Space Administration	1	15,828	1	20,000	1	20,000
Coast Guard	2	11,341	2	40,000	2	40,000
Department of Agriculture	1	6,982	1	25,000	1	25,000
Army Corps of Engineers (classified)		3,702	11	110,000	11	110,000
Central Intelligence Agency	1	2,704				
Federal Appalachian Commission			1	20,000	1	20,000
Office of Economic Opportunity			6	70,000	6	70,000
Vietnam program—AID			29	500,000	29	500,000
Total	25	287,361	72	1,085,000	72	1,085,000

5. Payments to Hawaii

	1967 estimate	1968 estimate	Increase or decrease
Grants, subsidies, and contributions	$1,200,000	$1,200,000	

Funds under this activity are for payments to the State of Hawaii for care and treatment of persons afflicted with leprosy as authorized and directed by 42 U.S.C. 255. Since this activity was authorized in 1953 by the Congress, the State of Hawaii has been unable to fully meet the total expenses from the funds which have been appropriated. No increase is requested in 1968.

The table below shows the estimated patient days, per diem cost, average daily patient load, appropriation, and requirements for 1967 and 1968. It should be noted that reimbursement is based on actual expense so that the requested amount will not be paid out unless it is actually earned.

	Estimate, 1967	Estimate, 1968
Average daily patient load	258	254
Patient days	94,000	93,000
Per diem cost	$16.74	$17.44
Total cost	$1,573,500	$1,621,512
Appropriation request	$1,200,000	$1,200,000

New positions requested, fiscal year 1968

	Grade	Annual salary
Inpatient and outpatient care:		
Medical officer, Sec. 208(g)		$23,174
Public health program specialist (6)	GS-15	105,300
Public health program specialist (5)	GS-14	75,530
Financial operations officer	GS-14	15,106
Public health program specialist (7)	GS-13	90,111
Public health program specialist (2)	GS-12	21,854
Medical staff assistant	GS-12	10,927
Medical staff assistant (4)	GS-11	36,884
Financial operations officer	GS-11	9,221
Computer operator	GS-11	9,221
Medical staff assistant (6)	GS-10	50,526
Property management specialist (3)	GS-10	25,263
Electronic technician	GS-10	8,421
Assistant chief (2)	GS-9	15,392
Administrative officer (3)	GS-9	23,088
Medical staff assistant (2)	GS-9	15,392
Financial operations officer	GS-9	7,696
Dietitian (5)	GS-9	38,480
Personnel officer	GS-9	7,696
Medical staff assistant	GS-8	7,068
Housekeeping assistant	GS-7	6,451
Property management assistant	GS-7	6,451
Nurse (17)	GS-7	109,667
Medical staff assistant (6)	GS-7	38,706
Medical staff technician (11)	GS-7	70,961
Laboratory technician (9)	GS-7	58,059
Clerical assistant	GS-6	5,867
Property management assistant (11)	GS-6	64,537
Nurse (39)	GS-6	228,813
Medical staff assistant (4)	GS-6	23,468
Medical staff technician	GS-6	5,867
Clerical assistant (5)	GS-5	26,655
Housekeeping assistant	GS-5	5,331
Property management assistant	GS-5	5,331
Dental staff technician (4)	GS-5	21,324
Dietetic assistant (2)	GS-5	10,662
Medical staff technician (5)	GS-5	26,655
Laboratory technician (5)	GS-5	26,655
Clerical assistant (14)	GS-4	66,864
Laundry worker	GS-4	4,776
Dental staff technician (11)	GS-4	52,536
Medical staff technician (9)	GS-4	42,984
Nursing assistant (11)	GS-4	52,536
Clerical assistant (3)	GS-3	12,807
Nursing assistant (24)	GS-3	102,456
Custodial worker (2)	GS-3	8,538
Dental staff technician (2)	GS-3	8,538
Ungraded positions at hourly rates equivalent to less than $15,106:		
Housekeeping assistant (16)		70,991
Laundry worker (2)		6,593
Custodial worker (8)		47,576
Dietetic assistant (20)		103,043
Maintenance craftsman		6,826
Grades established by Act of July 1, 1944 (42 U.S.C. 207) (commissioned officers):		
Director grade (5)		83,225
Senior grade (21)		271,824
Full grade (18)		168,714
Senior assistant grade (63)		530,874
Assistant grade (8)		48,440
Total, inpatient and outpatient care (417)		3,027,951
Coast Guard medical services: Nurse (2)	GS-7	12,902
Grades established by Act of July 1, 1944 (42 U.S.C. 207): Senior assistant grade officers (12)		97,176
Total, Coast Guard medical services (14)		110,078

New positions requested, fiscal year 1968—Continued

	Grade	Annual salary
Division of Federal Employee Occupational Health and Safety:		
Safety engineer	GS–13	$12,873
Industrial hygienist	GS–13	12,873
Financial management officer	GS–13	12,873
Safety training officer	GS–11	9,221
Safety officer, inspector	GS–9	7,696
Records management officer	GS–9	7,696
Statistician	GS–9	7,696
Nurse (18)	GS–8	127,224
Nurse (18)	GS–7	116,118
Medical staff technician (4)	GS–7	25,804
Medical staff technician (5)	GS–6	29,335
Nurse (36)	GS–6	211,212
Secretary	GS–5	5,331
Fiscal clerk	GS–5	5,331
Clerical assistant (18)	GS–4	85,968
Ungraded positions at hourly rates equivalent to less than $15,106: Housekeeping assistant (18)		76,428
Grades established by act of July 1, 1944 (42 U.S.C. 207): Full grade officers (18)		195,174
Total, Division of Federal Employee Occupational Health and Safety (144)		948,853
Total new positions, all activities (575)		4,086,882

HOSPITAL CONSTRUCTION ACTIVITIES

WITNESSES

DR. HARALD M. GRANING, DIRECTOR, DIVISION OF HOSPITAL AND MEDICAL FACILITIES
WILLIAM B. BURLEIGH, ASSISTANT DIRECTOR, PLANS AND POLICIES
DR. CARRUTH J. WAGNER, DIRECTOR, BUREAU OF HEALTH SERVICES
DR. PAUL Q. PETERSON, DEPUTY DIRECTOR, BUREAU OF HEALTH SERVICES
RALPH BAHN, FINANCIAL MANAGEMENT OFFICER, BUREAU OF HEALTH SERVICES
DR. WILLIAM H. STEWART, SURGEON GENERAL
G. R. CLAGUE, ACTING CHIEF FINANCE OFFICER
JAMES B. CARDWELL, DEPUTY ASSISTANT SECRETARY, BUDGET

Object classification

(In thousands of dollars)

		1966 actual	1967 estimate	1968 estimate
	Personnel compensation:			
11.1	Permanent positions	2,641	2,820	2,939
11.3	Positions other than permanent	41	25	25
	Total personnel compensation	2,682	2,845	2,964
12.0	Personnel benefits	229	259	270
21.0	Travel and transportation of persons	323	326	360
22.0	Transportation of things	16	17	18
23.0	Rent, communications, and utilities	59	59	63
24.0	Printing and reproduction	77	115	115
25.1	Other services	147	119	135
	Project contracts	561	263	327
25.3	Payment to: "Public Health Service management fund"	80	105	108
26.0	Supplies and materials	36	45	46
31.0	Equipment	29	40	51
41.0	Grants, subsidies, and contributions	221,954	311,823	312,400
99.0	Total obligations	226,194	316,016	316,857

Personnel summary

	1966 actual	1967 estimate	1968 estimate
Total number of permanent positions	293	302	313
Full-time equivalent of other positions	5	3	3
Average number of all employees	271	282	294
Average GS grade	5.7	5.8	5.9
Average GS salary	$6,637	$6,829	$6,982

Program and financing

[In thousands of dollars]

		1966 actual	1967 estimate	1968 estimate
	Program by activities:			
	1. Grants for construction of health facilities:			
	(a) Hospitals, public helath centers, etc	139,407	152,863	134,000
	(b) Long-term care facilities	39,519	74,093	70,000
	(c) Diagnostic or treatment centers	16,867	19,288	20,000
	(d) Rehabilitation facilities	12,647	11,423	10,000
	(e) Modernization of health facilities	1,587	41,182	40,000
	2. Grants for construction of a multiservice facility for the physically and mentally handicapped	1,500		
	3. Grants for construction and operation of demonstration health facilities		6,375	29,500
	4. Hospital and medical facilities research	11,055	7,200	10,000
	5. Operations and technical services	2,973	3,255	3,357
	Total program costs, funded [1]	225,555	315,679	316,857
	Change in selected resources [2]	639	339	
10	Total obligations	226,194	316,016	316,857
	Financing:			
16	Comparative transfers to other accounts	23,086	38,016	
21	Unobligated balance available, start of year	−207,533	−358,041	−217,500
22	Unobligated balance transferred from "Construction of community mental health centers" (78 Stat. 969-970)	−1,596		
23	Unobligated balance transferred to "Community health services"			10,500
24	Unobligated balance available, end of year	258,041	217,500	198,500
25	Unobligated balance lapsing	5,104	33	
	New obligational authority	303,294	313,525	308,357
	New obligational authority:			
40	Appropriation	303,304	313,525	308,357
41	Transferred to—			
	"Office of the Surgeon General, salaries and expenses" (42 U.S.C. 226)	−6		
	"Operating expenses, Public Buildings Service," General Services Administration (79 Stat. 531)	−4		
43	Appropriation (adjusted)	303,294	313,525	308,357
	Relation of obligations to expenditures:			
10	Total obligations	226,194	316,016	316,857
70	Receipts and other offsets (items 11-17)	23,086	38,016	
71	Obligations affecting expenditures	249,280	354,032	316,857
72	Obligated balance, start of year	344,008	392,325	521,179
74	Obligated balance, end of year	−392,325	−521,179	−603,036
77	Adjustments in expired accounts	−581		
90	Expenditures	200,382	225,178	235,000

[1] Includes capital outlay as follows: 1966, $29,000; 1967, $40,000; 1968, $51,000.
[2] Selected resources as of June 30 are as follows: Unpaid undelivered orders, 1965, $133,000 (1966 adjustment, −$92,000); 1966, $681,000; 1967, $1,020,000; 1968, $1,020,000.

Mr. FLOOD. We now have Dr. Harold M. Graning, Director, Division of Hospital and Medical Facilities.

BIOGRAPHICAL SKETCH OF PRINCIPAL WITNESS

At this point we will insert a biographical sketch of Dr. Graning.

(Sketch follows:)

Name: Harald M. Graning, M.D.
Position:
Assistant Surgeon General.
Director, Division of Hospital and Medical Facilities.
Birthplace and date: Minneapolis, Minn., February 14, 1912.
Education:
B.S. University of Minnesota.
B.M.–M.D. University of Minnesota.
M.P.H. Johns Hopkins School of Hygiene & Public Health.
Experience:
Director, Division of Hospital and Medical Facilities, Washington, D.C. October 1963 to present.
Regional Health Director for the New York Region 1958–1963.
Regional Medical Director, USPHS Chicago 1951 to 1958.
Chief, State & Local Health Serv. USPHS Wash., D.C., 1948–50.
Cancer Control Consultant, USPHS, New Orleans, La., 1947–48.
Director, Div. Local Health Serv., Georgia Dept. of Pub. Health, Atlanta, Ga. 1945–47.
Civil Affairs (Military Government) Princeton Univ. 1944–45.
USPHS Plague Laboratory, San Francisco, Calif. 1942–43.
Dir. Kitsap County Health Dept. Bremerton, Wash. 1941.
Hospital Service & Quarantine, San Pedro, Calif. 1938–40.
Association memberships: American Medical Association, American Hospital Association, the American Assoc. of Military Surgeons, The American College of Preventive Medicine, member of the governing council of the American Public Health Association and the House of Delegates of the American Hospital Association.
Special awards, citations, or publications: In November 1963, he was awarded the Meritorious Service Medal of the Public Health Service Commissioned Corps.

General Statement

Mr. Flood. I see you have a statement, Doctor.

You may proceed.

Dr. Graning. It is a privilege to appear today in support of the Hill-Burton construction program, hospital research and demonstration program, and the Appalachian program.

The total request for the activities included in this budget is $308,357,000. This amount provides $280 million for the Hill-Burton construction program, $10 million for the Hospital and medical facilities research and demonstration program, $15 million for the Appalachian program, and $3,357,000 for operations and technical services.

I would like to place before the committee a quick picture of the health facility situation before discussing the specific requests included in this budget. The most pressing demands presented by communities relate to the expansion and modernization of existing facilities and the construction of new general hospitals. The pattern has not changed significantly in that the need for additional general beds has its major focus in rural and suburban areas while the urban areas desperately need assistance in the modernization and replacement of existing general hospitals. While the medicare program will make substantial demands on long-term care facilities, we believe the pattern of private investment and Federal-aid programs will continue to make inroads into the serious problem of providing adequate care for our aging population. Also outpatient facilities which lessen the pressure for inpatient care facilities must be established wherever necessary.

And last, but not least, preventive health services must be strengthened through the establishment of facilities through which public health services can be provided efficiently.

Research and demonstration as a means of finding better and more economical methods of delivering health services in an institutional setting are first priority items. Technological advances, such as automation, hold great promise for improving hospital care and increasing the efficiency of the hospital's communication system and business operations.

While this is a "birds-eye" view of the problem, it is within this context that I wish to speak in support of the specific budget requests.

HILL-BURTON CONSTRUCTION PROGRAM

The $280 million requested, the full amount authorized for Hill-Burton construction, includes $130 million for the purpose of constructing new and expanded hospital and public health centers. In the main, these funds will be used to construct additional general hospital beds and facilities and this utilization will continue the trend of reducing the deficit of general hospital beds.

The need for construction of long-term care facilities continues at a high level. Our aging population continues to increase and the demand for adequate nursing-home care must be met. In addition, the enactment of the medicare program partially removes the economic barrier to long-term and extended care, and the demand for facilities providing services of this nature will unquestionably increase. Accordingly, $70 million is requested for long-term care facilities.

The request also includes $20 million for diagnostic or treatment centers and $10 million for rehabilitation facilities. These amounts will permit communities to continue the construction of outpatient care facilities and further reduce the need for additional inpatient facilities which are more expensive to construct and operate.

A total of 50 million is requested for the modernization of hospitals and other health facilities. While the Hill-Burton program has achieved notable results in bringing needed general hospital beds and facilities to many areas, particularly rural and suburban areas, a serious and growing problem of replacing and modernizing hospitals has emerged. Rapid advances in medical science have made obsolete many features of hospitals built 20 years or more ago. This is particularly true of the quality care hospitals which provide highly specialized hospital services, conduct research, apply the latest advances in medical science, and train future physicians, nurses, and other health specialists.

HOSPITAL AND MEDICAL FACILITIES RESEARCH AND DEMONSTRATION PROGRAM

The $10 million requested for the research and demonstration studies relating to hospital services, facilities, and resources is a modest investment when considered in relation to the $2 billion expended annually to construct medical facilities of all types. Great emphasis and a high priority is placed on the research and demonstration program because these activities hold the greatest promise for dramatic improve-

ments in hospital organization, operation, and design. During 1968, particular attention will be given to the funding of projects which involve the application of computer techniques to hospital operation.

Eleven additional positions are needed in the intramural phase of the program to provide the staff needed for supervising contracts and conducting studies in the field of hospital operation, including the testing and adaptation of automation techniques.

APPALACHIA PROGRAM

A request for $15 million is submitted for this program. Section 202 of Public Law 89–4, Appalachian Regional Development Act of 1965, with proposed amendments, authorizes funds for the planning, construction (including acquisitions of facilities), equipment, and operation of multicounty demonstration projects, including hospitals, regional health diagnostic and treatment centers, and other facilities and services necessary for health.

Grants for construction or equipment (including initial equipment) of any component of a demonstration health project shall not exceed 80 percent of such costs.

Grants for operation of a demonstration health project, whether or not constructed with funds authorized under this act, may be made for up to 100 percent of the costs thereof for the first 2 years. These grants may include initial operating funds and operating deficits including the cost of attracting, training, and retaining qualified personnel. For the next 3 years of operation such a grant may not exceed 50 percent of such costs.

The Congress intended that these section 202 projects demonstrate the value of adequate health facilities and services to the economic development of the region, and insure that comprehensive health services are available to the residents of communities in selected demonstration areas. The Commission, with the approval of the Department of Health, Education, and Welfare, established its Health Advisory Committee to develop criteria and guidelines for a program which would utilize these funds in the most efficient and effective manner possible in achieving that intent.

Since the adoption of the criteria and guidelines in January 1966, the Committee has worked with the State and local communities in the complex process of project development. Sufficient projects presently are in hand and under development to assure commitment of these funds during 1968. These projects represent the Federal Government's attempt to assist States and communities in the development of health services to meet their needs.

OPERATIONS AND TECHNICAL SERVICES

The request for $3,357,000 is necessary to the continuation of the Federal Government's role of providing national leadership in the planning, design, and construction of all types of health facilities. No new positions are being requested for the construction phase of the program. The present staff is needed to carry out such complex responsibilities as reviewing State plans, project applications, and architectural drawings, and providing consultation to State agencies and project sponsors regarding the many planning, administrative,

and construction features of health facility grant-aided construction programs.

Mr. Chairman, I shall be glad to answer any questions you may have concerning this program or the budget request.

APPALACHIA PROGRAM

Mr. FLOOD. Any such projects must first be approved by the responsible State agency before it comes to the Appalachian Commission in Washington, is that not true?

Dr. GRANING. That is true.

Mr. FLOOD. The project sponsor must clear through his responsible State agency first, and then it comes here to the Commission?

Dr. GRANING. Yes, sir.

Mr. FLOOD. Do I understand that you have available for the local project sponsors, technical aid, assistance, and advice in the preparation of the project and application? Do you do that?

Dr. GRANING. Are you speaking to the Hill-Burton program at the moment, sir?

Mr. FLOOD. Appalachia.

Dr. GRANING. The Health Advisory Staff of the Appalachian Commission has representatives in some regional offices who offer this consultation service, yes.

Dr. WAGNER. Supplemented by people concerned with the particular program.

SUMMARY OF BUDGET REQUEST

Mr. FLOOD. The adjusted appropriation for 1967 is $283,319,000, and the request for 1968 is $308,357,000, an increase of $25,038,000. Is that about where we are?

Dr. GRANING. Yes, sir.

Mr. FLOOD. Under the basic part of your program you are requesting $280 million, an increase of $10 million. Is this the total authorized?

EMPHASIS ON MODERNIZATION

Dr. GRANING. It is, sir. The law authorizes an increase in modernization with a decrease in hospital construction, for a net increase of $10 million.

Mr. FLOOD. The net increase is made up of a $5 million decrease for construction of hospitals and public health centers and things of that sort, and an increase of $15 million for modernization of health facilities?

Dr. GRANING. Yes, sir.

Mr. FLOOD. I know, of course, this shift was provided as a matter of law, but would you like to comment about the shift?

Dr. GRANING. The States have demonstrated that there is a need for the increase in modernization money. In fact, the transfer provisions in the law which make it possible for State agencies to transfer money between categories have demonstrated that there is need not only for the modernization money that is authorized, but additional funds as well.

For instance, this year with an authorization of $35 million, we have to date shown an obligation of $39 million. That is to say, the States have transferred additional money into the modernization category. So, the concept envisioned by the Congress of transferring into the modernization fund has turned out very well.

Mr. FLOOD. That is what prompted the shift.

Dr. GRANING. Yes, sir.

DEMAND FOR FUNDS COMPARED TO AVAILABILITY

Mr. FLOOD. What is the situation with regard to the excess of demand over funds available under title VI, the basic part of your program?

Dr. GRANING. The States at the annual meeting with the Surgeon General this last year passed a resolution to the effect that they would be interested in having four times as much money appropriated as the Congress has made available. Also, we did, as we have in previous years, ask for information from the States in terms of what construction they would be able to proceed with if there were no limitation in Federal funds. We learned that the States during the 2-year period 1968 and 1969, for instance, would be prepared to move ahead with $5,536,786,000 worth of total construction which would require a Federal share of $2,272,696,000.

APPALACHIA

Mr. FLOOD. For the Appalachia part of the program you are requesting $15 million, compared with $2,500,000 for 1967. What is the status of your authorization legislation for 1968 for the Appalachia program, do you know?

Dr. GRANING. The legislation is pending before the Congress at the present time.

Dr. WAGNER. The hearings have been held, and it is in conference. It was reported favorably to the Senate yesterday.

RESEARCH

Mr. FLOOD. For research you have 49 positions and $7,500,000. You are asking for 60 positions and $10 million. Is this a general increase across the board? Give us a few worthwhile results that you hope to achieve from this kind of research.

Dr. GRANING. As I indicated in my opening statement, the investment of $10 million would be a very modest sum, particularly when we think that the annual operational cost of hospitals today is $13 billion.

Illustrative of the type of projects supported with research and demonstration grants, the chairman might be interested in knowing that, for instance, in the State of Iowa, we funded a study of patient care involving a unit dose system which was a proposal to modify the conventional drug distribution system within a hospital to improve the safety and efficiency of medication transactions. The demonstration was to be carried out in one floor of the hospital. A single pharmacy substation is to be established adjacent to five nursing stations. The project will involve the use of unit dose drug disposal system that is de-

signed to reduce medication errors, reduce nursing time devoted to medication activities, increase the utilization of pharmacists in line with their training, reduce drug inventories throughout the hospital, provide greater control over drugs, and provide a check on prescriptions by a trained pharmacist.

In addition, the chairman might be interested in knowing that in Peoria, Ill., a grant was given to the Sisters of the Third Order of Staint Francis in which 10 hospitals, ranging in size from 65 beds to 700 beds, will be sharing a computer.

This computer study is directed at resolving three problems: The mounting clerical workload in hospitals, the problem of communications between departments, and the usually unorganized and delayed informational response of ancillary departments. These 10 hospitals will contain 89 nursing stations, 111 ancillary areas, and an initial estimated 40 doctors' offices serving communities in the Midwest.

RESULTS FROM RESEARCH

Mr. FLOOD. If you have anything further as to worthwhile results, suppose you develop two or three of them at this point in the record.

(The requested information follows:)

An Adaptable Building System project sponsored by the Division of Architecture of the Texas A & M University Research Foundation has been funded directed to the increasing problem of premature obsolescence of patient-care facilities. The objectives of the work are to make buildings for patient-care more adaptable to the often rapidly changing demands created by advances in medical techniques and equipment, improved hospital operation, and fluctuating social patterns. These demands are not easily met by the existing and currently employed building methods. The project involves the research, development, and demonstration of a modular building system of internal and external flexibility for application to the various types of progressive patient-care facilities. Characteristics of this building will be its inherent ability for efficient adjustment to frequently changing care-conditions.

A project concerned with *Programming Metropolitan Hospital Growth* has been funded at the Regional Science Research Institute in Philadelphia. The aim of this research is to develop and apply the methods of regional analysis in the determination of optimal growth patterns for metropolitan general short-term hospitals. They propose to investigate the major social and economic costs of hospital system growth and to develop a methodology for analyzing the interdependent impact of these costs, through space and time, on the total cost of providing hospital services to a metropolitan population. An effort will be made to develop procedures that can be widely applied by hospital planning agencies in metropolitan areas.

A project is being supported at the Youngstown Hospital Association in Youngstown, Ohio entitled *Computers-Automation: Impact on Laboratory Management*. The purpose of this project is to measure and to document the impact of combining computer techniques and automated pathology laboratory devices. Such a system involves the automatic recording of test instrument readings, their storage in a computer, and the automatic print-out of test results in a continually updated form which permits the attending physician to easily compare the latest test results of other appropriate tests as well. In addition, this system is expected to materially reduce the associated paperwork and to permit the effective and safe use of less highly trained personnel in the pathology laboratory.

GEORGETOWN UNIVERSITY PROJECT

Mr. FLOOD. What is the status of the Georgetown University project?

Dr. GRANING. The Georgetown University project is scheduled to go to construction in December of this year.

Mr. FLOOD. Thank you very much.

JUSTIFICATION MATERIAL

Hospital Construction Activities

Amounts available for obligation

	1967	1968
Appropriation	$133,525,000	$308,357,000
Comparative transfer to—		
"Community Health Services"	−25,206,000	
"Comprehensive health planning and services"	−5,000,000	
Total	283,319,000	308,357,000

Obligations by activity [1]

	1967 estimate		1968 estimate		Increase or decrease	
	Positions	Amount	Positions	Amount	Positions	Amount
1. Grants for construction of health facilities:						
(a) Hospitals, public health centers, etc.		$135,000,000		$130,000,000		−$5,000,000
(b) Long-term care facilities		70,000,000		70,000,000		
(c) Diagnostic or treatment centers		20,000,000		20,000,000		
(d) Rehabilitation facilities		10,000,000		10,000,000		
(e) Modernization of health facilities		35,000,000		50,000,000		+15,000,000
2. Grants for construction and operation of demonstration health facilities		2,500,000		15,000,000		+12,500,000
3. Hospital and medical facilities research	49	7,500,000	60	10,000,000	+11	+2,500,000
4. Operations and technical services	253	3,286,000	253	3,357,000		+71,000
(a) Hospital and medical facilities construction program	243	3,181,000	243	3,252,000		+71,000
(b) Appalachian program	10	105,000	10	105,000		
Total obligations	302	283,286,000	313	308,357,000	+11	+25,071,000
Unobligated balance, reserve		33,000				−33,000
Total, obligations and balances	302	283,319,000	313	308,357,000	+11	+25,038,000

[1] Hospital construction grants are on an allocation basis.

Obligations by object

	1967 estimate	1968 estimate	Increase or decrease
Total number of permanent positions	302	313	+11
Full-time equivalent of all other positions	3	3	
Average number of all employees	282	294	+12
11 Personnel compensation:			
Permanent positions	$2,820,000	$2,939,000	+$119,000
Positions other than permanent	25,000	25,000	
Total personnel compensation	2,845,000	2,964,000	+119,000
12 Personnel benefits	259,000	270,900	+11,000
21 Travel and transportation of persons	326,000	360,000	+34,000
12 Transportation of things	17,000	18,000	+1,000
23 Rent, communications, and utilities	59,000	63,000	+4,000
24 Printing and reproduction	115,000	115,000	
25 Other services	118,600	134,600	+16,000
Project contracts	263,000	327,000	+64,000
Payment to: "Public Health Service management fund"	105,400	108,400	+3,000
26 Supplies and materials	45,000	46,000	+1,000
31 Equipment	40,000	51,000	+11,000
41 Grants, subsidies, and contributions	311,822,833	312,400,000	+577,167
Total obligations by object [1]	316,015,833	316,857,000	+841,167

[1] Includes funds carried over for obligational purposes from prior years for Hill-Burton construction grants and the Appalachia program.

Summary of changes

1967 enacted appropriation	$313,525,000
Comparative transfers to—	
"Community health services"	−25,206,000
"Comprehensive health planning and services"	−5,000,000
Unobliged balance, reserve	−33,000
1967 total estimated obligations	283,286,000
1968 estimated obligations	308,357,000
Total change	+25,071,000

	Base		Changes from base	
	Positions	Amount	Positions	Amount
INCREASES				
A. Built in: Annualization of 9 positions approved in 1967				$46,000
B. Program:				
1. Increase in grants for hospital construction program		$270,000,000		10,000,000
2. Increase in grants for construction and operation of demonstration health facilities (Appalachia)		2,500,000		12,500,000
3. Increase in the hospital and medical facilities research and demonstration program	49	7,500,000	11	2,500,000
4. Increase for operations and technical services	253	3,180,600		35,000
5. Increase in pro-rata share of the Public Health Service management fund		105,400		3,000
Total program increases			11	25,038,000
DECREASES				
A. 1 less day's pay in 1968 (261 days in 1967: 260 days in 1968)				−11,000
B. Nonrecurring equipment costs				−2,000
Total decreases				−13,000
Total net changes requested			+11	+25,071,000

EXPLANATION OF CHANGES

Grants for hospital construction program

A net increase of $10,000,000 is requested for the hospital construction program. This is composed of a decrease of $5,000,000 for construction of new hospitals, public health centers, etc. and an increase of $15,000,000 for modernization of health facilities. This will provide $130,000,000 for new construction of hospitals, and $50,000,000 for modernization. This ratio is in accordance with provisions of Public Law 88–443 which indicates that thirteen-eighteenths shall be for new construction and five-eighteenths for modernization. The total requested is the full amount authorized in 1968.

Grants for construction and operation of demonstration health facilities (Appalachia)

The $12,500,000 increase requested for 1968 will provide for construction and operation of demonstration health facilities under the Appalachian Regional Development program. The increase is contingent upon enactment of authorizing legislation.

Hospital and medical facilities research and demonstration program

The $2,500,000 increase requested for 1968 will permit the approval of increased numbers of research and demonstration projects which focus attention on such problems as (1) improving the operating efficiency of health facilities, (2) improving the functional layout of health facilities, (3) improving the coordination of community health facilities, and (4) developing more effective organizational patterns for the provision of health services.

Operations and technical services

An increase of $35,000 is requested for 1968 to provide for increased operational costs.

LEGISLATIVE AUTHORIZATION

(Public Health Service Act)

TITLE VI

"PART A—GRANTS AND LOANS FOR CONSTRUCTION AND MODERNIZATION OF HOSPITALS AND OTHER MEDICAL FACILITIES

"AUTHORIZATION OF APPROPRIATIONS FOR CONSTRUCTION GRANTS

"SEC. 601, In order to assist the States in carrying out the purposes of section 600, there are authorized to be appropriated—

"(a) for the fiscal year ending June 30, 1965, and each of the next four fiscal years—

"(1) $70,000,000 for grants for the construction of public or other nonprofit facilities for long-term care;

"(2) $20,000,000 for grants for the construction of public or other nonprofit diagnostic or treatment centers;

"(3) $10,000,000 for grants for the construction of public or other nonprofit rehabilitation facilities;

"(b) for grants for the construction of public or other nonprofit hospitals and public health centers and for grants for modernization of such facilities and the facilities referred to in paragraph (a), $150,000,000 for the fiscal year ending June 30, 1965, $160,000,000 for the fiscal year ending June 30, 1966, $170,000,000 for the fiscal year ending June 30, 1967, and $180,000,000 each for the next two fiscal years.

"SEC. 602. (a)(1) * * * As used in this paragraph, the new hospital portion of sums appropriated pursuant to section 601(b) (which portion shall be available for grants for the construction of public or other nonprofit hospitals and public health centers) is 100 per centum of such sums in the case of the fiscal year ending June 30, 1965, seven-eighths thereof in the case of the first fiscal year thereafter, twenty-seven thirty-fourths thereof in the case of the second fiscal year thereafter, thirteen eighteenths thereof in the case of the third fiscal year thereafter, twenty-five thirty-sixths thereof in the case of the fourth fiscal year thereafter.

"STUDIES AND DEMONSTRATIONS RELATING TO COORDINATED USE OF HOSPITAL FACILITIES

"SEC. 624. (a) The Surgeon General is authorized to conduct research, experiments, and demonstrations relating to the effective development and utilization of services, facilities, and resources of hospitals or other medical facilities and, after consultation with the Federal Hospital Council, to make grants-in-aid to States, political subdivisions, universities, hospitals, and other public and nonprofit private institutions or organizations for projects for the conduct of research, experiments, or demonstrations relating to the development, utilization and coordination of services, facilities, and resources of hospitals or other medical facilities, agencies, or institutions, and including the construction of units of hospitals or other medical facilities which involve experimental architectural designs or functional layout, the efficiency or economy of which can be tested and evaluated, or the demonstration thereof, and projects for acquisition of experimental or demonstration equipment for use in connection with hospitals or other medical facilities. * * * There is authorized to be appropriated not to exceed $10,000,000 for any fiscal year to carry out the provisions of this section.

DEMONSTRATION HEALTH FACILITIES

SEC. 202. (a) In order to demonstrate the value of adequate health and medical facilities to the economic development of the region, the Secretary of Health, Education, and Welfare is authorized to make grants for the construction, equipment, and operation of multicounty demonstration health facilities, including hospitals, regional health diagnostic and treatment centers, and other facilities necessary to health. Grants for such construction (including initial equipment) shall be made in acordance with the applicable provisions of title VI

of the Public Health Service Act (42 U.S.C. 291–291z) and the Mental Retardation Facilities and Community Mental Health Centers Construction Act of 1963 (77 Stat. 282), without regard to any provisions therein relating to appropriation authorization ceiling or to allotments among the States. Grants under this section shall be made solely out of funds specifically appropriated for the purpose of carrying out this Act and shall not be taken into account in the computation of the allotments among the States made pursuant to any other provision of law. (b) * * * Not to exceed $41,000,000 of the funds authorized in section 401 shall be available for construction grants under this section. (c) * * * Not to exceed $28,000,000 of the funds authorized in section 401 of this Act shall be available for operating grants under this section.

AUTHORIZATION OF APPROPRIATIONS

SEC. 401. In addition to the appropriations authorized in section 201 for the Appalachian development highway system, there is hereby authorized to be appropriated for the period ending June 30, 1967, to be available until expended, not to exceed $252,400,000 to carry out this Act.

Explanation of transfers

	1967 estimate	1968 estimate	Purpose
Comparative transfer to—			
"Community health services"	−$25,206,000		Transfer of the mental retardation facilities construction programs in line with the Public Health Service reorganization.
"Comprehensive health planning and services."	−5,000,000		Transfer of areawide health facility planning grants in line with the Service reorganization.

HOSPITAL CONSTRUCTION ACTIVITIES

A request for $308,357,000 is submitted for 1968. This amount provides $280,000,000 for the Hill-Burton construction program, $15,000,000 for the Appalachian Regional Development program, $10,000,000 for the Hospital and Medical Facilities Research and Demonstration program, and $3,357,000 for operations and technical services.

Construction under title VI, the Public Health Service Act (Hill-Burton)

	1967 estimate	1968 estimate	Increase or decrease
Grants, subsidies, and contributions	$270,000,000	$280,000,000	+$10,000,000

The $280,000,000 requested for 1968 for construction under Title VI of the Public Health Service Act is the full amount authorized and will provide $180,000,000 for grants or loans to assist in (a) the construction of hospitals, public health centers, and related facilities and (b) the modernization of hospitals and other health facilities; $70,000,000 for long-term care facilities; $20,000,000 for diagnostic or treatment centers; and $10,000, for rehabilitation facilities.

Considerable progress has been made in providing additional general hospital beds and facilities. However, the need and demand for construction of these types of facilities continue at a high level. The need for long-term care and ambulatory facilities is also acute and the interest of communities in constructing these relatively low cost facilities in lieu of expensive general hospital beds continues to increase. Increase in our population and the enactment of medicare which partially removes the financial barriers to care in nursing homes and hospitals further contribute to the need for additional beds and facilities.

The rate at which existing facilities are becoming obsolete and require replacement is a serious threat to health facilities, particularly those quality care hospitals located in our more densely populated areas. State plans covering the need for modernization of health facilities have now been approved, and many cities and communities are now ready to seek assistance under this program to modernize or replace functionally and structurally obsolete facilities.

State agencies reported in January 1966 that if unlimited Federal funds were available 827 projects costing a total of $1,651,323,000 and utilizing Federal funds in the amount of $654,917,000 could be approved in 1968. Many of the 1,938 projects which States reported could be approved in 1967 will not be constructed because of limited funds and will further add to this total. In order that the greatest program impact possible may be made, therefore, the maximum amounts authorized to be appropriated are requested.

A net increase of $10,000,000 for 1968 over 1967 is requested.

1. *Hospitals and public health centers, etc.*—The amount of $130,000,000 is requested for the construction of new and expanded hospitals and public health centers out of the $180,000,000 requested pursuant to Section 601(b). This is a decrease of $5,000,000 from the amount available in 1967. That portion of the $130,000,000 that will be utilized for general hospital construction will produce an estimated 15,025 beds. Construction taking place outside the program will produce an additional 13,000 beds. The total of 28,025 will be sufficient to more than offset those required for population increases and to further reduce the existing deficit.

2. *Modernization of health facilities.*—An amount of $50,000,000, the full amount authorized, is requested for the modernization of hospitals and other health facilities out of the $180,000,000 requested pursuant to the provisions of Section 601(b). This is an increase of $15,000,000 over the amount available for 1967.

While the Hill-Burton program has achieved notable results in bringing needed health facilities to many areas, an additional serious and growing problem has emerged. Many hospitals and other health facilities—particularly those quality care general hospitals located in our more densely populated areas—are functionally or structurally obsolete and are becoming increasingly inefficient or unsafe to operate. Yet these are the hospitals which provide for highly specialized hospital services, conduct research, put into practice the latest advances in medical science, and help train future physicians, nurses, and other health specialists.

This modernization problem is one of the more urgent needs in the hospital field today. State plans for the modernization program have now been submitted and show the need for modernizing or replacing 272,000 general hospital beds. It is estimated that the $50,000,000 requested will modernize or replace 6,200 beds.

3. *Long-term Care Facilities.*—The need for chronic disease and nursing home beds continues to grow with the increase in our aging population and the demand for such beds will increase as a result of the medicare program. State agencies report that 318,700 long-term care beds, including extended care facility beds, must be constructed, modernized, or replaced. Providing more long-term care beds will not only permit more economical care of patients requiring this type of service, but in addition, will tend to lessen the pressures for additional general hospital beds in some communities. The $70,000,000 requested for 1968 is the same as appropriated for 1967, the total amount authorized, and will provide 13,090 beds.

4. *Diagnostic or treatment centers and rehabilitation facilities.*—The maximum amounts authorized to be appropriated for these two categories are also requested. The construction of these outpatient facilities will provide a means of lessening the pressure for construction of additional expensive bed-care installations, and reducing the cost of health care to patients whose needs may be met through facilities providing outpatient care. The $20,000,000 for diagnostic or treatment centers and the $10,000,000 for rehabilitation facilities are the same as appropriated for 1967.

Projects and Beds Produced by Funds Requested.—Assuming that State agencies program projects along the same lines as occurred in 1964 and 1965, the funds requested above will produce the following projects and beds for 1968. Comparative data are included for 1966 and 1967.

Type of project	Number of projects			Beds provided		
	1966	1967	1968	1966	1967	1968
Hospitals, public health centers, etc.:						
General hospitals	247	223	218	16,333	16,100	15,025
Mental hospitals	11	12	11	691	414	419
Public health centers and laboratories	43	44	50	0	0	0
Subtotal	301	279	279	17,024	16,514	15,444
Long-term care facilities	272	242	223	14,440	13,090	13,090
Diagnostic or treatment centers	106	92	93	0	0	0
Rehabilitation facilities	44	42	39	0	0	0
Subtotal	422	376	355	14,440	13,090	13,090
Modernization	38	62	90	2,520	4,445	6,200
Grand total	761	717	724	33,984	34,049	34,734

Construction and operation of demonstration health projects (Appalachia)

	1967 estimate	1968 estimate	Increase or decrease
Grants for demonstration health projects	$2,500,000	$15,000,000	+$12,500,000

Section 202 of Public Law 89–4 under proposed amendments authorizes funds for the planning, construction (including acquisition of facilities), equipment and operation of multi-county demonstration projects, including hospitals, regional health diagnostic and treatment centers and other facilities and services necessary for health.

Grants for construction or equipment (including initial equipment) of any component of a demonstration health project shall not exceed 80% of such costs.

Grants for operation (including initial operating funds and operating deficits comprising among other items the costs of attracting, training and retaining qualified personnel) of a demonstration health project, whether or not constructed with funds authorized under this Act may be made for up to 100% of the costs thereof for the two-year period beginning, for each facility or service assisted under any such operating grant, on the first day such facility or service is in operation as a part of the project. For the next three years of operation such grant shall not exceed 50% of such costs.

Authorization is provided for funds for the support of the Health Advisory Committee and staff and to make grants for expenses of planning necessary for the development and operation of demonstration health projects.

The Congress intended that these projects demonstrate the value of adequate health facilities and services to the economic development of the Region and insure that comprehensive health services are available to the residents of communities in selected demonstration areas.

In its immediate efforts to implement Section 202, the Appalachian Regional Commission, with the approval of the Department of Health, Education and Welfare, established its Health Advisory Committee. This twenty-five member Committee is comprised of twelve State appointees and twelve Federal appointees, with a Chairman who is jointly appointed by the Federal and State Co-Chairmen, and represents a cross section of leaders in the health fields (private physicians, deans of medical schools and schools of public health, private philanthropists, public health officials, hospital administrators, etc.).

The Committee and its staff, supported by the Public Health Service and the Office of Economic Opportunity, with the assistance of various programs of the Public Health Service, conducted an extensive field study and appraisal of the health needs and facilities in Appalachia.

On completion of this study, the Commission found that construction and operation of health facilities would only partially meet the needs of the Region. During this study, particular emphasis was placed on identification of available health resources and the development of a program which would assure the most

efficient and productive method of channeling the grant funds into the local areas. This would provide the greatest possible increase in the delivery of health services to those people most in need of such services.

In January 1966, the Committee recommended and the Commission adopted the Criteria and Guidelines for the development of Section 202 projects, aimed at making available comprehensive health services to all residents in a multi-county service area.

The Committee has emphasized three major concepts: regional services, comprehensive care and demonstration of new health service techniques. These projects must include health education, personal preventive services, diagnostic and therapeutic services, rehabilitative and restorative services and community-wide environmental health services. The development and operation of any community health service under Section 202 shall preserve and encourage all existing programs and arrangements involving the relationships between the physician and the patient.

It has been determined that funds to develop adequate health services could be used most prudently by broadening the scope of existing authority. Legislation is presently pending which will extend and amend the existing legislation.

Since the adoption of the Criteria and Guidelines, the Public Health Service staff, working under the direction of the Commission, has made extensive field visits throughout Appalachia working with the State and local communities in the complex process of comprehensive health service project development.

Prior to 1967 no grant funds were obligated pending the completion of the field survey and establishment of the criteria and guidelines.

The Commission has given assurance that there are sufficient projects on hand and under development that will permit the commitment of the $23,500,000 presently available, as well as the increased amount being requested in this estimate. These include one project formally submitted for funding and 4 additional projects informally submitted and under review. It is anticipated that these will be formally submitted by the States within 60–90 days. There are also 4 additional projects in various stages of development.

A request is submitted for $15,000,000 for 1968 for a net increase of $12,500,000 over 1967 which will allow the Federal Government to assist State and local communities in the development of health services to meet their needs.

Hospital and medical facilities research

	1967 estimate		1968 estimate		Increase of decrease	
	Positions	Amount	Positions	Amount	Positions	Amount
Personnel compensation and benefits	49	$508,000	60	$616,000	+11	+$108,000
Other expenses	.....	6,992,000	.....	9,384,000	.....	+2,392,000
Total	49	7,500,000	60	10,000,000	+11	+2,500,000
Summary of program:						
Research and demonstration grants	.....	$6,600,000	.....	$8,900,000	.....	+$2,300,000
Intramural research	.....	900,000	.....	1,100,000	.....	+200,000
Total	.....	7,500,000	.....	10,000,000	.....	+2,500,000

A total of $10,000,000 is proposed for the Hospital and Medical Facilities Research and Demonstration Program. This research and demonstration effort is essential to enable hospitals and other health facilities to upgrade their functional layout, operation, organization, and general effectiveness so as to keep pace with the rapid advances being made in medical research and the practice of medicine.

In addition the funds requested will permit the approval of research and demonstration projects which focus attention on such problems as (1) improving the operating efficiency of health facilities, (2) improving the layout of health facilities, (3) improving the coordination of community health facilities, and (4) developing more effective organizational patterns for the provision of health services.

Research and demonstration studies will be undertaken relating to such areas as:

1. Improvements in hospital organization and patterns of service which may lead to greater efficiency and lower costs of operation.
2. Greater safety and efficiency in health facility operation through changes and improvements in the characteristics of facility design, construction, and equipment.
3. The utilization rates of health facilities and the relationship of such rates to the need for various types of health facilities.
4. Improvements in the design of hospitals.

Eleven additional positions are proposed for the intramural phase of the program to provide the staff needed for conducting studies in the field of hospital operation, including the testing and adaptation of automated data processing systems to all facets of hospital and other health facility operations.

Operations and technical services

	1967 estimate		1968 estimate		Increase or decrease	
	Positions	Amount	Positions	Amount	Positions	Amount
Personnel compensation and benefits	253	$2,596,000	253	$2,618,000	.....	+$22,000
Other expenses	.....	690,000	.....	739,000	.....	+49,000
Total	253	3,286,000	253	3,357,000	.....	+71,000
Summary of program:						
(a) Hospital and medical facilities construction program	243	3,181,000	243	3,252,000	.....	+71,000
(b) Appalachia program	10	105,000	10	105,000	.....	.....
Total	253	3,286,000	253	3,357,000	.....	+71,000

The estimate of $3,357,000 and the 253 positions requested are necessary to the continuation of the Federal government's role of providing national leadership in the operation of (a) the Hill-Burton program, (b) providing architectural and engineering services in the processing of applications under the mental retardation facilities program, and (c) the Appalachia program for construction of multicounty demonstration health facilities, and for supplemental grants to projcts approved for Hill-Burton aid in the Appalachian region.

The funds requested will support the staff necessary to provide technical assistance and consultation to sponsors and State agencies regarding all aspects of program administration; develop and revise minimum standards of design, construction, and equipment; review and approve basic documents, such as State plans, applications, and architectural drawings and specifications; compile and analyze data relating to problems in hospital and medical facility planning for the purpose of reflecting health facility needs and developing or projecting a base for a balanced program approach; maintaining surveillance over bid awards and the construction of facilities; and the development of regulations, procedures, and policies for operation of the program.

In connection with the Appalachia program, the same basic activities identified above for the Hill-Burton program are carried out, and in addition, data relating to such problems as the needs of the Appalachia area for health services and facilities must be developed and analyzed. A close liaison relationship is maintained with the Appalachian Regional Commission regarding the development of projects, the need therefore, and the extent to which such projects will contribute to the economic development of the Appalachian region.

A total increase of $84,000 is requested for 1968 for operations and technical services activities. Of this amount, partially offset by nonrecurring costs amounting to $13,000, $46,000 for mandatory costs, $3,000 for the pro-rata share of the Public Health Service management fund, and $35,000 for increased operational costs.

EXHIBIT 1.—*Allocations to States for construction of hospital and medical facilities*

	Fiscal year		
	1966	1967	1968
Total	$258,500,000	$270,000,000	$280,000,000
Alabama	7,582,721	7,531,936	7,424,061
Alaska	750,000	750,000	750,000
Arizona	2,456,746	2,477,104	2,592,896
Arkansas	4,445,097	4,379,755	4,131,068
California	13,869,919	14,390,467	15,474,150
Colorado	2,346,927	2,541,105	2,816,710
Connecticut	1,787,652	2,170,924	2,662,947
Delaware	750,000	750,000	750,000
District of Columbia	791,579	782,182	773,956
Florida	9,012,859	9,264,822	9,424,662
Georgia	8,451,100	8,331,482	8,116,196
Hawaii	1,044,127	1,026,624	947,694
Idaho	1,362,435	1,337,186	1,235,894
Illinois	8,374,671	9,112,630	9,966,741
Indiana	6,018,230	6,462,739	6,575,159
Iowa	3,918,964	4,257,154	4,332,973
Kansas	3,128,959	3,354,793	3,342,127
Kentucky	6,363,606	6,270,427	6,170,993
Louisiana	7,096,802	6,991,881	6,749,672
Maine	1,775,580	1,772,862	1,832,862
Maryland	3,340,667	3,519,935	3,951,881
Massachusetts	4,714,370	5,706,612	6,796,145
Michigan	9,741,755	10,487,643	10,055,850
Minnesota	4,871,084	5,127,094	5,226,684
Mississippi	5,969,077	5,883,459	5,538,545
Missouri	5,422,694	5,850,465	6,730,582
Montana	1,219,594	1,197,821	1,257,988
Nebraska	2,047,762	2,134,648	2,267,752
Nevada	750,000	750,000	750,000
New Hampshire	1,100,385	1,081,513	1,080,250
New Jersey	5,371,505	6,275,499	7,002,551
New Mexico	1,913,565	1,886,436	1,774,223
New York	13,157,047	14,671,937	16,829,948
North Carolina	9,707,217	9,898,683	10,128,288
North Dakota	1,269,369	1,246,384	1,236,491
Ohio	12,082,319	12,688,579	13,005,467
Oklahoma	4,341,402	4,324,947	4,270,004
Oregon	2,310,714	2,356,250	2,526,753
Pennsylvania	14,168,613	15,624,370	16,694,159
Rhode Island	1,287,354	1,234,958	1,164,839
South Carolina	5,724,856	5,696,789	5,712,378
South Dakota	1,359,088	1,333,921	1,370,669
Tennessee	7,724,894	8,020,510	8,217,758
Texas	16,886,826	17,263,024	17,913,831
Utah	1,649,665	1,627,003	1,601,965
Vermont	897,130	884,327	895,796
Virginia	7,393,981	7,615,722	7,459,520
Washington	3,464,510	3,680,051	3,636,454
West Virginia	3,430,694	3,587,162	3,836,426
Wisconsin	5,391,423	5,533,879	5,635,076
Wyoming	773,265	765,069	775,254
American Samoa	59,874	57,145	375,000
Guam	149,218	387,251	382,307
Puerto Rico	7,105,109	7,269,841	7,453,315
Virgin Islands	375,000	375,000	375,000

EXHIBIT II.—*Allocations to States for construction and modernization of hospitals and related health facilities for fiscal year 1966 (as of July 1, 1965)*

State	Total	Modernization	Hospitals and public health centers	Long-term care facilities	Diagnostic or treatment centers	Rehabilitation facilities
Total	$258,500,000	$20,000,000	$140,000,000	$70,000,000	$18,500,000	$10,000,000
Alabama	7,582,721	490,362	4,189,330	2,077,685	534,642	290,702
Alaska	750,000	200,000	200,000	200,000	100,000	50,000
Arizona	2,456,746	200,000	1,333,019	661,107	170,120	92,500
Arkansas	4,445,097	317,158	2,438,300	1,209,268	311,175	169,196
California	13,869,919	906,235	7,657,417	3,797,673	977,238	531,356
Colorado	2,346,927	200,000	1,268,151	628,936	161,842	87,998
Connecticut	1,787,652	200,000	937,797	465,098	119,682	65,075
Delaware	750,000	200,000	200,000	200,000	100,000	50,000
District of Columbia	791,579	200,000	241,579	200,000	100,000	50,000
Florida	9,012,859	472,728	5,044,503	2,501,806	643,779	350,043
Georgia	8,451,100	546,218	4,669,273	2,315,712	595,892	324,005
Hawaii	1,044,127	200,000	464,005	230,122	100,000	50,000
Idaho	1,362,435	200,000	676,785	335,650	100,000	50,000
Illinois	8,374,671	645,407	4,565,539	2,264,265	582,653	316,807
Indiana	6,018,230	406,305	3,314,864	1,643,996	423,043	230,022
Iowa	3,918,964	286,632	2,145,553	1,064,081	273,816	148,882
Kansas	3,128,959	215,188	1,721,112	853,580	219,649	119,430
Kentucky	6,363,606	442,814	3,497,306	1,734,478	446,326	242,682
Louisiana	7,096,802	448,692	3,926,920	1,947,544	501,153	272,493
Maine	1,775,580	200,000	930,667	461,562	118,771	64,580
Maryland	3,340,667	237,317	1,833,094	909,117	233,939	127,200
Massachusetts	4,714,370	432,825	2,529,032	1,254,266	322,755	175,492
Michigan	9,741,755	640,928	5,375,696	2,666,060	686,046	373,025
Minnesota	4,871,084	354,752	2,667,717	1,323,046	340,454	185,115
Mississippi	5,969,077	395,022	3,292,495	1,632,903	420,188	228,469
Missouri	5,422,694	432,528	2,947,602	1,461,854	376,173	204,537
Montana	1,219,594	200,000	581,300	288,294	100,000	50,000
Nebraska	2,047,762	200,000	1,091,440	541,296	139,290	75,736
Nevada	750,000	200,000	200,000	200,000	100,000	50,000
New Hampshire	1,100,385	200,000	501,612	248,773	100,000	50,000
New Jersey	5,371,505	410,451	2,930,406	1,453,326	373,978	203,344
New Mexico	1,913,565	200,000	1,012,172	501,984	129,173	70,236
New York	13,157,047	1,130,380	7,103,938	3,523,176	906,604	492,949
North Carolina	9,707,217	640,946	5,355,285	2,655,937	683,441	371,608
North Dakota	1,269,369	200,000	614,573	304,796	100,000	50,000
Ohio	12,082,319	773,739	6,679,777	3,312,815	852,472	463,516
Oklahoma	4,341,402	318,785	2,376,088	1,178,414	303,236	164,879
Oregon	2,310,714	200,000	1,246,761	618,327	159,112	86,514
Pennsylvania	14,168,613	1,045,169	7,751,784	3,844,474	989,282	537,904
Rhode Island	1,287,354	200,000	626,596	310,758	100,000	50,000
South Carolina	5,724,856	360,262	3,168,770	1,571,542	404,398	219,884
South Dakota	1,359,088	200,000	674,548	334,540	100,000	50,000
Tennessee	7,724,894	498,339	4,268,598	2,116,998	544,757	296,202
Texas	16,886,826	1,039,431	9,360,774	4,642,448	1,194,620	649,553
Utah	1,649,665	200,000	856,292	424,675	109,279	59,419
Vermont	897,130	200,000	347,130	200,000	100,000	50,000
Virginia	7,393,981	466,115	4,092,167	2,029,498	522,242	283,959
Washington	3,464,510	247,079	1,900,479	942,537	242,539	131,876
West Virginia	3,430,694	253,027	1,876,992	930,888	239,541	130,246
Wisconsin	5,391,423	393,920	2,951,936	1,464,003	376,726	204,838
Wyoming	773,265	200,000	223,265	200,000	100,000	50,000
American Samoa	59,874	2,834	33,693	16,710	4,299	2,338
Guam	149,218	6,560	70,000	52,001	13,381	7,276
Puerto Rico	7,105,109	441,852	3,935,868	1,951,981	502,294	273,114
Virgin Islands	375,000	100,000	100,000	100,000	50,000	25,000

NOTE.—Basis of allocations, per statutory formula:

(*a*) Total population, as estimated by the Bureau of the Census: (1) Provisional estimates of the United States, July 1, 1965 (Series P–25, No. 317, Aug. 27, 1965): American Samoa, Guam, Puerto Rico and Virgin Islands provisional estimates as of July 1, 1964 (Series P–25, No. 300, Feb. 24, 1965).

(*b*) Allocation percentage for fiscal years 1966 and 1967, as determined by the Surgeon General, Sept. 17, 1964.

EXHIBIT III.—*Allocations to States for construction and modernization of hospitals and related health facilities, fiscal year 1966 (as of June 30, 1966)*

State	Total	Modernization	Hospitals and public health centers	Long-term care facilities	Diagnostic or treatment centers	Rehabilitation facilities	Administration funds
Total	$258,500,000	$31,821,902	$134,687,636	$60,896,898	$17,493,054	$12,075,856	$1,524,654
Alabama	7,582,721	1,883,004	4,189,330	959,685	210,000	290,702	50,000
Alaska	750,000	200,000	200,000	200,000	100,000	35,000	15,000
Arizona	2,456,746	943,402	589,617	661,107	142,628	92,500	27,492
Arkansas	4,445,097	447,170	2,434,300	1,109,756	270,370	155,196	28,305
California	13,869,919	2,236,984	6,641,276	2,350,972	1,297,237	1,343,450	
Colorado	2,346,927	200,000	1,268,151	582,086	161,842	87,998	46,850
Connecticut	1,787,652	200,000	919,041	200,000	184,492	262,022	22,097
Delaware	750,000	200,000	200,000	200,000	100,000	50,000	
District of Columbia	791,579	200,000	241,579	200,000	100,000	50,000	
Florida	9,012,859	472,728	5,044,503	2,501,806	643,779	300,043	50,000
Georgia	8,451,100	546,218	4,669,273	2,265,712	595,892	324,005	50,000
Hawaii	1,044,127	593,527	258,664	141,936		33,262	16,738
Idaho	1,362,435	200,000	676,785	335,650	100,000	24,032	25,968
Illinois	8,374,671	645,407	4,565,539	1,031,350	1,024,307	1,058,068	50,000
Indiana	6,018,230	714,296	3,314,864	1,543,333	215,715	180,022	50,000
Iowa	3,918,964	286,632	2,153,450	1,328,000	2,000	123,882	25,000
Kansas	3,128,959	215,188	1,711,112	1,035,231	32,998	114,430	20,000
Kentucky	6,363,606	442,814	3,497,306	1,734,478	446,326	192,682	50,000
Louisiana	7,096,802	2,396,236	3,926,920	26,400	474,753	247,493	25,000
Maine	1,775,580	200,000	920,367	327,322	253,011	64,580	10,300
Maryland	3,340,667	625,000	1,445,411	909,117	233,939	127,200	
Massachusetts	4,714,370	432,825	2,494,532	1,245,266	318,255	173,492	50,000
Michigan	9,741,755	640,928	5,375,696	2,666,060	686,046	329,360	43,665
Minnesota	4,871,084	354,752	2,667,717	1,123,046	290,454	385,115	50,000
Mississippi	5,969,077	395,022	3,292,495	1,632,903	420,188	228,469	
Missouri	5,422,694	432,528	2,947,602	1,411,854	376,173	204,537	50,000
Montana	1,219,594	200,000	581,300	388,294		29,765	20,235
Nebraska	2,047,762	200,000	1,091,440	527,217	138,726	75,736	14,643
Nevada	750,000	200,000	200,000	297,953	2,047	50,000	
New Hampshire	1,100,385	200,000	501,612	248,773	100,000	29,300	20,700
New Jersey	5,371,505	410,451	2,899,006	1,440,226	370,328	201,494	50,000
New Mexico	1,913,565	1,009,000	203,172	501,984	129,173	55,690	14,546
New York	13,157,047	1,130,380	7,103,938	3,523,176	906,604	492,949	
North Carolina	9,707,217	635,946	5,331,285	2,714,627	607,751	367,608	50,000
North Dakota	1,269,369	200,000	691,993	404,796		50,000	12,580
Ohio	12,082,319	773,739	6,629,777	3,312,815	852,472	463,516	50,000
Oklahoma	4,341,402	318,785	2,376,088	1,178,414	303,236	141,474	23,405
Oregon	2,310,714	2,070,355		108,187		86,514	45,658
Pennsylvania	14,168,613	1,045,169	7,701,784	3,844,474	989,282	537,904	50,000
Rhode Island	1,287,354	200,000	626,596	310,758	100,000	28,212	21,788
South Carolina	5,724,856	360,262	3,168,770	1,571,542	354,398	219,884	50,000
South Dakota	1,359,088	300,000	674,548	334,540		26,613	23,387
Tennessee	7,724,894	498,339	4,268,598	2,116,998	536,257	296,202	8,500
Texas	16,886,826	2,345,000	9,360,774	3,288,500	1,192,999	649,553	50,000
Utah	1,649,665	200,000	856,292	424,675	109,279	43,899	15,520
Vermont	897,130	200,000	347,130	200,000	100,000	42,500	7,500
Virginia	7,393,981	466,115	4,062,167	1,830,100		990,599	45,000
Washington	3,464,510	1,132,242	1,487,347	420,506	242,539	131,876	50,000
West Virginia	3,430,694	253,027	1,876,992	930,888	200,548	130,246	38,993
Wisconsin	5,391,423	399,920	2,951,936	1,464,003	376,726	164,436	40,402
Wyoming	773,265	423,265			300,000	34,535	15,465
American Samoa	59,874	2,834	33,693	16,710	4,299	2,338	
Guam	149,218	6,560	70,000	52,001	13,381	7,276	
Puerto Rico	7,105,109	441,852	3,935,868	1,621,671	832,604	223,197	49,917
Virgin Islands	375,000	100,000	100,000	100,000	50,000	25,000	

NOTE.—This exhibit is prepared especially to show the adjusted amount of construction money remaining in the various categories and the amount used for State administration purposes.

EXHIBIT IV.—*Allocations to States for construction and modernization of hospitals and related health facilities for fiscal year 1967*

State	Total	Modernization	Hospitals and public health centers	Long-term care facilities	Diagnostic or treatment centers	Rehabilitation facilities
Total	$270,000,000	$35,000,000	$135,000,000	$70,000,000	$20,000,000	$10,000,000
Alabama	7,531,936	549,363	4,036,715	2,075,756	580,068	290,034
Alaska	750,000	200,000	200,000	200,000	100,000	50,000
Arizona	2,477,104	254,550	1,284,887	660,713	184,636	92,318
Arkansas	4,379,755	317,158	2,348,638	1,207,716	337,495	168,748
California	14,390,467	1,627,158	7,378,634	3,794,234	1,060,294	530,147
Colorado	2,541,105	428,105	1,221,552	628,146	175,535	87,767
Connecticut	2,170,924	607,793	903,666	464,682	129,855	64,928
Delaware	750,000	200,000	200,000	200,000	100,000	50,000
District of Columbia	782,182	200,000	232,182	200,000	100,000	50,000
Florida	9,264,822	859,443	4,859,258	2,498,723	698,265	349,133
Georgia	8,331,482	549,630	4,498,789	2,313,363	646,467	323,233
Hawaii	1,026,624	200,000	446,847	229,777	100,000	50,000
Idaho	1,337,186	200,000	651,944	335,242	100,000	50,000
Illinois	9,112,630	1,503,967	4,398,666	2,261,878	632,079	316,040
Indiana	6,462,739	938,404	3,193,689	1,642,256	458,927	229,463
Iowa	4,257,154	682,188	2,066,734	1,062,754	296,985	148,493
Kansas	3,354,793	487,034	1,657,888	852,518	238,235	119,118
Kentucky	6,270,427	443,070	3,368,870	1,732,337	484,100	242,050
Louisiana	6,991,881	448,692	3,782,702	1,945,138	543,566	271,783
Maine	1,772,862	222,319	896,389	46,0940	128,809	64,405
Maryland	3,519,935	463,836	1,766,770	908,507	253,881	126,941
Massachusetts	5,706,612	1,491,801	2,436,636	1,252,965	350,140	175,070
Michigan	10,487,643	1,528,432	5,179,435	2,663,365	774,274	372,137
Minnesota	5,127,094	680,821	2,570,448	1,321,773	369,368	184,684
Mississippi	5,883,459	395,022	3,172,936	1,631,585	455,944	227,972
Missouri	5,850,465	938,004	2,839,957	1,460,360	408,096	204,048
Montana	1,197,821	200,000	559,906	287,915	100,000	50,000
Nebraska	2,134,648	316,046	1,051,357	540,628	151,078	75,539
Nevada	750,000	200,000	200,000	200,000	100,000	50,000
New Hampshire	1,081,513	200,000	483,096	248,417	100,000	50,000
New Jersey	6,275,499	1,391,941	2,823,248	1,451,768	405,695	202,847
New Mexico	1,886,436	200,000	974,951	501,338	140,098	70,049
New York	14,671,937	2,833,778	6,843,792	3,519,209	983,439	491,719
North Carolina	9,898,683	975,602	5,158,548	2,652,624	741,273	370,636
North Dakota	1,246,384	200,000	591,978	304,406	100,000	50,000
Ohio	12,688,579	1,556,463	6,435,620	3,309,318	924,785	462,393
Oklahoma	4,324,947	364,209	2,289,754	1,177,435	329,033	164,516
Oregon	2,356,250	277,748	1,201,609	617,890	172,669	86,334
Pennsylvania	15,624,370	2,705,820	7,468,380	3,840,384	1,073,191	536,595
Rhode Island	1,234,958	200,000	584,432	300,526	100,000	50,000
South Carolina	5,696,789	414,872	3,053,544	1,570,191	438,788	219,394
South Dakota	1,338,921	200,000	649,788	334,133	100,000	50,000
Tennessee	8,020,510	906,240	4,112,851	2,114,907	591,008	295,504
Texas	17,263,024	1,664,356	9,017,791	4,637,120	1,295,838	647,919
Utah	1,627,003	200,000	824,969	424,215	118,546	59,273
Vermont	884,327	200,000	334,327	200,000	100,000	50,000
Virginia	7,615,722	798,647	3,941,039	2,026,557	566,319	283,160
Washington	3,080,051	513,232	1,830,779	941,421	263,079	131,540
West Virginia	3,582,162	459,736	1,808,005	929,711	259,807	129,903
Wisconsin	5,538,879	614,192	2,844,135	1,462,508	408,696	204,348
Wyoming	765,069	200,000	215,069	200,000	100,000	500,000
American Samoa	57,145	2,834	31,398	16,145	4,512	2,256
Guam	387,251	100,000	112,251	100,000	50,000	25,000
Puerto Rico	7,269,841	587,494	3,863,151	1,986,506	555,127	277,563
Virgin Islands	375,000	100,000	100,000	100,000	50,000	25,000

NOTE.—Basis of allocations, per statutory formula:

(*a*) Total population, as estimated by the Bureau of the Census: (1) Provisional estimates of the United States, July 1, 1965 (series P-25, No. 324, Jan. 20, 1966); American Samoa, Guam, Puerto Rico, and Virgin Islands provisional estimates as of July 1, 1965 (series P-25, No. 336, Apr. 26, 1966).

(*b*) Allocation percentage for fiscal years 1966 and 1967, as determined by the Surgeon General, Sept. 17, 1964.

EXHIBIT V.—*Tentative allocations to States for construction and modernization of hospitals and related health facilities, for fiscal year 1968*

State	Total	Modernization	Hospitals and public health centers	Long-term care facilities	Diagnostic or treatment centers	Rehabilitation facilities
Total	$280,000,000	$50,000,000	$130,000,000	$70,000,000	$20,000,000	$10,000,000
Alabama	7,424,061	804,299	3,767,035	2,011,275	560,968	280,484
Alaska	750,000	200,000	200,000	200,000	100,000	50,000
Arizona	2,592,986	376,215	1,261,474	673,519	187,852	93,926
Arkansas	4,131,068	339,390	2,157,689	1,152,021	321,312	160,656
California	15,474,150	2,427,302	7,424,427	3,964,009	1,105,608	552,804
Colorado	2,816,710	634,825	1,241,621	632,920	184,896	92,448
Connecticut	2,662,947	908,136	998,591	533,162	148,705	74,353
Delaware	750,000	200,000	200,000	200,000	100,000	50,000
District of Columbia	773,956	200,000	223,956	200,000	100,000	50,000
Florida	9,424,662	1,267,389	4,641,970	2,478,415	691,259	345,629
Georgia	8,116,196	803,266	4,161,489	2,221,879	619,708	309,854
Hawaii	947,694	200,000	389,653	208,041	100,000	50,000
Idaho	1,235,894	200,000	577,538	308,356	100,000	50,000
Illinois	9,966,741	2,229,018	4,403,221	2,350,944	655,705	327,853
Indiana	6,575,159	1,374,570	2,959,442	1,580,089	440,705	220,353
Iowa	4,332,973	998,011	1,897,790	1,013,258	282,609	141,305
Kansas	3,342,127	711,278	1,497,108	799,328	222,942	111,471
Kentucky	6,170,993	645,937	3,144,083	1,678,672	468,201	234,100
Louisiana	6,749,672	594,608	3,502,595	1,870,086	521,589	260,794
Maine	1,832,862	326,361	857,288	457,719	127,663	63,831
Maryland	3,951,881	696,725	1,852,376	989,011	275,846	137,923
Massachusetts	6,796,145	2,218,496	2,604,953	1,390,822	387,916	193,958
Michigan	10,055,850	2,218,939	4,459,665	2,381,080	664,111	332,055
Minnesota	5,226,684	998,355	2,406,169	1,284,689	358,314	179,157
Mississippi	5,538,545	412,745	2,916,883	1,557,366	434,367	217,184
Missouri	6,730,582	1,400,480	3,033,143	1,619,439	451,680	225,840
Montana	1,257,988	286,979	535,238	285,771	100,000	50,000
Nebraska	2,267,752	465,057	1,025,840	547,711	152,763	76,381
Nevada	750,000	200,000	200,000	200,000	100,000	50,000
New Hampshire	1,080,250	200,000	476,070	254,180	100,000	50,000
New Jersey	7,002,551	2,061,216	2,811,911	1,501,320	418,736	209,368
New Mexico	1,774,223	200,000	895,826	478,294	133,402	66,701
New York	16,829,948	4,225,679	7,172,573	3,829,541	1,068,103	534,052
North Carolina	10,128,288	1,438,141	4,945,206	2,640,318	736,415	368,208
North Dakota	1,236,491	200,399	577,667	308,425	100,000	50,000
Ohio	13,005,467	2,285,066	6,100,541	3,257,167	908,462	454,231
Oklahoma	4,270,004	529,857	2,128,364	1,136,365	316,945	158,473
Oregon	2,526,753	413,728	1,202,436	641,998	179,061	89,530
Pennsylvania	16,694,159	3,988,652	7,230,184	3,860,300	1,076,682	538,341
Rhode Island	1,164,839	110,006	531,215	283,624	100,000	50,000
South Carolina	5,712,378	610,292	2,903,388	1,550,161	432,358	216,179
South Dakota	1,370,669	235,060	642,545	343,064	100,000	50,000
Tennessee	8,217,758	1,583,271	3,917,680	2,091,706	583,401	291,700
Texas	17,913,831	2,462,554	8,792,689	4,694,544	1,309,363	654,681
Utah	1,601,965	213,573	790,076	421,833	117,654	58,827
Vermont	895,796	200,000	345,796	200,000	100,000	50,000
Virginia	7,459,520	1,164,682	3,582,134	1,912,554	533,433	266,717
Washington	3,636,454	746,579	1,644,509	878,028	244,892	122,446
West Virginia	3,836,426	678,632	1,796,971	959,429	267,596	133,798
Wisconsin	5,635,076	901,007	2,693,964	1,438,347	401,172	200,586
Wyoming	775,254	200,000	225,254	200,000	100,000	50,000
American Samoa	375,000	100,000	100,000	100,000	50,000	25,000
Guam	382,307	100,000	197,307	100,000	50,000	25,000
Puerto Rico	7,453,315	873,229	3,744,457	1,999,220	557,606	278,803
Virgin Islands	375,000	100,000	100,000	100,000	50,000	25,000

Basis of allocations, per statutory formula:

a. Total population, as estimated by the Bureau of the Census: (1) Provisional estimates of the United States, and Puerto Rico, July 1, 1966 (series P–25, No. 348, Sept. 16, 1966); American Samoa, Guam, and Virgin Islands, provisional estimates as of July 1, 1965 (series P–25, No. 336, Apr. 26, 1966).

b. Allotment percentages for fiscal years 1968 and 1969, as determined by the Surgeon General, Sept. 30, 1966.

New positions requested, fiscal year 1968

	Grade	Annual salary
Hospital and medical facilities research:		
Public health specialist (2)	GS–14	$30,212
Public health adviser (3)	GS–13	39,619
Research analyst (2)	GS–12	21,854
Research analyst (1)	GS–11	9,221
Do	GS–9	7,696
Clerical assistant (2)	GS–5	10,662
Total new positions (11)		118,264

THURSDAY, APRIL 13, 1967.

NATIONAL HEALTH STATISTICS

WITNESSES

DR. FORREST E. LINDER, DIRECTOR, NATIONAL CENTER FOR HEALTH STATISTICS
THEODORE D. WOOLSEY, DEPUTY DIRECTOR, NATIONAL CENTER FOR HEALTH STATISTICS
LOUIS R. STOLCIS, EXECUTIVE OFFICER, NATIONAL CENTER FOR HEALTH STATISTICS
DR. WILLIAM H. STEWART, SURGEON GENERAL
G. R. CLAGUE, ACTING CHIEF FINANCE OFFICER, PUBLIC HEALTH SERVICE
JAMES B. CARDWELL, DEPUTY ASSISTANT SECRETARY, BUDGET

BIOGRAPHICAL SKETCH OF PRINCIPAL WITNESS

Name: Forrest E. Linder.
Position: Director, National Center for Health Statistics.
Birthplace and date: Waltham, Massachusetts; November 21, 1906.
Education: University of Iowa: B.A. 1930; M.A. 1931; Ph.D. 1932.
Experience: Director, National Center for Health Statistics, 1960-present; Director, National Health Survey, U.S. Public Health Service, 1956–1960; Chief, Demographic and Social Statistics Branch, United Nations, 1947–1956; Commander, U.S. Navy (Reserve), 1944–1946 (duty at BUMED and assigned to staff of the Supreme Commander of Allied Powers to study and make recommendations on the reorganization of the Japanese system of vital statistics); Statistician, U.S. Census Bureau, 1935–1946; Statistician, Worcester (Mass.) State Hospital, 1932–1935.
Major committee experience: Vice Chairman, Technical Development Board, APHA, 1961–1966; Member, *Ad Hoc* Committee to Draft Revision of Constitution and Bylaws of Inter-American Statistical Institute, 1963–1965; Member, U.S. National Committee on Vital and Health Statistics, 1958-present; U.S. Member, WHO Expert Committee on Health Statistics, 1957-present.
Association memberships: American Public Health Association, American Statistical Association, Population Association of America, American Sociological Association, Inter-American Statistical Association, International Union for the Scientific Study of Population, Sigma X, Cosmos Club.
Special awards, citations or publications: HEW Distinguished Service Award, April 1966. Significant Publications: Forrest E. Linder *and* Walt R. Simmons. Objectives and Requirements for measurement of Vital Rates, Paper for Annual Meeting, American Statistical Association, Social Statistics Section, Los Angeles, August 1966.
Health of the American People. *Scientific American*, Vol. 214, No. 6, pp. 21–29. June 1966.
The Increased Scope of Demographic Investigations Through the Use of Sampling Surveys, United Nations, World Population Conference, Belgrade, September 1965.
Forrest E. Linder *and* Walt R. Simmons. Significance of the Electronic Computer for Health and Vital Statistics. *In* Emerging Techniques in Population Research. Milbank Memorial Fund Quarterly, New York, pp. 290–303. 1962.

Mr. NATCHER. At this time we will be pleased to hear from you, Dr. Linder.

Dr. LINDER. Thank you, Mr. Chairman.

GENERAL STATEMENT

Dr. LINDER. Mr. Chairman and members of the committee, it is a pleasure to appear before you to discuss the requested 1968 appropriation of the National Center for Health Statistics. Before doing so,

however, I would like to provide you with some background information about the organization I represent.

The National Center for Health Statistics is one of four general purpose statistical organizations of the Government. The others are the Bureau of the Census, the Bureau of Labor Statistics, and the Statistical Reporting Service of the Department of Agriculture. NCHS is by a large margin the smallest of these, there being 507 positions proposed for it in the budget request you are now considering.

MISSION OF NATIONAL CENTER FOR HEALTH STATISTICS

I would describe the mission of NCHS as being to provide reliable national health statistics of a descriptive character, on a continuing basis for the use of the health community, both public and private. Very briefly, we collect and publish health statistics of four types: Direct measures of health, such as mortality and morbidity; measures of people's use of services, such as doctor visits and hospital use; measures of health resources, such as physicians, pharmacists, hospital beds, and nursing home beds; and certain basic demographic data, such as births, marriages, and divorces. Our clientele includes, of course, the executive and legislative branches of the Federal Government, but also State and local governments, universities, and a wide variety of private businesses.

To fulfill its mission, the Center is organized into six divisions and seven offices. Its mechanisms for data collection include, in the case of vital statistics, a most successful and satisfying example of Federal-State cooperation.

I believe you may be interested in three of the fundamental policies governing activities of the Center. The first of these is a strict requirement covering the confidentiality of our data. In keeping with a pledge given to those who supply information to us, we never release such information in a form that would allow identification of individuals. Secondly, we insist upon scientific objectivity in our activities. NCHS publications report what the existing situation is; they never attempt to suggest what it should be or what social programs or corrective action should be attempted. One example of the recognition earned by this policy was an approving resolution passed on June 24, 1964, by the house of delegates, American Medical Association. And thirdly, the collected and analyzed data must be communicated to our users. We feel that we make no contribution until we have identified those who need our information and have made it available to them, and strong emphasis is placed on this purpose.

Turning now to the appropriation for 1968, I believe it represents advances in three principal categories. These reflect demands which fall upon the Center in support either of health programs and research or improved planning processes and management practices in the Public Health Service.

NEW MEDICAL CLASSIFICATION PROGRAM

The first category is associated with the recent revision of the International Classification of Diseases by the World Health Organization. This classification represents the basic international standard which makes it possible to compare the health statistics of America

with that of other advanced countries of the world. The new classification which goes into worldwide use in 1968 is designed to facilitate more complete use of medical information which doctors write on some 1,700,000 death certificates in the United States each year. Heretofore, it has been necessary to discard 60 percent of these valuable health data because we had to select—sometimes arbitrarily—a single cause for each death. Since mortality now results increasingly from chronic diseases or a complex of conditions, data based on a single cause of death are misleading and wasteful. We intend a multiple cause analysis which will correct this deficiency and will permit evaluation of interrelationships between the principal cause and other conditions which are contributing causes of death. This analysis will provide a new perspective to mortality problems and enhance the value of analytical data provided to public health programs and medical researchers who seek the means to control such leading killers as heart disease, cancer and stroke. The value of this approach has always been recognized but its cost has been considered prohibitive in the past. Now, however, the computer makes the effort economically feasible, and it is essential that this new method start in 1968 with the adoption of the revised International Classification of Diseases.

SURVEY OF FAMLY GROWTH

The second area of program emphasis involves a survey of family growth. The world is increasingly concerned with rapid population increase. Some nations regard it is a menace which threatens their economic progress. In our own country we recognize it as a crucial element in our social and economic development. The essential unit of population growth is, of course, the family but surprisingly little is known about the family and particularly about the dynamics of its growth. We propose to explore the latter area and to attempt to answer such questions as: In which segments of our population is growth most rapid? Why? What are the implications of this growth in terms of the nation's health? Its social problems? Its economy? What causes the wide fluctuations we have seen in the birth rate—the rapid rise for example in the late forties and the unexpectedly sharp decline in the mid-sixties? Can such fluctuations be predicted? Health and welfare programs, educators, economists and many business groups are keenly interested in the answers to these questions. We propose a nationwide household interview survey conducted frequently enough to provide reliable trend information and flexible enough to explore the implications and interrelationships of the data. Although up to now we have had very little information on family growth and factors related to it, I can say that there is no area of health statistics that receives as much public interest and attention as this.

PROGRAM EVALUATION

Enactment of the Comprehensive Health Planning and Public Health Service Amendments of 1966 inaugurated a new era in intergovernmental planning for public health. At about the same time, the Public Health Service began to develop its system for long range projection of health program goals. A necessary corollary of both

these efforts is a continuous and comprehensive evaluation of health programs to determine progress toward their goals.

A series of statistical studies will serve as the basis for this evaluation. Funds are included here because of the statistical relationship of these studies to the mission of NCHS and because the Center's continuing statistical output will also be used in program evaluation. This evaluation, leading to related judgments as to program progress and recommendations for detailed planning, will heavily involve appropriate units within the Office of the Surgeon General and the operating bureaus of the Service.

The total budget estimate for "National health statistics" for 1968 is $9,767,000, representing a total increase of $487,000 over the 1967 appropriation. This amount reflects program and mandatory increases of $1,763,800 offset by nonrecurring costs from 1967 of $1,276,800.

I shall be glad to answer any questions the committee may have.

SUMMARY OF BUDGET REQUEST FOR HEALTH STATISTICS

Mr. NATCHER. Thank you, Dr. Linder.

The appropriation for 1967 is $9,312,000 and the request for 1968 is $9,767,000, which is an increase of $455,000.

But, Dr. Linder, for practical purposes the request represents an increase of $1,605,000 since the 1967 appropriation included $1,150,000 for the purchase of a new computer which is a nonrecurring item.

That is correct, is it not?

Dr. LINDER. That is correct, yes, sir.

NEW MEDICAL CLASSIFICATION SYSTEM

Mr. NATCHER. You are requesting $220,600 and 33 positions to begin a new medical classification program. Tell us about this, Dr. Linder, and why it is important enough to start under current circumstances.

Dr. LINDER. This new medical classification program is tied in with the revision of the international classification of diseases. Every 10 years there is an international understanding on the method of classifying diseases. It is revised and updated each decade. This revision process has been going on now for 80 or 90 years. In other words, the revision that we are going into, starting in 1968, is the eighth international revision of this classification system.

One of the main points in the revision of this classification system was to redesign it—and this was done on the basis of international agreements—so for the first time we could begin to tabulate not only what one cause of death was, but also what the related complex of causes were that caused the death.

In earlier days when people died from infectious disease, smallpox, things of this kind, we tabulated—and the tradition has been to tabulate—just one cause of death, that is, the underlying cause of death. But now with the vast majority of deaths happening from a complex of causes, the chronic diseases that involve more than one medical condition, there has been pressure on the Center for many years, from the medical research people, to start tabulating these combinations. This has not been possible before because of the structure of the interna-

tional list. The new international list is designed to do this and by international understanding it goes into effect January 1, 1968. This is the one time in the decade that this can be done, and it is based on the new design of the classification.

NATIONAL SURVEY OF FAMILY GROWTH

Mr. NATCHER. I believe you want $409,900 to launch a national survey of family growth. I will ask you to do the same thing with regard to this new program that you have just discussed. Why, Dr. Linder, at this time?

Dr. LINDER. The problem of population and family growth in the United States is one of the principal items of interest, not only from a health standpoint but in terms of the economy of this country. This basic birth rate, which indicates the rate of increase to the population and consumers of the country, is a most important index. On this chart which I should like to refer to, if I can, it shows the birth rate since 1920. Now, this chart shows wide fluctuations of this phenomenon. It went down very sharply as you can see in the twenties and in the thirties, which was related to some of the depression of that time. It went up as expected right after the war but, as nobody expected, it stayed at that high level for 10 years. And now, in a time of unprecedented prosperity it is suddenly dropping down to the depression levels again.

The fluctuations of this chart have an important significance to American business. If I may, I should like to refer to an article published in the current issue of Fortune entitled "Why the U.S. Population Isn't Exploding." Would it be appropriate to read a couple of sentences from it?

Mr. NATCHER. Yes, it would, Doctor.

Dr. LINDER. It says here:

A sizable number of businessmen, in markets ranging from toys and baby food to houses and appliances, have been waiting restlessly for the new wave of marriages and births to power the economy in the 1970's.

The projection being fed into most business plans for the future nowadays is the census C.

I might explain that this census C is the lowest projection of the number that they have thought possible.

This yields a population in 1975 of 219,400,000—17 million less than was thought most probable in 1958. Thus, businessmen generally are looking forward to only about half the addition to population that they once expected to take place between 1967 and 1975.

Another quotation from this.

If births do take the "C" course, some businessmen are going to be disappointed by the market support they receive from the next rise in births. Purveyors of a wide range of products and services—some obvious examples include diaper services, bicycles, linens, milk, toys, baby furniture, children's clothing, baby food, and soft drinks—must clearly operate in smaller markets than they were anticipating only a few years ago.

Then relating to the question of our survey is the statement:

In any event, the main question about the reduced births is not who's doing the reducing but what these young parents have in mind. Are they simply postponing births, or are they in the process of curtailing the ultimate size of their families?

The object of our attempt to investigate the causes of these sharp fluctuations in the birth rate—which are important for population statistics—is to find out what is going on, to find out whether these fluctuations represent a real reduction in the proposed family size or whether they represent a postponement of births which will be made up at some future time. At the present, although a birth to a family represents an economic investment of $20,000, we know more about the intentions of families to buy a new washing machine or new automobile than we do about their intentions with regard to making investments of that size.

SPECIAL EVALUATION STATISTICAL STUDIES

Mr. NATCHER. Now, Dr. Linder, the other requested increase appears to be new also. This is the $1 million and 10 positions to be used to conduct the special evaluation statistical studies. What kind of a record can you build on this, Dr. Linder, to keep this little item here of $1 million riding real smoothlike in the budget?

Dr. LINDER. Well, we will do the best we can, Mr. Chairman.

Mr. NATCHER. All right. Go ahead.

Dr. LINDER. We are entering a period where public health programs are now being subjected to a type of practical evaluation that has not always been true in the past. Traditionally, in the Federal Government and in the State governments public health was defended on compassionate ground, on sympathy for the sick people or something like that, on an argument that public health programs would raise the quality of living.

But now, other things are recognized that also raise the quality of living and they come into competition with public health and health-type activities that are related to the main goal of improving the quality of the American life.

So, more and more, there have been demands made that public health work be evaluated on some sort of a cost effectiveness ratio; not just on compassionate grounds. In other words, are the results commensurate with the investment?

The effort here is to begin to approach this kind of question with factual studies of the results obtained from an investment of a certain size in a public health program, and to evaluate the effectiveness of this kind of a public health program as against another kind of a public health program in rather hardheaded terms—not just in terms of compassionate considerations.

It is the proper role for statistics in a public health program, in my opinion, to bring facts on the table rather than just consider the more emotional elements of the thing. We visualize this as the role of the National Center for Health Statistics, and we propose to sponsor and develop a series of studies that will attempt to bring this hardheaded approach to the evaluation of public health programs.

Mr. CARDWELL. I might add, Mr. Chairman, that Secretary Gardner specifically asks that funds be included in the Public Health Service budget for this purpose. When you add together the budget of the Public Health Service, the cost of Medicare, and the public health aspects of the welfare program in our budget, I think there is some-

thing just a little less than $6 billion being expended by the Federal Government in our Department for health and health-related activities. We have talked thus far about our manpower requirements and about the need for additional medical and public health services. The Secretary wants to be certain that we base our future requests for these resources on valid data. He wants some information that he can use, the Surgeon General can use, the President can use and that the Congress can use to assess priorities among disease categories, among various target groups, the general public, the older person, and the child. We want to find out more about at what levels problems exist. We have attacked a number of problems such as VD as if they were uniform nationwide, but there are indications now that they vary in degree among regions and even among States. This is why we want to put so much emphasis on this particular item within this budget.

Mr. NATCHER. Mr. Michel.

FLUCTUATIONS IN BIRTH RATE

Mr. MICHEL. I appreciate the chairman yielding to me. I do not know whether or not any observation I might make for the hearing at this point would be constructive or not but I am rather interested in the fluctuations in this birth rate chart that you presented to us.

Did I understand you to say that you could not understand why there was this leveling off between 1950 and 1960?

Dr. LINDER. Yes, sir. There has been an explanation of why the birth rate went up immediately after the war so rapidly and so high. This we understand. But nobody expected it to stay up there for a decade, because the level at that time was higher, as you can see, than we had for some decades before.

There is a great mystery why it is dropping so fast now in a time of relative prosperity. People thought they could understand the drop in the depression years of the thirties but what is happening now? Nobody really knows.

Mr. MICHEL. Would it be all the talk, even the appropriation of money, for population control not only here but around the globe? That certainly must have some bearing on it; doesn't it?

Dr. LINDER. Well, these might be the related causes. What is it doing to the family? Have people decided now to have smaller families or have they decided that they are getting married but they are going to have them later? In other words, is the total potential market rapidly disappearing?

Mr. MICHEL. How about getting this in the census?

Dr. LINDER. You see, that is only taken every 10 years. That does not show what is going on. If what you say is the case, that people are recalibrating the total size of their families because of the desire to advance their children's educational status and so on, then what this Fortune article says is that the businessmen in the seventies are going to have to learn to live with a much smaller market than they thought they were going to have when the birth rate was running at this level here.

So these are the alternatives, if families are going to be smaller, then there are going to be fewer customers than people had been anticipating up to now.

Mr. NATCHER. Mr. Smith?

Mr. SMITH. No questions.

Mr. NATCHER. Dr. Linder, we want to thank you for appearing before our committee at this time in behalf of your budget request for fiscal year 1968.

Dr. LINDER. Thank you, Mr. Chairman.

THURSDAY, APRIL 13, 1967.

NATIONAL LIBRARY OF MEDICINE

WITNESSES

DR. MARTIN M. CUMMINGS, DIRECTOR, NATIONAL LIBRARY OF MEDICINE
SCOTT ADAMS, DEPUTY DIRECTOR, NATIONAL LIBRARY OF MEDICINE
DR. MARJORIE P. WILSON, ASSOCIATE DIRECTOR, EXTRAMURAL PROGRAMS, NATIONAL LIBRARY OF MEDICINE
JAMES D. ISBISTER, EXECUTIVE OFFICER, NATIONAL LIBRARY OF MEDICINE
DR. WILLIAM H. STEWART, SURGEON GENERAL
G. R. CLAGUE, ACTING CHIEF FINANCE OFFICER, PUBLIC HEALTH SERVICE
JAMES B. CARDWELL, DEPUTY ASSISTANT SECRETARY, BUDGET

Object classification

[In thousands of dollars]

		1966 actual	1967 estimate	1968 estimate
	Personnel compensation:			
11.1	Permanent positions	2,300	2,842	3,355
11.3	Positions other than permanent	14	54	123
11.5	Other personnel compensation	28	10	30
	Total personnel compensation	2,342	2,906	3,509
12.0	Personnel benefits	179	224	266
21.0	Travel and transportation of persons	61	116	186
22.0	Transportation of things	4	8	12
23.0	Rent, communications, and utilities	125	179	278
24.0	Printing and reproduction	243	272	328
25.1	Other services	91	81	164
	Project contracts	1,242	2,678	3,305
25.2	Services of other agencies	189	134	138
25.3	Payment to "National Institutes of Health management fund"	418	658	743
26.0	Supplies and materials	104	110	156
31.0	Equipment	257	369	276
41.0	Grants, subsidies, and contributions	1,295	7,789	19,500
99.0	Total obligations	6,550	15,523	28,862

Personnel summary

	1966 actual	1967 estimate	1968 estimate
Total number of permanent positions	356	397	447
Full-time equivalent of other positions	6	6	12
Average number of all employees	302	355	397
Average GS grade	8.0	8.2	8.7
Average GS salary	$8,429	$9,028	$9,402

Program and financing

[In thousands of dollars]

	1966 actual	1967 estimate	1968 estimate
Program by activities:			
1. Grants:			
(a) Research	606	1,299	1,400
(b) Training	465	1,379	1,300
(c) Construction			12,500
(d) Publications and library support	224	4,911	2,800
(e) Regional medical libraries		200	1,500
Total, grants	1,295	7,789	19,500
2. Direct operations:			
(a) Library operations	3,590	4,578	7,361
(b) Research and support contracts	604	1,345	700
(c) Review and approval of grants and contracts	123	715	801
Total, direct operations	4,317	6,638	8,862
Total program costs, funded [1]	5,612	14,427	28,362
Change in selected resources [2]	938	1,096	500
10 Total obligations	6,550	15,523	28,862
Financing:			
16 Comparative transfers from other accounts	−61	−62	
21 Unobligated balance available, start of year		−3,034	−7,700
24 Unobligated balance available, end of year	3,034	7,700	
25 Unobligated balance lapsing	161	65	
New obligational authority	9,684	20,192	21,162
New obligational authority:			
40 Appropriation	9,685	20,192	21,162
41 Transferred to "Office of the Surgeon General, salaries and expenses" (42 U.S.C. 226)	−1		
43 Appropriation (adjusted)	9,684	20,192	21,162
Relation of obligations to expenditures:			
10 Total obligations	6,550	15,523	28,862
70 Receipts and other offsets (items 11-17)	−61	−62	
71 Obligations affecting expenditures	6,489	15,461	28,862
72 Obligated balance, start of year	1,067	3,310	5,582
74 Obligated balance, end of year	−3,310	−5,582	−9,410
77 Adjustments in expired accounts	−9		
90 Expenditures	4,237	13,189	25,034

[1] Includes capital outlay as follows: 1966, $257,000; 1967, $356,000; 1968, $276,000.
[2] Selected resources as of June 30 are as follows: Unpaid undelivered orders 1965, $776,000; 1966, $1,714,000; 1967, $2,810,000; 1968, $3,310,000.

BIOGRAPHICAL SKETCH OF PRINCIPAL WITNESS

Mr. NATCHER. We take up next the National Library of Medicine, with Dr. Martin M. Cummings as its Director. We will insert the biography of Dr. Cummings into the record at this point.

(The biography follows:)

Name: Martin Marc Cummings.

Position: Director, National Library of Medicine.

Birthplace and date: Camden, New Jersey, September 7, 1920.

Education: B.S., Bucknell University, 1941; M.D., Duke University School of Medicine, 1944; mixed internship, Boston Marine Hospital, 1944–45; assistant resident, medicine, Boston Marine Hospital, 1945–46.

Experience: Director, National Library of Medicine, 1964 to present; DHEW representative on the Committee on Science and Technological Information (COSATI) of the Federal Council on Science and Technology, 1965 to present; associate director for research grants, NIH, 1963; chief, Office of International Research, NIH, 1961–63; consultant, Office of the Director, NIH, 1960–61; consultant to Department of Medicine and Surgery, Veterans Administration, 1959–61; chairman and professor, Department of Microbiology, University of Oklahoma School of Medicine, Oklahoma City, Oklahoma, 1959–61; chairman, Panel on Sarcoidosis, National Research Council, National Academy of Sciences, 1958–60; chairman, Committee on Medical Research, National Tuberculosis Association, 1958–59; director, Research Service, Veterans Administration Central Office, Washington, D.C., 1953–59; special lecturer in microbiology, George Washington University School of Medicine, Washington, D.C., 1953–59; chief, Tuberculosis Research Laboratory, Veterans Administration Hospital, Atlanta, Georgia, 1949–53; associate professor of bacteriology, 1953, and instructor through associate professor of medicine at Emory University School of Medicine, Atlanta, Georgia, 1948–53; director, Tuberculosis Evaluation Laboratory, Communicable Disease Center, U.S. Public Health Service, Atlanta, Georgia, 1947–49; commissioned officer, U.S. Public Health Service, served in New York, Minnesota, Michigan, and Denmark, working with diseases of the chest and bacteriology.

Association memberships: American Academy of Microbiology, Inc.; American Federation for Clinical Research; American Society for Clinical Investigation—Emeritus Member; American Thoracic Society and National Tuberculosis Association; Association of American Medical Colleges; Medical Library Association; National Association on Standard Medical Vocabulary (Honorary Member); The Society of the Sigma XI; American Documentation Institute; Council of Biology Editors, Inc., The Royal Society of Medicine; one of twelve permanent members of the Federal Library Committee; Science Information Council, National Science Foundation; Association of Research Libraries—Automation Committee; Pacific Science Association, U.S. Panel, Standing Committee on the Communication of Scientific Information; consultant to the Special Joint Committee on Libraries in International Education (Association of Research Libraries, Spec. Libraries Association, The Council of National Library Associations and the American Library Association); consultant, American Hospital Association, Committee on Library Services for Hospitals; Board of Directors, Gorgas Memorial Foundation; Board of Directors, Council on Biological Science Information, NRC, NAS.

Special awards, citations, or publications: VA Distinguished Service Award; DHEW Superior Service Award; more than seventy articles on subjects ranging from tuberculosis to information retrieval systems; coauthor of a textbook on tuberculosis and contributor to four medical texts.

Mr. NATCHER. We will be pleased to hear from you at this time.

GENERAL STATEMENT

THE BIOMEDICAL COMMUNICATIONS PROBLEM

Dr. CUMMINGS. Mr. Chairman and members of the committee, since the beginning of the modern scientific era in the mid-17th century, the fund of human knowledge is estimated to have doubled every 15 years. The increasing investment of resources in recent years devoted to improving health has stimulated the publication of information at a rate which has overloaded all health science information channels. There are more than 6,000 different medical journals published in the world today. These periodicals contain approximately 250,000 articles each year written in 40 different languages. Based on historical evidence,

this periodical literature will double again in about 12 years. In addition, the technical report literature produced by Government contractors is expanding at an enormous rate. National and international scientific meetings produce still more information important to the growth of the health sciences. All of these elements contribute to a critical information overload.

Good communication among all members of the biomedical community is essential in improving health. Ineffective communication inhibits the progress of research and the application of new developments in the treatment of patients. The health researcher finds it increasingly difficult to be aware of the specialized literature pertaining to his fields of inqury. With present methods the average health practitioner finds it virtually impossible to keep abreast of the literature; his efforts to maintain awareness of recent medical findings are thwarted by a maze of uncoordinated information sources.

Scientific progress which created the information problem, we believe, offers the best hope for its solution. Many technological advances which have enabled the scientific community to increase the rate of data generation and analysis provide the means for improved collection, organization, and dissemination of information. Solutions to the technical problems of the information explosion lie in the application of new technology to specific needs in the areas of information management and transmission, graphic image information storage and retrieval, and even direct man-machine communication. We are studying these problems and developing new applications for their solution.

THE NATIONAL LIBRARY OF MEDICINE

The National Library of Medicine has been concerned with the information management problem for over a hundred years. Since 1879 the Federal Government has accepted responsibility for the publication of indexes and bibliographies in the health sciences as guides and major resources for the medical community.

The National Library of Medicine, with its collection of nearly 1,300,000 books, journals, theses, photographs, and other records constitutes the ultimate repository of the world's biomedical literature. NLM is the largest and most comprehensive research library in any field of science. But the library is more than a passive repository of information. It is an active information center, utilizing a variety of modes and mechanisms of information transfer. During 1966 the library indexed 164,545 journal articles, performed 3,035 computer-generated demand searches, published 47 major recurring demand search bibliographies, provided 152,000 interlibrary loans, and answered 21,871 reference inquiries. In addition it provided bibliographic and referral services through Index Medicus, Cumulated Index Medicus, Current Catalog, Bibliography of Medical Reviews, and Bibliography of Medical Translations. It responded to 91,000 reader requests within the library and photographed 3.4 million pages for preservation and distribution.

THE MEDICAL LITERATURE ANALYSIS AND RETRIEVAL SYSTEM

In an effort to provide more rapid access to the flood of new publications, the NLM developed the medical literature analysis and retrieval

system (MEDLARS), one of the world's largest computer-based information systems. MEDLARS combines the talents of trained literature analysts and the processing capibilities of a high-speed electronic computer. The literature analysts, using terms selected from Medical Subject Headings (MESH), the master key to MEDLARS, index biomedical journal articles and assign the MESH terms which describe the articles' content. These data are entered into the computer and transferred to magnetic tapes for storage and rapid retrieval. The MEDLARS files now contain over 500,000 citations to the most significant biomedical journal articles published since January 1964.

In addition to providing a rapid and efficient method for producing the monthly Index Medicus, a comprehensive index to articles from approximately 2,300 biomedical journals, and the annual Cumulated Index Medicus, the library's computer operation permits rapid machine reference searches. These computer searches provide physicians, health scientists, educators, and students rapid and easy access to the biomedical literature in broad areas of medical interest.

To provide extensive circulation of these references in specialized medical subject areas, the library cooperates with nonprofit professional organizations and other Government agencies in producing published recurring bibliographies, for distribution to groups of workers in specialized fields.

To facilitate local access to the MEDLARS system, the library supports five decentralized MEDLARS search centers at the Universities of California (Los Angeles), Colorado, Alabama, and Michigan, and Harvard University.

The demands for MEDLARS searches this year at one point exceeded our human resources to provide these services, forcing us to declare a 6-week moratorium on the processing of new requests for demand searches. Thus, an increase of 11 positions and $259,200 is needed in 1968 to meet the expanding indexing and computer search formulation workload. We are also requesting $975,900 and eight positions for a new, more efficient computer system. We have almost exhausted the time available on our current computer equipment whose design was frozen 6 years ago. The original system has met expectations for the 5-year period of operation. However, more advanced equipment is required to handle an expanding workload and to allow direct, on-line communication with the computer through remote terminals—a needed feature available in other modern systems.

MEDICAL LIBRARY ASSISTANCE ACT OF 1965

Recognizing that the growth of institutions and mechanisms to collect, organize, and disseminate biomedical information has not kept pace with the information explosion, Congress enacted the Medical Library Assistance Act of 1965 (Public Law 89–291).

To implement the act Congress provided an increase over the 1967 President's budget of $200,000 for support of the regional medical library programs and 10 positions and $100,000 for review and approval of grants and contracts. The Congress added an additional 9 positions and $668,000 for increased levels of preservation filming, graphic image storage and retrieval equipment purchases, and development and direction of the library's application of advanced technology to biomedical communications.

Funds to be used in 1968 for programs authorized by the act include: $12,500,000 for construction grants to improve and expand the Nation's medical library facilities; $1,600,000 for grants and contracts for research and development directed toward solving some of the difficult problems in storing, retrieving, and transmitting biomedical information; $1,200,000 to increase the number and improve the quality of librarians and information specialists available to serve the Nation's medical libraries; $100,000 for special scientific projects; $800,000 for support of publications, such as translations, bibliographies, critical reviews, indexes, and abstracts; and $2,500,000 for grants to biomedical libraries for strengthening their resources and services.

The library is currently planning a program to initiate support for six or seven regional medical libraries, and the 1968 budget includes $1,500,000 for grants for the development of existing medical libraries as regional service centers to improve and accelerate access to the health science literature.

TOXICOLOGY INFORMATION SYSTEM

An important new responsibility has been assigned to the Library in the past year. The President's Science Advisory Committee (PSAC) in its report, "Handling of Toxicological Information," published in June 1966, drew attention to the urgent need for a better coordinated and more comprehensive computer-based file of toxicology information than is currently available. Recent congressional hearings and legislation express wide public concern for this need. Responding to the PSAC report, the President asked the Secretary of Health, Education, and Welfare to be responsible for developing and operating a computer-based toxicological information system. In the foreword to the report, the President said:

> The number of chemical compounds to which people become exposed is already vast and increasing daily. This is a result of our steadily advancing industrialization, changes in agricultural practices, and advances in the biomedical sciences. All segments of our population are exposed either deliberately or in the course of daily living to many such compounds.

To begin development of a toxicology information exchange which will inform the public as well as physicians and scientists of toxic effects of drugs and chemicals on man and his environment, $900,000 and 20 positions are requested.

In summary, our total request is for $21,162,000 in new obligational authority representing a net increase of $970,000 over the amount appropriated in 1967. The principal items of increase are for development of a new computer system and a toxicology information exchange, and for regional medical library grants.

I shall be pleased to answer any questions you may have.

SUMMARY OF BUDGET REQUEST FOR LIBRARY OF MEDICINE

Mr. NATCHER. Dr. Cummings, first on the increase you just mentioned to the committee of $970,000.

Dr. CUMMINGS. That is new obligational authority.

Mr. NATCHER. Now, the adjusted appropriation for 1967 I believe is $20,254,000, is that not correct?

Dr. CUMMINGS. That is correct.

Mr. NATCHER. And the request now pending before the committee is $21,162,000.

Dr. CUMMINGS. That is correct.

Mr. NATCHER. But if you consider the carryovers the total of the funds actually obligated this year is $15,588,000, is that correct?

Dr. CUMMINGS. I believe it is $15,522,000.

Mr. NATCHER. $522,000?

Dr. CUMMINGS. I am sorry. Your figure was correct and mine was an error.

Mr. NATCHER. This is the adjusted figure.

Dr. CUMMINGS. Yes.

Mr. CARDWELL. The difference being an item in reserve.

CONSTRUCTION OF MEDICAL LIBRARY FACILITIES

Mr. NATCHER. Right. So the real increase in the level of funding budgeted for 1968 is $13,274,000. The big increase is $12,500,000 for grants for construction of medical library facilities under the Medical Library Assistance Act.

Now, Dr. Cummings, you have $7,500,000 for this purpose for fiscal year 1967 that you are not going to use until 1968, is that correct?

Dr. CUMMINGS. Yes, sir.

Mr. NATCHER. Why aren't you moving along with your program, Dr. Cummings? Why the holdback?

Dr. CUMMINGS. These funds were placed in reserve, Mr. Chairman, in keeping with the overall deferment of construction project obligations for the current fiscal year.

We are moving along with respect to program development, however. Universities and medical schools throughout the Nation have been able to make their needs known to us. In fact, a significant number of library construction grant applications have been received, reviewed, and those which were approved are waiting funding in the next fiscal year.

Mr. NATCHER. Have you received information to the effect that the freeze is still on as far as this $7,500,000 is concerned? Are you still in that category?

Dr. CUMMINGS. I should like Mr. Cardwell to answer that.

Mr. NATCHER. What about it? Is this still frozen?

Mr. CARDWELL. No, sir.

Mr. NATCHER. You can move along?

Mr. CARDWELL. Yes.

Dr. CUMMINGS. That is good news.

Mr. NATCHER. You can get it up here. All you have to do is come see us.

Dr. CUMMINGS. I am very pleased to learn of this opportunity. This is like Christmas.

AUTHORIZATION, ELIGIBILITY, AND MATCHING FOR CONSTRUCTION

Mr. NATCHER. Would you place in the record the amount authorized, the eligibility requirements, the matching requirements, and some facts and figures on the need and demand for these funds at this point in the record.

Dr. CUMMINGS. Yes, I will provide that for the record.
(The information follows:)

AUTHORIZATION AND ELIGIBILITY

The Medical Library Assistance Act (Section 2 of PL 89-291; Section 393, of the PHS Act) authorized the appropriation of not more than $10,000,000 per year for the period beginning with fiscal year 1967 and ending with fiscal year 1970 for the purpose of making grants to assist in the construction of health science library facilities. Public and private non-profit institutions are eligible to apply for such grants.

MATCHING REQUIREMENTS

The Act states that the amount of the grant may not exceed 75% of the necessary cost of construction. Currently, due to anticipated shortage of funds relative to the total requests expected, it is planned to match according to the following sliding scale: 75% for the first 30,000 net square feet, 66⅔% for the next 20,000 net square feet, and 50% for the next 10,000 net square feet. No support would be provided in excess of 60,000 net square feet without special justification demonstrating the necessity for such space.

NEED AND DEMAND

In 1968 a total of $12,500,000 (comprised of $5,000,000 in new obligational authority requested for 1968 plus $7,500,000 appropriated in 1967 and carried forward to 1968) would be available for the construction grants program. If current rates of application submission and approval are sustained we estimate there will between $34,000,000 to $35,000,000 in approved applications awaiting funding during 1968. To date, we have reviewed 12 applications. Five, totaling more than $7,00,000, have been approved. Three have been deferred and four disapproved. Nine more are pending review this fiscal year. All applications approved during 1967 and 1968 will compete with each other on the basis of priority score to determine which will be awarded during 1968.

PUBLICATION SUPPORT

Mr. NATCHER. Now you have a small item of $235,000 this year and a request for $300,000 for next year called publication support. What is this? Just what is publication support?

Dr. CUMMINGS. May I ask Dr. Wilson to respond to your question?

Mr. NATCHER. All right. Dr. Wilson, we will glad to hear from you.

Dr. WILSON. This is in support of the development and publication of secondary publications. This would include bibliographies, abstracts, critical reviews, handbooks, and so on. It is considered very important to the overall library mission in that these help us gain access to, and have bibliographic control over, this massive amount of medical literature. We support these projects through both the grant and contract mechanisms.

REGIONAL MEDICAL LIBRARY PROGRAM

Mr. NATCHER. Last year this committee placed $200,000 in the bill to start the regional medical library program. I see that you are requesting $1,500,000 for next year.

Dr. CUMMINGS. That is correct.

Mr. NATCHER. Tell us what you are doing this year and what you plan for next year and give us your personal assessment of this program please.

Dr. CUMMINGS. Yes, I am very pleased to respond to that question. We have been able to utilize the funds provided by the Congress in the current fiscal year for program planning and for developing community action and regional action plans.

Recently we made our first commitment to establish a test and demonstration prototype regional medical library in one section of the United States. The funds requested for the next fiscal year will be used to establish six or seven additional regional medical libraries so that we can cover the Nation, providing the communities across the country with equal access to scientific information.

Right now the problem in medical information is no different than the maldistribution of physicians and other resources throughout the Nation. It is our hope that we can develop a library network so that physicians in the Far West, the Northwest, the Southeast, and the Southwest will all have an equal opportunity to reach into this information store.

I believe this is a coherent and well-ordered concept. We do not intend to carry this plan through an extraordinary number of such regional libraries. In our view one regional library might serve as many as six or seven States so that they will be rather broadly based geographically.

EFFECT OF DEFERRING INCREASES FOR DIRECT OPERATIONS

Mr. NATCHER. Dr. Cummings, you have a rather large increase for direct operations of $2,187,000 and 42 positions. What would happen if you were held to the current level with enough increase to cover only the mandatory costs? How would you do, Dr. Cummings?

Dr. CUMMINGS. Well, two adverse effects of such action would be that we would not be able to implement the toxicology information program requested by the President; nor would we be able to transform our overloaded current computer system into a more efficient one. These would be the two most significant effects of such action.

Mr. NATCHER. Part of the increase, then, is to begin the installation of a new computer system, is that correct?

Dr. CUMMINGS. That is correct.

Mr. NATCHER. How much do you have budgeted for this particular item for 1968?

Dr. CUMMINGS. I will ask Mr. Isbister to check my figure, but I believe it is about $950,000 for the first phase in the establishment of a second generation computer system; $974,000 is the correct figure.

Mr. NATCHER. All right.

FREEZE ON CONSTRUCTION FUNDS

Mr. CARDWELL. I think I could tell from Dr. Cumming's reaction to my response that he understood my answer to pertain to 1967. The answer about the lifting of the freeze of the construction funds applies to 1968. The carryover balance of $7.5 million would be available in 1968.

Mr. NATCHER. It is not available at this time?

Mr. CARDWELL. Not available at this time.

Mr. NATCHER. You just let him look at his Christmas present but aren't going to give it to him yet?

Mr. CARDWELL. Yes.

TOTAL COST OF PROPOSED COMPUTER SYSTEM

Mr. NATCHER. Now what would be the total cost of your new computer system? What would the overall amount be?

Dr. CUMMINGS. We have just completed a system study which has developed the functional specifications for this total development. Phased over a 5-year period there would be an estimated requirement of $8 million for software development and hardware. Requests for bids have obviously not been sent out because they are dependent upon the actions taken by the Congress.

Mr. NATCHER. Mr. Laird.

Mr. LAIRD. I yield to Mr. Michel.

Mr. NATCHER. Mr. Michel.

LOCATION OF REGIONAL MEDICAL LIBRARIES

Mr. MICHEL. Doctor, have you any idea where these regional medical libraries are going to be, that you are requesting $1.5 million to support?

Dr. CUMMINGS. Yes, sir. We have a good general idea as to their location geographically, Mr. Michel.

Mr. MICHEL. You have a good idea but I do not. What are we talking about?

Dr. CUMMINGS. I will give you the plan in general and then ask Dr. Wilson, perhaps to give you more specifics. Approaching the problem geographically, we believe there should be a regional library resource in New England, in the Southeastern States, in the North Central States, in the Southwestern States, and in the Northwest Pacific.

Mr. MICHEL. Will these be confined then to five?

Dr. CUMMINGS. No, sir. I think perhaps there will be the requirement for two additional ones to take into account the very heavy concentration of physicians and scientists and populations oriented to the eastern portion of our Nation.

Mr. MICHEL. Now, one step further. What States or towns are you thinking about?

Dr. CUMMINGS. At the moment I can tell you that we have surveyed the resources of the following communities: Boston, New York, Philadelphia, Nashville, Birmingham, Chicago, Ann Arbor, and Seattle. I really will now have to pass to Dr. Wilson to see if I have overlooked any. Could you add to the record any that I may have missed, Dr. Wilson?

Dr. WILSON. We have had regional visits to other areas as well, not necessarily focusing on a particular city but on large areas such as the area of Oklahoma and in Texas. We visited in New Jersey, New York State, and so on. All regions are not specifically defined as yet.

Mr. MICHEL. How soon will they be defined?

Dr. WILSON. We have made about 12, I would say, different visits to meet with regional groups and speak about their program.

Mr. LAIRD. You would not expect us to appropriate any money, though, until we know where these were going to be, would you?

Dr. WILSON. Yes, I would.

Let me speak about this a little further.

We would anticipate that over the course of the next 5 years there would be some 10 or 11 regional libraries selected. Our approach has been along this line: to meet with groups on a regional basis. We have met with groups as small as 20 or 25, and as large as 120 or 150 to discuss the importance of people on a regional basis getting together to plan to look at resources they have within the region, to calculate what resources are needed which are not present and also to study in what ways they can interrelate the libraries in that region into a regional network that can in turn relate nationally to a total national network. We have asked them to develop a specific plan for us, nominating the appropriate library within that region which can carry the ball for the region. A review committee will decide which institution has the appropriate resource base on which we can award a grant to provide them with the ability to backstop the local libraries within that region.

The reason I cannot be more specific now is that we plan an evaluative review process for this, the way be evaluate many of our other grants, and it would be premature for me to indicate now what those decisions ultimately will be. Things are very much still in the planning stage.

Mr. MICHEL. In your professional judgment how long a time would it take to make this kind of proper evaluation that you speak of?

Dr. WILSON. I would anticipate that between now and the close of the fiscal year 1968 we would have decided on some six to seven regional library sites. I think when you look over the country, the candidates to become regional libraries are not too many, because it requires a considerable library base, a considerable capability to build upon.

Mr. MICHEL. You anticipated in part one of my questions. Have you had a lot of action from the standpoint of interested communities, institutions vying for them? Or is it just the fact that maybe it is not too well known, that you are looking around?

Dr. WILSON. In some areas it has been quite obvious it will not be hard to make a decision. In other places perhaps we have one or two strong candidates and it will perhaps be difficult for the region and the National Library of Medicine to come to a decision on which is the appropriate site for a regional library.

MEDICAL LIBRARY RESOURCE SUPPORT

Mr. MICHEL. The other day I brought up this list of "Research Grants and Awards, U.S. Public Health Service." The one I got has a February date on it; I suspect these come out monthly. I do not get to see them all. I noticed in this particular one a number of them with the same heading "Medical Library Resource Support." Is this your baby?

Dr. WILSON. Yes, sir; one of them.

Mr. MICHEL. That is one of them. I raised the question at the time that in going through here there seemed to be so many and there were different figures. But here is one in Alabama, here is one at Arkansas, here are a couple of them at the University of California, here is one in California down at San Diego, one in Connecticut, Colo-

rado. Now we are talking about $26,000 for one, here is one for $13,000, but they are in that range and average about $20,000. What is involved here?

Dr. CUMMINGS. Please respond, Dr. Wilson.

Dr. WILSON. The Medical Library Assistance Act provides——

Mr. MICHEL. I meant to ask you what the authority for this is.

Dr. WILSON. We operate under the authority of Public Law 89–291, section 397. These are grants for basic improvement of library resources and we elected to call them library resources grants. Funds may be used to build library collections, improve services, institute new library procedures to improve services. The reason you see so many of these is that it was deliberate on our part to try to reach out to as many libraries thoughout the county as we can with these funds.

In the first year of the program, in fiscal year 1966, we received a supplemental appropriation of $2 million for this purpose and in 1967 $2.7 million was appropriated for this purpose. It has been the hope of the legislators who introduced this legislation that through this mechanism we could reach many libraries throughout the country, large and small.

In other words they could go to medical schools, to hospitals, to all of the schools of the health professions and so on. The law authorizes us to base the entitlement for funds at not more than 60 percent of the library's operating budget. In order to reach more institutions we have elected to reduce the funds to about a 25-percent level of the library's operating budget. This permits us to use this relatively small amount of money to support more institutions.

Mr. MICHEL. How many are you reaching now?

Dr. WILSON. We are presently paying 231 of these and we anticipate by the end of this fiscal year, after our June review, to have made a total of 250 to 270 individual grants.

Mr. MICHEL. And that will be a total cost of what?

Dr. WILSON. Approximately $3.5 million to cover this number.

Mr. MICHEL. And the total authorization in that?

Dr. WILSON. During this present fiscal year with the carryover from the appropriation that came in May of last year plus the present fiscal year, just under $4.7 million.

There is a complicated funding relationship here. I should go back and take a moment to discuss the philosophy of this program. The idea was to give a relatively short term, one-time resources grant to an institution to help it to get its house in order and build up its library resources. The formula is based on a decreasing amount each year, a decrease in Federal contribution so that in the second year the grant is five-sixth's of the first year and so on. Over 5 years the Federal support is decreasing and hopefully is stimulating the parent institution to provide more support to its library.

Mr. MICHEL. As against that number that you cited that will be granted in this current fiscal year, how many applications do you have?

Dr. WILSON. I can give you an approximation. I would say around 300. There have not been too many disapprovals on this, not nearly the disapproval rate for research grants, for example.

Mr. MICHEL. Would you take a closer look at them if there were twice that number of applications?

Dr. WILSON. No, sir,. I say no because I think we take a very close look at them now. The criteria for approval are not simply a formula and a matching. We consider very much the merit of the plan for utilization of the funds, we look for a well-thought-out program, we look at the amount of institutional support, and the commitment that the institution seems to have to its library. We examine whether they have adequate personnel or not.

We look for evidence that the library is showing growth, at least that it is not showing a state of decline. Finally, we have given a high priority to those institutions that have obligations for service outside the confines of their own immediate institution but provide a community library service. I am speaking about the health professions, not public libraries.

PROSPECTIVE SIZE OF LIBRARY RESOURCE PROGRAM

Mr. MICHEL. Just one final question. In the overall, Dr. Cummings, as you look ahead regarding this medical library business, the way it is currently constituted and its obligation and responsibility, it cannot do anything but continue to go up, up, up, can it?

Dr. CUMMINGS. I think a reasonable prospect would be something like this: the heaviest expenditure would be in the first 5 years of resuscitation and upgrading of library resources. They have been in a sad state of disarray for more than a decade. I believe the introduction of new technology is going to be the one factor that will stabilize the total investment after 5 years. For the record, I share a concern that you must have had when you looked through a long list of research grants and found library resource grants. I believe they are improperly classified in that accounting. These should not really be considered as research grants. They are really institutional resource grants. Finally I would say with respect to the generality of your question——

Mr. MICHEL. Do you suppose that was by design?

Dr. CUMMINGS. No. I just do not know how this happened. It was not by our design. I think this is the worst possible place for us to show library resource grant support, under the research category.

Dr. WILSON. This might be a coding problem in the information retrieval system.

Dr. CUMMINGS. I was going to say in my response to your general question that I believe the ultimate solution of the information problem facing medicine is not for us to be concerned with the library for the library's sake but to be concerned with the ultimate user of the information, the physician who is helping the patient. I believe the most economical approach here is to try to develop a formalized library network. We should cut out the tiny inefficient operations and transmit information in a skillful, technically designed way in the same sense that our telephone systems are linked, where we can communicate efficiently and reasonably economically. This is my hope for the future and I am quite optimistic that we are going to have something like that.

Mr. MICHEL. Thank you. That is all.

Mr. NATCHER. Mr. Smith.

AVERAGE GRADE LEVEL OF NEW POSITIONS

Mr. SMITH. Doctor, you are proposing a personnel increase from 397 up to 447, is that correct?

Dr. CUMMINGS. That is correct. We are asking for 50 positions.

Mr. SMITH. That would be a 12.5 percent increase. Ordinarily whenever a shop increases the number of personnel like that it results in the reduction of the average grade level but you are proposing to increase from 8.2 up to 8.7.

Dr. CUMMINGS. That is correct.

Mr. SMITH. That would mean one out of two would get a promotion of one grade. How do you justify that?

Dr. CUMMINGS. This increase in grade level will not result from a change in promotion policy. But I hope we can accomplish this by the attraction of more skilled, highly competent professional people to join this effort.

The new manpower required for 1968, for example, will be mainly scientists and physicians who will be working in the toxicology information program. Also, the skills required to implement the new computer system will require higher graded technical manpower.

Mr. CARDWELL. I think what happened here is that the proposal would change the mix. There are a much higher number of higher grade jobs in the increase than there is in the base.

Mr. SMITH. Will these higher level jobs go to the new people or are you going to bring them in at a lower grade and promote people who are now on your payroll?

Dr. CUMMINGS. We are hoping to be able to recruit people with skills we do not have in the library at this time.

Mr. SMITH. Will these new people get these higher grade jobs?

Dr. CUMMINGS. Yes; I hope that we have the kind of job descriptions and job functions that will make it possible to provide better salaries for the kind of people needed to do this professional job.

Mr. SMITH. For example, you have two clerk-typists, GS–5. Ordinarily clerk-typists come in at GS–3. So it appears obvious to me that you are going to promote two people to grade 5's that you already have in shop and you are going to hire two GS–3's.

Mr. CUMMINGS. I would be less than frank if I could say now that these two people would be promoted from the existing staff or would be brought in from the outside. I would like to call to your attention that we have clerk-typists in the library's computer program who are not the usual clerk-typists employed in our office operations. These are people required to operate Flexowriters and sophisticated punched paper tape input devices. Many of our clerical personnel have to handle foreign languages, and other duties that are normally not handled by GS–3 clerk-typists.

Mr. SMITH. They ordinarily come in at GS–3, do they not?

Dr. CUMMINGS. Unfortunately I think that is right, I think they do.

Mr. CARDWELL. This is a question of the individual and his or her qualifications. The positions we are talking about here are classified as to the nature of the work and the skills that are required to perform it. Then you find an individual who matches those qualifications and has those skills. These jobs are graded at grade 5 under the classification system. If Dr. Cummings has individual employees at grade

4 who can qualify, they would be promoted. If they can't qualify then he would go out and look for the person who could fill the job and meet the skill requirements.

Mr. SMITH. Do you not agree, really, what is being done here is that people within the shop are going to get most of these new slots that are being asked for and the new people coming in would go into lower slots as is usually the case?

Mr. CARDWELL. I really doubt with the mix of skills proposed that that is the case. Among the grade 5's and grade 2's I would leave that question to Dr. Cummings. I do not know the answer.

About half of the jobs are above grade 13. I just counted them very quickly as we talked.

Dr. CUMMINGS. I know our needs are at this level. It is quite clear to me that libraries of the future will not just be manned by librarians. They are going to have to be manned by information specialists, people with professional backgrounds who can provide evaluated information.

Mr. SMITH. I notice in Mental Health, for example, the average grade is 7.7, most of the other Institutes are around 7.6. If I remember correctly the FBI is 7.8. It is an unusually high average level that they are proposing.

Mr. CARDWELL. The question of higher or average depends on the kind of skills being employed. When you look at the average grade in the National Institutes of Health you find the average grade for the civil service classified employees does not take into consideration the number of physicians who are commissioned officers who do not show up in that average grade. If they were in there that average grade would exceed 9.5 or 6. So I would say for the Department that this is probably about a normal average grade.

Mr. SMITH. That is all.

Mr. NATCHER. Mr. Casey.

Mr. CARDWELL. I will have to exclude the Social Security Administration from that on the average, but in the Public Health Service I would say that is true.

MEDICAL RESEARCH CENTERS

Mr. CASEY. Do you have the five decentralized medical research centers now in operation?

Dr. CUMMINGS. Yes, sir. They are either operational or about to become operational during this fiscal year. We have manpower trained to man them. The computer programs are replicated so that these institutions have the same power of storage and retrieval that we enjoy.

Mr. CASEY. In other words these five centers will have the same material stored in them that you have up here.

Dr. CUMMINGS. We intend to share with these regional institutions the tape store that we have generated centrally so that the user is closer to the information and he does not always have to come to Bethesda to get his service. That is correct, sir.

Mr. CASEY. Do they have to go to these centers?

Dr. CUMMINGS. No, sir. The user is free to go anywhere he or she may wish to seek this information.

Mr. CASEY. I mean if they want to avail themselves of the information in the centers they must go to the center.

Dr. CUMMINGS. Yes, sir. Presently they must write or call one of these centers where the information is stored.

Mr. CASEY. You made a statement a while ago that interested me. I think a similar program is now in the process of being developed and know it is under consideration in Houston. I think Rice University is spearheading it and I am sure other sections of the country are doing likewise. This is setting up a technical research library pool in which I think they would exchange information through a network of communications—either teletype or some other similar means. They have not yet quite developed it. They have just started plans but Rice University, the University of Houston, I think the University of Corpus Christi, and others in that gulf coast area are working up an exchange program.

Dr. CUMMINGS. That is correct.

Mr. CASEY. So that they would pool their resources in that manner with a communications network so that they would not have to duplicate a lot of facilities, as you say, each build more and more and store more and more. Is it your idea to eventually go to something of that nature so that there could be quick distribution of data without them having to go to the installation itself?

Dr. CUMMINGS. Yes, sir. That is a concept that has been accepted generally in the scientific and technical community. That is, the establishment of switching stations where stored technical data as well as information can be shared regionally and ultimately the network should be able to switch this information anywhere. This is a part of my projection earlier in response to Mr. Michel. I think in 5 years we ought to have a system that would do this efficiently. I think it is fair to say that in the health sciences this is already being developed. There are specialized information centers concerned with brain disease problems in one community, heart disease problems in another community, diabetes in another community, but all of these specialized information systems are not to serve internal needs exclusively. They are to share their data and resources nationally.

MEDLARS

Mr. CASEY. Now, the installation that Dr. Wilson was referring to, are those going to be MEDLARS, too?

Dr. CUMMINGS. The regional medical libraries will have a MEDLARS search center within them. We started the MEDLARS program some 4 years ago before we had authority to engage in support of library development grants and regional medical library grants. So we now have these computer-based systems in the five communities that I have identified. I believe, Mr. Casey, that every regional library should also have this power of computer-based information retrieval.

Mr. CASEY. If we develop a communications system such as on the idea we were talking about, would that not more or less tend to level off some of your accelerated costs, which you have now, since this is more or less a new program of regional libraries?

Dr. CUMMINGS. I would hope that it would. The economic advantage, the strategy here, I think is very interesting. We pay the heavy price to place information in machine-readable form, on magnetic tape. It costs us a considerable amount of money to carry out this transaction. But for less than $1,000 we can take this vast store of information, these 500,000 citations to articles, replicate them on tape, and give them to a regional institution. I think this is the most important advantage that we will enjoy. The only other alternative to this that I can see is to build a vast monolithic system at the national library. This will require more people, not only to put information in the store but to take it out. We think it is more economic and more efficient to have the retrieval decentralized. We believe that only the input should be centralized.

BACKLOG OF REQUESTS FOR RESEARCH SERVICE

Mr. CASEY. You mentioned that you had a backlog here where you had to stop your requests.

Dr. CUMMINGS. Yes. We went off the air for 6 weeks because we had inadequate manpower to formulate the search strategy. A doctor, a teacher, or a graduate student asks a question. This has to be translated from normal English language into algebra suitable for the machine and that is how the search is made. The service has been so popular that we have, frankly, barely been able to keep up with it. At the turn of the year we had a backlog that compelled us to abandon services for 6 weeks in order to get caught up.

Mr. CASEY. Do you make any charge for this service?

Dr. CUMMINGS. No. Traditionally, the National Library of Medicine provides public services without a charge. It has done so with congressional authority since, I believe, 1879.

Mr. CASEY. In other words, you do some of the same thing that we do. We get requests from students writing themes, and whatnot, they want all sorts of research. We turn it over to the Library of Congress and they ship it back to them. And the more students that find out about that, the more requests we get. Is that what happens to you?

Dr. CUMMINGS. We provide our services only to qualified health scientists, educators, and health practitioners, including graduate students, but not undergraduate students.

Mr. CASEY. When you had this 6-week moratorium was any of it of an urgent nature? Did anyone suffer by this delay, that you know of?

Dr. CUMMINGS. Yes, sir. I think I can, very frankly, state that we had several letters of complaint directly from users of the system and also some queries from Congress asking why we did not serve a constituent. I felt the pressure.

Mr. CASEY. Was anyone's health threatened due to this delay? Was this just research work?

Dr. CUMMINGS. I really don't know. I think you will be interested to know the character of the users of this system. Roughly one-third of them are health practitioners, one-third of the users are from the academic community, and one-third of the users are in the Federal and private sector such as the drug and pharmaceutical industry.

However, I cannot tell you that withholding this information for 6 weeks had a serious effect on the health of any given individual. I do not know.

USE OF RESEARCH SERVICE BY INDUSTRY

Mr. CASEY. Does industry make inquiry of you?

Dr. CUMMINGS. Yes.

Mr. CASEY. And you furnish them the information, do the research, and bring out the data that they want?

Dr. CUMMINGS. We provide our services to any qualified American health-oriented institution.

Mr. CASEY. Free of charge?

Dr. CUMMINGS. Yes, sir.

Mr. CASEY. You mean there is not even a normal service charge for the printing of the paper or whatever way you reproduce it?

Dr. CUMMINGS. There is no charge for our library services.

Mr. CASEY. That is the best free library service I have ever heard of. If you go to any other library, in any community, of course, you can borrow the books free but if you want copies of something, some volumes that they will not lend out, you have to pay. In fact, right here, the Library of Congress, if I want copies of certain pages I pay for it. It looks like there ought to be at least some nominal charge for this great service, but that is just an observation.

No further questions.

Mr. LAIRD. Mr. Chairman.

Mr. NATCHER. Mr. Laird.

REGIONAL MEDICAL LIBRARIES

Mr. LAIRD. Last year we increased your funds for the regional library program by, I believe, about $200,000 with the idea in mind that you would be able to come back here and be ready to go forward with this program.

Dr. CUMMINGS. That is correct.

Mr. LAIRD. You are not ready today as you come here. In fact, you are not too much further along than when you were here last year. It was our understanding when we went above the budget that you were going to be able to go forward and you are not. This is a disappointment. Why has there been this delay?

Dr. CUMMINGS. I do not view our state of readiness for the development of regional medical libraries as having been delayed.

Mr. LAIRD. It has not been speeded up. This is the way it looked when you came here last year. We added $200,000 so we would not be in this position. Wouldn't they let you spend it?

Dr. CUMMINGS. We have had no inhibition on spending; however, we have had some constraints on acquiring personnel for staffing programs. I do believe that we have a significant amount of information derived from these studies of 12 communities. We have a commitment to establish the first regional center during the current calendar year and I think progress has been made, Mr. Laird.

Mr. LAIRD. How many open lines do you transmit on now? Are you transmitting?

Dr. CUMMINGS. No; we are not transmitting. We have a TWX tieup with some 64 medical libraries and we receive requests by cable from these 64 medical libraries through the normal commercial TWX.

Mr. LAIRD. Now, these facilities that are tied in with you, do they pay that cost?

Dr. CUMMINGS. Yes; they all pay their own costs.

Mr. LAIRD. Their own line charges?

Dr. CUMMINGS. Yes; they do.

Mr. LAIRD. Have you done anything on the new Bell System, using audio?

Dr. CUMMINGS. No, we have not. We have examined that. We have had representatives from both Bell and IT&T visit the library and share their planning with us. The judgments reached at that time were that we could not afford this kind of a national hookup using audiolines.

Mr. LAIRD. Why would that be so much more expensive?

Dr. CUMMINGS. As I understand the technical problem, it is due to the volume of information to be transmitted. Even using lines at night, it is so large that it is very difficult to rationalize the costs involved. It is a question of volume of words per line. I am sure that IT&T and Bell Telephone ultimately might become competitive but in fact our analysis showed that we could not afford this. They really did not try to push this on us at this time.

Mr. LAIRD. Are they supporting it at the University of Wisconsin? Who does pay for that at the University of Wisconsin?

Dr. CUMMINGS. I do not know who supports the dial access system at the University of Wisconsin. We are being visited by several of their people today, as a matter of fact. I do not know whether a private fund or the State is supporting it.

Mr. LAIRD. Any doctor can call up and ask about a drug?

Dr. CUMMINGS. Yes.

Mr. LAIRD. It is an open line to the university medical library?

Dr. CUMMINGS. That is correct. They have an effective dial access system.

Mr. LAIRD. And it has to do with drugs or the treatment of various diseases or to give them references on surgery. Who made those tapes for them?

Dr. CUMMINGS. I do not know who generated the tapes or who sponsored it. I believe that the professional staff at the University of Wisconsin synthesized the information. The quality of response is their responsibility. Mr. Joseph Becker, who is studying this kind of problem, visited Wisconsin 3 weeks ago to look at the system. He spent a day on the sending side and a day with the physicians on the receiving side and he was quite impressed with the efficiency of the system. I saw his favorable report.

Mr. LAIRD. I do not think there is any Federal money involved in that program.

Dr. CUMMINGS. I can only say I am sure we have no money in that program. I do not know whether perhaps other Federal agencies may

have sponsored this. I just do not know. I could find the answer for you.

Mr. LAIRD. I will find out. I know they work with Bell Laboratory up in New Jersey, who had something to do with developing the tapes. As a matter of fact, to keep it manned, they can make the switches right in the hospital pharmacy which is open 24 hours a day. Around the clock service is rather unusual even when compared to the big operation we have out here. This is not an expensive operation but they do get a lot of information out of it.

Dr. CUMMINGS. It is a different kind of information and I think a very important kind. It is what I would call critical responsiveness. It really deals very directly with day-by-day patient care problems.

Mr. LAIRD. I know, I have watched them and I have been told about some of the problems they have, for instance with a kid taking some poison. They dial and they get the antidote right away.

Dr. CUMMINGS. That is right.

Mr. LAIRD. I was interested in whether we would ever develop this on a national basis.

Dr. CUMMINGS. I think the toxicology program will have that same capability. Anyone, public or professional, should be able to dial to a central referral point and get not just information but certified health information. If the child swallowed aspirin, you should get the right response to what you should do. I think this is a very important concept, that is being developed not only at Wisconsin, but I understand that Ohio State University is trying to mimic this same development now in the field of heart disease.

COST ANALYSIS OF MEDLARS SYSTEM

Mr. LAIRD. I was interested in the questions of Mr. Casey about this information that you supply. How much does the print-out sheet cost?

Dr. CUMMINGS. We have a very careful cost analysis of the MEDLARS system. The input, to put in one full citation describing what is in an article, costs the library about $1.32. To generate a full retrieval from this 4-year store of information costs the national library about $149. When we share this system regionally, the costs may be lowered. Dr. Rogers at Colorado has reported his costs and he can search a year's literature for about $60. These are the ranges of cost that we have now.

Mr. LAIRD. So when you have, say, Merck getting in touch with you for information on a particular drug, that service to them would cost you a total of about $150?

Dr. CUMMINGS. Yes. It would cost the national library about $150 to handle the whole process; that is, to put it in the store, search it, print it, and send it to the user. We have introduced a new service that I think will interest you and has certainly been a profitable experience from our side: Every time we provide a computer search we announce it so that anyone else that is interested in that drug or that disease or that subject can write it in and get the same search, essentially, as a free ride.

Mr. LAIRD. How much does that copy cost?

Dr. CUMMINGS. The copy costs only 15 cents. For example, if you have 100 seekers of information on the same subject and it costs $150 to do one full search, sharing it reduces the cost to $1.50 per person. I have some material that shows the kind of process that the computer generates. That is a typical literature search in a field where at least 50 or 60 users are known to have an interest.

We do more massive searches for the Food and Drug Administration, for the National Heart Institute, Neurological Diseases and Blindness Institute, and several professional societies.

Mr. LAIRD. They do not reimburse you either?

Dr. CUMMINGS. They help in nonmonetary ways. They help intellectually. When they want a special product, we ask them to send a highly qualified man, skilled in that specialty, to work with my staff to be sure that we do a good job of indexing and programing for the output. So in part, I would say they pay through their manpower contribution.

OVERAPPROPRIATION

Mr. LAIRD. We overappropriated for the library last year in the amount of about $65,000.

Dr. CUMMINGS. Will you deal with that, Mr. Isbister? I am not familiar with that $65,000.

Mr. LAIRD. The executive branch thinks that this committee gave you too much money.

Dr. CUMMINGS. I guess that has to do with the cost reduction effort.

Mr. CARDWELL. Yes. This is another item of a number of items that we spoke of earlier. It was not the selection out of this particular appropriation as having had too much money but more a matter of applying new formulas across the board, restrictions in procurement of supplies and equipment.

Mr. LAIRD. We were very embarrassed about that. We do not want it to happen again because we do not like to have the reputation around here of overappropriating.

Mr. CARDWELL. The restriction is not being imposed by the executive branch in 1968.

Mr. LAIRD. Well, that is what they told me during the budget hearings for 1967, that it was a very firm budget. Even the week before we marked it up I said I had heard there were going to be certain freezes and that I would like to have a list of these. I got a letter from the Secretary denying it. So, your assurance today does not mean a thing to me. I had one from the Secretary last year that did not mean a thing.

That is all I have.

Mr. NATCHER. Dr. Cummings, we want to thank you and your associates for appearing before our committee at this time.

JUSTIFICATION MATERIAL

National Library of Medicine

Amounts Available for Obligation

	1967	1968
Appropriation	$20,192,000	$21,162,000
Comparative transfer from "Office of the Surgeon General, Salaries and Expenses"	62,000	
Unobligated balance brought forward	3,033,828	7,700,000
Unobligated balance carried forward	−7,700,000	
Total	15,587,828	28,862,000

Obligations by activity

	1967 estimate		1968 estimate		Increase or decrease	
	Positions	Amount	Positions	Amount	Positions	Amount
Grants:						
Research		$1,299,406		$1,400,000		+$100,594
Training		1,378,420		1,300,000		−78,420
Construction				12,500,000		+12,500,000
Publications and library support		4,911,002		2,800,000		−2,111,002
Regional medical libraries		200,000		1,500,000		+1,300,000
Total, grants		7,788,828		19,500,000		+11,711,172
Direct operations:						
Library operations	357	5,674,000	399	7,861,400	+42	+2,187,400
Research and support contracts		1,345,000		700,000		−645,000
Review and approval of grants and contracts	40	715,000	48	800,600	+8	+85,600
Total, direct operations	397	7,734,000	447	9,362,000	+50	+1,628,000
Total obligations	397	15,522,828	447	28,862,000	+50	+13,339,172
Unobligated balance, reserve		65,000				−65,000
Total, obligations and balance	397	15,587,828	447	28,862,000	+50	+13,274,172

Obligations by object

		1967 estimate	1968 estimate	Increase or decrease
	Total number of permanent positions	397	447	+50
	Full-time equivalent of all other positions	6	12	+6
	Average number of all employees	355	397	+42
11	Personnel compensation:			
	Permanent positions	$2,841,700	$3,355,300	+$513,600
	Positions other than permanent	54,000	123,000	+69,000
	Other personnel compensation	10,500	30,500	+20,000
	Total personnel compensation	2,906,200	3,508,800	+602,600
12	Personnel benefits	224,000	266,400	+42,400
21	Travel and transportation of persons	115,600	186,200	+70,600
22	Transportation of things	7,500	12,500	+5,000
23	Rent, communications, and utilities	179,050	277,850	+98,800
24	Printing and reproduction	272,350	327,950	+55,600
25	Other services	80,700	163,900	+83,200
	Project contracts	2,677,800	3,305,200	+627,400
	Services of other agencies	134,000	138,000	+4,000
	Payment to "National Institutes of Health Management Fund"	658,200	743,200	+85,000
26	Supplies and materials	109,800	155,800	+46,000
31	Equipment	368,800	276,200	−92,600
41	Grants, subsidies, and contributions	7,788,828	19,500,000	+11,711,172
	Total obligations by object	15,522,828	28,862,000	+13,339,172

Summary of changes

1967 enacted appropriation	$20,192,000
Comparative transfer from "Office of the Surgeon General, salaries and expenses"	62,000
Unobligated balance brought forward	3,033,828
Unobligated balance carried forward	−7,700,000
Unobligated balance, reserve	−65,000
1967 total estimated obligations	15,522,828
1968 estimated obligations	28,862,000
Total change	+13,339,172

	Base		Changes from base	
	Positions	Amount	Positions	Amount
Increases:				
A. Built in: Annualization of 22 positions new in 1967				$64,800
B. Program:				
1. Research and development grants		$1,299,406		100,594
2. Construction grants				12,500,000
3. Regional medical library grants		200,000		1,300,000
4. MEDLARS indexing and searching	42	517,192	11	259,200
5. MESH development	8	93,808	1	80,900
6. New computer system installation and research	1	154,000	8	974,900
7. Executive direction and administration			1	138,000
8. Program analysis			1	52,800
9. Review and approval of grants and contracts	40	715,000	8	85,600
10. Toxicology information exchange			20	900,000
Total program increases			50	16,391,994
Decreases:				
A. Nonrecurring items of cost:				
Equipment				−241,000
Rental of office space				−30,000
Extramural contracts				−645,000
B. Pay above stated annual rate in 1967				−12,200
C. Publications and library support grants		4,911,002		−2,111,002
D. Training grants		1,378,420		−78,420
Total decreases				−3,117,622
Total net changes requested			+50	+13,339,172

EXPLANATION OF CHANGES

Research and development grants

An increase of $100,594 will bring the total for this program up to $1,400,000 for 1968 which will provide for approximately twenty-eight grants to improve the distribution of documents, bibliographic materials, and information to health scientists and practitioners.

Construction grants

An increase of $12,500,000, composed of $7,500,000 carryover of 1967 funds plus $5,000,000 requested as new obligational authority in 1968, will support approximately thirteen construction projects.

Regional medical libraries

An increase of $1,300,000 for a total of $1,500,000 will support seven institutions in 1968.

Publications and library support

An increase of $65,000 for a total of $300,000 in 1968 for support of publications and a decrease of $2,176,002 leaving a total of $2,500,000 for library resources will result in a net decrease of $2,111,002. The reduced amount will support 290 awards.

Training

A decrease of $86,496 in special scientific projects and an increase of $8,076 for support of training will result in a net decrease of $78,420. The reduced amount will support two special scientific projects and twenty training grants.

MEDLARS Indexing and searching

An increase of $259,200 and eleven positions will enable the Library to increase intramural indexing and searching and to contract for the indexing of biomedical literature to reduce the backlog.

MeSH development

An increase of $80,900 and one position is necessary to improve the quality, scope, and level of sophistication of Medical Subject Headings, giving particular attention to biochemical mechanisms and biomedical engineering.

New computer system

An increase of $974,900 and eight positions is required to complete planning for a second-generation MEDLARS, provide systems analysis staff for expanding programs of increasing complexity, and conduct a program of intramural research.

Executive direction and administration

An increase of $138,000 and one position will permit the Library to establish a contract management office and to strengthen other administrative management operations.

Program analysis

An increase of $52,800 and one position is necessary for intramural analysis and to hire consultants for program evaluation.

Review and approval of grants and contracts

An increase of $85,600 and eight positions will provide the scientific expertise required to conduct the diverse program of medical library assistance and will provide a grants management and processing staff.

Toxicology information exchange (TIE)

An increase of $900,000 and twenty positions is required to begin planning of this new program by data gathering and analysis of toxicological information sources and user needs, and to hire top-level management staff, analysts, and program specialists.

LEGISLATIVE AUTHORIZATION FOR GRANTS

Medical Library Assistance Act (PL 89-291)

Construction of facilities.—Secs. 390(b)(1) and 393(i). To assist in the construction of new, and the renovation, expansion, or rehabilitation of existing medical library facilities; there are hereby authorized to be appropriated for each fiscal year, beginning with the fiscal year ending June 30, 1967, and ending with the fiscal year ending June 30, 1970, such sums, not to exceed $10,000,000 for any fiscal year, as may be necessary.

Training in medical library sciences.—Secs. 390(b)(2) and 394(a). To assist in the training of medical librarians and other information specialists in the health sciences; there are hereby authorized to be appropriated for each fiscal year, beginning with the fiscal year ending June 30, 1966, and ending with the fiscal year ending June 30, 1970, such sums, not to exceed $1,000,000 for any fiscal year, as may be necessary.

Special scientific projects.—Secs. 390(b)(3) and 395. To assist, through the awarding of special fellowships to physicians and other practitioners in the sciences related to health and scientists, in the compilation of existing, and the creation of additional, written matter which will facilitate the distribution and utilization of knowledge and information relating to scientific, social, and cultural advancements in sciences related to health; there are hereby authorized to be appropriated for each fiscal year, beginning with the fiscal year ending June 30, 1966, and ending with the fiscal year ending June 30, 1970, such sums, not to exceed $500,000 for any fiscal year, as may be necessary

Research and development in medical library science and related fields.—Secs. 390(b)(4) and 396(a). To assist in the conduct of research and investigations in the field of medical library science and related activities, and in the

development of new techniques, systems, and equipment for processing, storing, retrieving, and distributing information in the sciences related to health; there are hereby authorized to be appropriated for each fiscal year, beginning with the fiscal year ending June 30, 1966, and ending with the fiscal year ending June 30, 1970, such sums, not to exceed $3,000,000 for any fiscal year, as may be necessary.

Basic resources of medical libraries and related instrumentalities.—Secs. 390(b)(5) and 397(a). To assist in improving and expanding the basic resources of medical libraries and related facilities; there are hereby authorized to be appropriated for each fiscal year, beginning with the fiscal year ending June 30, 1966, and ending with the fiscal year ending June 30, 1970, such sums, not to exceed $3,000,000 for any fiscal year, as may be necessary.

Establishment of regional medical libraries.—Secs. 390(b)(6) and 398(a). To assist in the development of a national system of regional medical libraries each of which would have facilities of sufficient depth and scope to supplement the services of other medical libraries within the region served by it; there are hereby authorized to be appropriated for each fiscal year, beginning with the fiscal year ending June 30, 1966, and ending with the fiscal year ending June 30, 1970, such sums, not to exceed $2,500,000 for any fiscal year, as may be necessary.

Financial support of biomedical scientific publications.—Secs. 390(b)(7) and 399(a). To provide financial support to biomedical scientific publications; there are hereby authorized to be appropriated for each fiscal year, beginning with the fiscal year ending June 30, 1966, and ending with the fiscal year ending June 30, 1970, such sums, not to exceed $1,000,000 for any fiscal year, as may be necessary.

Continuing availability of appropriated funds.—Sec. 399a. Funds appropriated to carry out any of the purposes of this part for any fiscal year shall remain available for such purposes for the fiscal year immediately following the fiscal year for which they were appropriated.

Public Health Service Act

The legislative authority in section 301 of the Public Health Service Act which provides for the award of grants for research, research training, and fellowships is included in the section of the justifications under the tab, "Preamble Paragraph" in Volume V.

Explanation of transfers

	1967 estimate	1968 estimate	Purpose
Comparative transfer from: "Office of the Surgeon General, salaries and expenses."	$62,000	----------	Transfer of the science information activity from the Office of the Surgeon General to the National Library of Medicine in connection with the Public Health Service reorganization.

Direct operations and grants

	1967 estimate		1968 estimate		Increase or decrease	
	Positions	Amount	Positions	Amount	Positions	Amount
Personnel compensation and benefits	397	$3,130,200	447	$3,775,200	+50	+$645,000
Other expenses	----------	12,392,628	----------	25,086,800	----------	+12,694,172
Total	397	15,522,828	447	28,862,000	+50	+13,339,172

Summary of program

	1967 estimate		1968 estimate		Increase or decrease	
	Positions	Amount	Positions	Amount	Positions	Amount
Medical library assistance, grants and contracts:						
Research and development:						
Grants	.....	$1,299,406	.....	$1,400,000	.....	+$100,594
Contracts	.....	800,000	.....	200,000	.....	−600,000
Total, research and development	.....	2,099,406	.....	1,600,000	.....	−499,406
Training:						
Grants	.....	1,191,924	.....	1,200,000	.....	+8,076
Special scientific projects	.....	186,496	.....	100,000	.....	−86,496
Total, training	.....	1,378,420	.....	1,300,000	.....	−78,420
Construction grants	.....	.....	.....	12,500,000	.....	+12,500,000
Publications and library support:						
Publications:						
Grants	.....	235,000	.....	300,000	.....	+65,000
Contracts	.....	545,000	.....	500,000	.....	−45,000
Total, publications	.....	780,000	.....	800,000	.....	+20,000
Library resources: Grants	.....	4,676,002	.....	2,500,000	.....	−2,176,002
Total, publications and library support	.....	5,456,002	.....	3,300,000	.....	−2,156,002
Regional medical libraries: Grants	.....	200,000	.....	1,500,000	.....	+1,300,000
Subtotal, extramural grants and contracts	.....	9,133,828	.....	20,200,000	.....	+11,066,172
Direct operations:						
Library operations	357	7,019,000	399	8,561,400	+42	+1,542,400
Less contracts, included above	.....	−1,345,000	.....	−700,000	.....	+645,000
Intramural library operations	357	5,674,000	399	7,861,400	+42	+2,187,400
Review and approval of grants and contracts	40	715,000	48	800,600	+8	+85,600
Total, National Library of Medicine	397	15,522,828	447	28,862,000	+50	+13,339,172

National Library of Medicine

INTRODUCTION

The biomedical knowledge of the world is recorded in a wide variety of forms and languages at an ever increasing rate of volume and complexity. The institutions and mechanisms which exist to collect, organize, and disseminate biomedical information are outmoded and inadequate. As a result, the potential value of existing biomedical knowledge is not fully realized in health research, education, and practice.

The goals of the National Library of Medicine programs are to assist the advancement of medical and related sciences through the conduct and support of programs which improve the flow of biomedical information from the point of generation to the ultimate user for the purposes of research, education, and medical practice and thus contribute to bringing the latest advances in health care ultimately to the patient. NLM assists in strengthening biomedical libraries and related institutions, exploiting current interlibrary relationships, improving information handling techniques, and enhancing the role of libraries as learning resources.

The 1968 budget request includes funds for awards in all categories of support authorized under the Medical Library Assistance Act of 1965 to assist in the development and support of the Nation's biomedical information resources. Increases are requested for research in medical library science and information systems and techniques, and development of regional medical libraries.

In order to strengthen the Library's ability to meet increased demands for service, the budget contains increases to plan and develop a toxicology information exchange; conduct systems design and provide partial staffing of a new com-

puter system; accelerate the development of NLM's medical literature analysis and retrieval capability to keep pace with the growing body of literature and demand for computer-based bibliographic services; improve medical subject headings; strengthen executive direction and administration; conduct a program analysis activity; and increase the staff to administer the expanding extramural program.

Medical library assistance, grants

	1967 estimate		1968 estimate		Increase or decrease	
	Positions	Amount	Positions	Amount	Positions	Amount
Grants	.....	$7,788,828	.....	$19,500,000	.....	+$11,711,172

The 89th Congress recognized that the unprecedented expansion of knowledge in the health sciences within the past two decades has caused massive growth in the quantity, the major changes in the nature of, biomedical information. In enacting the Medical Library Assistance Act of 1965, the Congress noted that there has not been a corresponding growth in the facilities and techniques necessary to coordinate and disseminate the ever-increasing volume of knowledge and information which has been developed in the health science field, and, that much of the value of this ever-increasing volume of knowledge will be lost unless the proper measures are taken in the immediate future to develop facilities and techniques necessary to collect, preserve, store, process, retrieve and facilitate the dissemination and utilization of such knowledge and information.

The Medical Library Assistance Act provides for a comprehensive program of support through:

(1) grants and contracts for research in the field of medical library science and related activities and development of new techniques, systems, and equipment for processing, storing, retrieving and distributing information in the sciences related to health;

(2) grants for training of medical librarians and other information specialists in the health sciences;

(3) grants for special scientific projects conducted under special fellowships awarded to physicians, scientists, and other practitioners in the sciences related to health, which will facilitate the distribution and utilization of knowledge and information relating to scientific, social, and cultural advances in sciences related to health;

(4) grants for construction of new, and renovation, expansion, or rehabilitation of existing medical library facilities;

(5) grants for improving and expanding the basic resources of medical libraries and related facilities;

(6) grants and contracts for financial support of biomedical scientific publications;

(7) and, grants for development of a national system of regional medical libraries each of which would have facilities of sufficient depth and scope to supplement the services of other medical libraries within the region served by it.

Research and development

	1967 estimate		1968 estimate		Increase or decrease	
	Positions	Amount	Positions	Amount	Positions	Amount
Grants	.....	$1,299,406	.....	$1,400,000	.....	+$100,594

Research grants

	1967 estimate		1968 estimate		Increase or decrease	
	Number of awards	Amount	Number of awards	Amount	Number of awards	Amount
Noncompeting continuations	17	$455,406	17	$740,000	.....	+$284,594
New grants	19	844,000	11	660,000	−8	−184,000
Total	36	1,299,406	28	1,400,000	−8	+100,594

The Library requests a net increase of $100,594 to support research and development projects in 1968. The total amount of new obligational authority requested for this sub-activity is $1,400,000. Obligations in 1967 consist of $1,000,000 in new obligational authority plus $299,406 brought forward from 1966.

The support of research and development in medical library science and related fields is based on the premise that the information resources of the Nation's biomedical libraries must be made available to its health practitioners, scientists, and students in the forms, volume, and with the speed required to meet users' needs for relevance, specificity, and timeliness.

Evaluation of research and development projects must consider the time available to the physician and other users to find, digest, and evaluate medical information; the unique communication requirements of the medical community; and the potential benefit to the health of the people of timely, pertinent, and reliable information. Research and development approaches to solutions of biomedical information problems involve three basic steps: 1) identification of user motivation and requirements through exploration of the preferences for different methods of information assimilation and identification of information gathering methods; 2) technical development of terminology, nomenclature, classification, and linguistics for the solution of traditional problems in indexing, abstracting, translation, and search strategy, and development of new media; and, 3) synthesis of the findings of behavioral and technical research.

The NLM is currently supporting research projects in each of the three broad areas outlined above. Program plans for 1967 emphasize the support of projects defined above as critical to the whole process; namely, the behavioral aspects of the information gathering process. During 1968, the Library will continue to support research in these three major areas but will emphasize studies for improving the techniques of information acquisition, organization, processing, preservation, and retrieval and the integration of behavioral and technological research efforts into effective communication systems.

The NLM also awards grants for projects in the history of the life sciences with special reference to the history of medicine. By preserving and illuminating the historical record, these projects provide the potential for a better understanding and appreciation of contemporary health activities.

Training

	1967 estimate		1968 estimate		Increase or decrease	
	Positions	Amount	Positions	Amount	Positions	Amount
Total grants	.....	$1,378,420	.....	$1,300,000	.....	−$78,420

This sub-activity includes grants for training and special scientific projects. The net decrease of $78,420 for 1968 consists of an increase of $8,076 in training offset by a decrease of $86,496 for special scientific projects.

A. Training

	1967 estimate		1968 estimate		Increase or decrease	
	Positions	Amount	Positions	Amount	Positions	Amount
Grants	----------	$1,191,924	----------	$1,200,000	----------	+$8,076

	1967 estimate		1968 estimate		Increase or decrease	
	Number of awards	Amount	Number of awards	Amount	Number of awards	Amount
Noncompeting continuations	9	$526,924	20	$1,200,000	+11	+$673,076
New grants	11	665,000	----------	----------	−11	−665,000
Total	20	1,191,924	20	1,200,000	----------	+8,076

The Library requests an increase of $8,076 in 1968 to award training grants. This will result in a total obligational authority of $1,200,000 in 1968 composed of $200,000 brought forward from 1967 plus $1,000,000 in new obligational authority (the amount of yearly authorization in the Medical Library Assistance Act). The 1967 base of $1,191,924 is composed of $191,924 brought forward from 1966 plus $1,000,000 in new obligational authority. $200,000 must be carried forward from 1967 to 1968 in order to meet noncompeting continuation commitments.

The success of a national health science information system is dependent upon the availability of a national manpower resource skilled in information communication techniques. In the United States and Canada, of the 2,188 graduates from the 36 accredited library schools in 1963, 1,839 were identifiable as known placements. Of these, 24 were placed in medical libraries and 13 in hospital libraries. It is not known how many of these had specific training in medical librarianship.

Serious as the quantitative problems are, simply adding more schools which offer a course in medical bibliography will not solve the infinitely more far-reaching problems. Training programs are needed which go beyond the basic traditional training in library science and provide the student with an educational experience that combines theoretical depth with research or practical experience all directly related to the problems of medical science. Rapid retrieval of drug information, continuing education of the physician, provision of regional medical services, library backup for specialized information centers such as those in Parkinsonism, brain research, diabetes, and cardiovascular disease are the types of services needed. With the growing concept of the learning resource center in the medical complex, the medical library will no longer be limited to books and journals but will be responsible for the newer instructional media.

B. Special scientific projects

	1967 estimate		1968 estimate		Increase or decrease	
	Positions	Amount	Positions	Amount	Positions	Amount
Grants	----------	$186,496	----------	$100,000	----------	−$86,496

The Library requests $100,000 to support approximately 6 Special Scientific Projects in 1968. Obligations in 1967 consist of $120,000 in new obligational authority plus $66,496 brought forward from 1966, to bring total obligations in 1967 to $186,496.

Special scientific projects are awarded on behalf of individuals to compile existing data and to make original contribtuions to the literature on the scientific, social, and cultural advances in the health sciences.

In 1967, particular attention will be directed toward studies on the contributions of contemporary health practitioners and the drug information system in the United States. In 1968, programs in one or two selected medical environments will be designed to foster an awareness in the medical community of the social and cultural aspects of the health sciences.

Construction

	1967 estimate		1968 estimate		Increase or decrease	
	Positions	Amount	Positions	Amount	Positions	Amount
Grants	----	----	----	$12,500,000	----	+$12,500,00

The $5,000,000 requested for construction in 1968, when combined with the $7,500,000 carried over from 1967 will make a total of $12,500,000 available for obligation in 1968. This grant support will provide up to 75% of the costs of constructing, renovating, expanding or remodeling biomedical library facilities in medical schools, and other health profession or service institutions.

The Association of American Medical Colleges has reported that a survey conducted in 1964 showed that its member institutions required more than $87,000,000 for medical library construction and renovation. This sum represents about $65,000,000 in Federal funds when the 75 percent matching rate as allowed in the Medical Library Assistance Act of 1965 is applied. The survey did not take into account the needs of free-standing health science libraries and those in other health professions educational institutions which are estimated to require an additional $10,000,000 in Federal funds.

A 1964 study by the Association of American Medical Colleges provided qualitative data for the establishment, operation, support and functions of libraries in medical schools. The Library contracted with the same organization in 1966 to develop criteria and planning guidance for the construction of medical libraries. The new study devotes special attention to the role of the medical library as a learning resource, considering facilities for use and dissemination of audiovisual and other non-print material.

The information from the 1966 study supplemented by the criteria reported in the 1964 study provides guidelines for effective implementation of the medical library construction grant program.

To date, eleven construction grant applications have been submitted and are under review. Funds carried over from 1967 plus the 1968 appropriation will fund approximately thirteen projects in 1968. These projects will include the cost of original construction or the renovation, expansion or remodeling of biomedical library facilities in non-profit health institutions. In reviewing applications for construction grants, consideration will be given to the relative effectiveness of the proposed facilities in meeting demonstrated needs for additional or improved medical library services.

Publications and library support

	1967 estimate		1968 estimate		Increase or decrease	
	Positions	Amount	Positions	Amount	Positions	Amount
Grants	----	$4,911,002	----	$2,800,000	----	−$2,111,002

This subactivity includes grants for publications support and for library resources. A net decrease of $2,111,002 for 1968 results from a requested increase of $65,000 for publication support, offset by a decrease in the library resource grant program of $2,176,002. These programs are discussed separately below:

A. Publications support

	1967 estimate		1968 estimate		Increase or decrease	
	Positions	Amount	Positions	Amount	Positions	Amount
Grants	----------	$235,000	----------	$300,000	----------	+$65,000

The Library provides financial assistance for non-profit biomedical publications to make available to the health related professions information of significance to the national health effort. To facilitate the utilization and availability of health science information, support must be provided for the preparation of abstracts, bibliographies, translations, handbooks, indexes, and secondary biomedical publications. In addition, primary or secondary publications in the field of medical librarianship and related areas of information science are supported. Assistance is provided to periodical publications in need of temporary support for the expansion or improvement of services to the readers.

During 1967, the Library will continue to identify information gaps in certain subject matter areas and provide special assistance such as abstracting projects to meet the identified needs. Also, an evaluation of the utility and effectiveness of those publications being supported currently will continue.

In 1968, a special effort will be directed toward studies of the availability, dissemination, and usefulness of existing and planned translation services. By this effort, the Library seeks to improve its contribution to international communication through the improved and increased exchange of recorded scientific information.

For these purposes, the Library requests an increase of $65,000 in 1968.

B. Library resources

	1967 estimate		1968 estimate		Increase or decrease	
	Positions	Amount	Positions	Amount	Positions	Amount
Grants	----------	$4,676,002	----------	$2,500,000	----------	−$2,176,002

A total of $2,500,000 is requested for this program in 1968. This represents a decrease from 1967 of $2,176,002 in obligational authority. Obligations in 1967 consist of $2,700,000 in new obligational authority plus $1,976,002 brought forward from 1966.

Grants will be made to improve and expand medical library resources which may be used to: strengthen collections through the purchase of books, journals, and other informational resources; improve access to the holdings of libraries by providing support for cataloging, binding, and other processing services; introduce new techniques in health service librarianship; and acquire photoduplication devices, film projectors, microfilm readers, and other needed equipment.

While the specific amount of each resource grant is determined by a formula, the basis for approval will be the merit of the plan set forth for the provision of services utilizing the resources to be obtained with the grant. Before awarding such grants the scope of services provided and planned by the medical library will be examined and numbers of users who will require services will be considered. The services and resources of the applicant, both existing and proposed, will be reviewed in the context of the geographic area served by the library along with those of other libraries in the area. In this way, planning for total coverage by library services will be stimulated at all interrelating levels, viable libraries will be identified and strengthened, and library service can be generated for user groups not adequately covered previously.

A guiding principle of the resource grant program is to provide a means for optimizing materials and techniques which are available. A further guiding principle in the planning of this program has been to reach as large a number as possible of libraries capable of providing useful and necessary service.

The NLM plans to award grants to 200 libraries in 1967. The $2,500,000 requested in 1968 will provide grants to an additional 75 libraries.

Regional medical libraries

	1967 estimate		1968 estimate		Increase or decrease	
	Positions	Amount	Positions	Amount	Positions	Amount
Grants	.....	$200,000	.....	$1,500,000	.....	+$1,300,000

The Library requests $1,500,000, an increase of $1,300,000 over the 1967 amount, to support regional medical libraries in 1968. The Medical Library Assistance Act authorizes this program of grants to existing institutions to enable them to assume responsibilities for providing regional medical library services in support of local medical libraries having limited resources. This program will provide grants to the designated regional libraries for acquisition of library resources, cataloging, binding, and other processing activities; acquisition of equipment to facilitate the use of library resources; acquisition of mechanisms and employment of personnel to provide rapid transmission of materials and information between regional libraries and the local libraries which they serve; and necessary construction, renovation, rehabilitation or expansion of facilities to provide regional services. Grantee institutions will be required, as a condition of the grant, to expand and modify their supportive facilities and services and to provide free loan services and photoduplication services to qualified requesters.

In addition to the above function, the regional libraries will be expected to give the widest possible dissemination to information concerning their resources and services. Discussions with neighboring areas are also encouraged in order to insure complete coverage ultimately of all users in a national network of biomedical libraries.

In 1967 one regional medical library will be supported. Additional funds in 1968 will provide for six more for a total of seven regional medical libraries supported in 1968.

Direct operations

	1967 estimate		1968 estimate		Increase or decrease	
	Positions	Amount	Positions	Amount	Positions	Amount
Personnel compensation	397	$3,130,200	447	$3,775,200	+50	+$645,000
Other expenses	.....	4,603,800	.....	5,586,800	.....	+983,000
Total	397	7,734,000	447	9,362,000	+50	+1,628,000

Library operations

	1967 estimate		1968 estimate		Increase of decrease	
	Positions	Amount	Positions	Amount	Positions	Amount
Personnel compensation and benefits	357	$2,844,000	399	$3,412,300	+42	+$568,300
Other expenses	.....	2,830,000	.....	4,449,100	.....	+1,619,100
Total	357	5,674,000	399	7,861,400	+42	+2,187,400

MEDLARS indexing and searching.—The Library requests an increase of eleven positions and $259,200 to meet indexing and searching goals in 1968. MEDLARS was designed to provide improved bibliographic access to the voluminous biomedical literature for health scientists, practitioners, and students. It was the first application of a computer to the problems of scientific information

processing in a library. MEDLARS has been outstanding in its success. The Library will have over 600,000 citations to medical articles on magnetic tape by the end of 1967, but this is not adequate. The same reason that brought the need for the MEDLARS system—the explosion in the volume and scope of scientific literature—now requires that the Library expand its efforts to index all significant articles from the biomedical literature for publication and retrieval purposes. The Ad Hoc Panel on Selection of Journals for *Index Medicus* recommended that 600 periodicals be added to the 2,300 already being indexed. Many top quality journals have increased the number of articles published in each issue as well as the number of issues per year. The Library began a concerted effort in 1965 to improve the quality of computer input, and thereby bibliographic output, by careful expert selection of journals to be indexed, by modifying headings to reflect article content more accurately, and by more intensive review of indexer data sheets to increase the quality and consistency of indexing. Due to inadequate staff, the Library's Index Section is experiencing a backlog of articles to be indexed which is growing at the rate of 2,000 articles per month. By the end of 1967 the total backlog will reach approximately 60,000 articles. In order to partially reduce the backlog the Library will contract for some indexing. The request includes $87,000 to contract for indexing of about 20,000 articles in 1968. The request for positions includes 4 additional indexers, 2 revisers (senior indexers), and one clerk-typist to meet the Library's goal of 200,000 articles indexed in 1968.

The Library's Search Section, with responsibility for retrieval of information entered into the computer, produces recurring bibliographies, demand searches, and selects certain demand search bibliographies of general interest for wider distribution at very low cost. To meet the Library's 1968 goal of 3,600 demand searches, 20 recurring bibliographies, and 40 recurring demand searches, the request for positions includes 3 additional searchers and one clerk-typist.

The Library has established a training program in indexing and search procedures to train employees of decentralized MEDLARS search centers. In addition to their regular duties, the new index and search positions will be used to assist in this program. Funds requested will be used for contract indexing, increased printing costs for Library publications, library supplies and equipment, travel, and to fund new positions.

Medical subject headings (MeSH) development.—The Library requests an increase of $80,900 and one position for Medical Subject Headings development.

The National Library of Medicine has developed a uniform system of classification for the medical literature to exploit more fully its MEDLARS computer system. The Medical Subject Headings list has three basic applications:

1. It is the subject heading authority for indexing in *Index Medicus* and MEDLARS.
2. It is the subject heading authority for cataloging at the NLM.
3. It is the dictionary or key for the user of *Index Medicus* and the individual who requires or demands searches on the MEDLARS computer.

MeSH is used not only in this country, but world-wide as a medical thesaurus. The Bibliotheque Nationale has adopted it as the official subject heading authority for France.

The development and updating of MeSH is carried out by Library staff in consultation with committees of experts and individual authorities in the various fields. The list of Medical Subject Headings must be constantly revised and updated as the volume and scope of the world's biomedical literature expands and as the biomedical sciences encompass a greater variety of academic disciplines. As the disciplines become more sophisticated, their language and terminology evolve and change causing terms in the list of Medical Subject Headings to be revised. The Library has a planned program for improving the quality, scope, and level of sophistication of its Medical Subject Headings. During 1966 and 1967, the areas of epidemiology, behavioral science, medical care, and organ transplantation were analyzed, and index terms, interdisciplinary vocabularies, and methods for the display of the vocabulary were developed. During 1968 particular attention will be given to revising and improving the terms used to describe literature pertaining to biochemical mechanisms and biomedical engineering.

The position requested will be used to employ an additional medical subject headings specialist. Funds will be used to pay for consultative services, contracts for new terminology development and other miscellaneous expenses.

New computer system: Installation and research.—The Library requests an increase of $974,900 and 8 positions for reprogramming and conversion to a new

computer system, initial installation of new computer equipment, and systems development and research.

The Library will begin installation of a new computer system to meet future data processing and information systems requirements for: (1) an increase in the level of MEDLARS bibliographic services provided including demand searches and recurring bibliographies; (2) an on-line input system to MEDLARS permitting the indexer and the searcher to communicate directly with the computer; (3) an automated acquisitions and cataloging system; (4) a graphic image storage and retrieval system closely linked to the MEDLARS computer search capability; (5) a drug literature program with chemical search capabilities added to MEDLARS; (6) a Toxicology Information Exchange; and, (7) an intramural research and development program in information retrieval and scientific documentation.

The computer system will incorporate: (1) processing capacity many times that of present hardware; (2) mass random access memory measured in billions of characters; (3) on-line consoles for direct access into the computer files; and (4) data communications capability for electronic linkage to other centers.

The request contains an increase of six positions and $49,100 to provide personnel to monitor the development of the new system. Increased costs associated with developing the new system and operating the old system amount to $253,200 and include $105,800 for equipment rental, $30,000 for equipment maintenance, $76,900 for equipment purchases and $40,500 for miscellaneous items. Contracts for conversion to the new system and reprogramming in 1968 will require an increase of $650,600.

The installation of the new computer system and the general increase in the Library's intramural research and development activities in 1968 will place a heavy burden on the present systems analysis staff of the Library. As the cornerstone of the Nation's biomedical information system, the Library must spearhead efforts for the development and testing of new techniques for collection, organization, processing, and dissemination of all forms of biomedical information. Library staff will conduct research projects in graphic image storage and retrieval and other forms of scientific documentation. An increase of two positions and $22,000 for systems analysis and research is requested.

Executive direction and administration.—An increase of one position and $138,000 is requested to strengthen the management of the Library to meet increased responsibilities and workload resulting from program growth.

Administrative management services for the Library are provided centrally. Due to its organizational status, the Library is required to provide a broader range of such services in greater depth than would be normally the case for an organization of its size. With the greatly increased program responsibilities and enlarged staff and budget of the Library, resulting principally from the enactment of the Medical Library Assistance Act of 1965, and the initiation of a Toxicology Information Exchange, prudence dictates that the administrative management offices be bolstered.

The Library's budget has grown from $9,685,000 in 1966 to more than $21,000,000 in 1968. The Library's contract program has increased sharply, from about $1,000,000 in 1966 to over $3,000,000 in 1968. The new position will be used for contract management. The funds will be used to support the position and other administrative expenses including office equipment, supplies, and reimbursement to the NIH Management Fund for increased services.

Program analysis.—The most pressing need in the Office of the Director, NLM, is to enhance the capability for program planning and analysis. The Library has before it increasingly important responsibilities for the conceptualization of new programs in the area of biomedical communications, for the evaluation of existing programs, and for the provision of standards for the direction of both current and projected programs. As the principal focus for such activities in the Public Health Service, it is imperative that the Library expand its program analysis and evaluation activities.

Consultants will be used to a great extent in the evaluation of the NLM program and in the development of plans and objectives. The program analysis office will maintain statistics and other information pertaining to biomedical libraries, health communication and other subjects relevant to NLM program planning. An increase of one position and $52,800 is requested for program analysis and evaluation in 1968.

Toxicology Information Exchange.—The Library requests an increase of 20 positions and $900,000 for planning and development of a Toxicology Information Exchange.

The President's Science Advisory Committee (PSAC) in its report, "Handling of Toxicological Information," drew attention to the urgent need for a better coordinated and more comprehensive computer-based file of toxicology information than is currently available. In response to a delegation of responsibility from the President to the Secretary of Health, Education, and Welfare, and subsequently to the Director of the National Library of Medicine, the Library will plan for the development of an action-oriented program through the formation of an organizational unit to be known as the Toxicology Information Exchange (TIE) which, when operational, will:

1. Provide leadership and technical and financial support in the continuing development and operation of a comprehensive system of information on the interaction of chemicals and biological systems (toxicology).

2. Identify, classify, and maintain current descriptions of all toxicology information users and all significant centers and services which accumulate and analyze toxicology information.

3. Propose compatible systems standards and guidelines within Government for storage and retrieval of toxicology information including common vocabulary systems and compatible computer programming, and promote their adoption by the non-Government sector.

4. Respond to incoming requests for stored information, directly or by referral, and provide or arrange repackaging of stored information where significantly large user-groups are identified.

5. Support preparation of comprehensive chemical information files. Automation techniques will be used when advantages can be gained.

6. Conduct and support research and investigations in those aspects of the processing and communication of toxicology information essential for the development and operation of a user-oriented information system.

7. Provide a data base for the study of biological effects of chemicals which have a meaning to life systems.

In 1968 the Library will convene an advisory committee on toxicological information, composed of experts in the various fields of toxicology, in order to provide *ad hoc* consultations for program development. Two studies, a survey of toxicological information sources and a study of user needs and practices, will be performed on contract. These data gathering and analysis activities are fundamental to the program and will form the basis for planning and other actions. In addition, work will begin on a bibliography of reviews in toxicology.

Positions will be used to recruit the top-level management staff of the program along with high-level analysts and program specialists to work on system design and analysis. Funds requested include $227,000 to fund the 20 positions, $500,000 for project contracts, $20,000 for consultative services, $30,000 for travel, $20,000 for equipment, $10,000 for literature, $20,000 for rental of office space, $10,000 for supplies and $63,000 for other expenses.

An overall program reduction of $218,400 in the Library Operations base is included in the 1968 budget. This is comprised of decreases for non-recurring costs of $283,200 partially offset by $64,800 for annualization of 22 positions new in 1967.

Research and support contracts

	1967 estimate		1968 estimate		Increase or decrease	
	Positions	Amount	Positions	Amount	Positions	Amount
Personnel compensation and benefits						
Other expenses		$1,345,000		$700,000		−$645,000
Total		1,345,000		700,000		−645,000
Research and development contracts		800,000		200,000		−600,000
Publications support contracts		545,000		500,000		−45,000
Total		1,345,000		700,000		−645,000

The Medical Library Assistance Act authorizes the Library to use the contract in addition to the grant mechanism for two categories of support—research and publications support. In 1968 the grant mechanism will be used to a greater extent resulting in a net decrease for this activity in 1968. The narrative justification for these funds is found under research and development grants and publications and library support grants.

Review and approval of grants and contracts

	1967 estimate		1968 estimate		Increase or decrease	
	Positions	Amount	Positions	Amount	Positions	Amount
Personnel compensation and benefits	40	$286,200	48	$362,900	+8	+$76,700
Other expenses		428,800		437,700		+8,900
Total	40	715,000	48	800,600	+8	+85,600

The Library must provide initial review for the major portion of the applications for grants under the Medical Library Assistance Act. The NLM staff will service three advisory committees: Manpower and Training Committee, Facilities and Resources Committee, and National Medical Libraries Assistance Advisory Board.

Five of the eight positions requested will be used to provide the scientific expertise required to conduct the diverse program of medical library assistance that runs from research and development to construction grants.

Three positions will be used for the grants management and processing staff. The growth in the size of the extramural program and in the number of applications and awards to be processed, requires a considerable increase to handle the increased workload and exercise financial and administrative oversight of the awards made. Positions other than permanent are included for the standing committees as well as part-time and intermittent clerical assistants required during periods of peak workload. This estimate assumes appointments to Committees through Civil Service procedures rather than using a contract mechanism.

New positions requested, fiscal year 1968

	Grade	Annual salary
Library operations:		
Associate director, toxicology information	GS–15	$17,550
Scientist (2)	GS–15	35,100
Public health program specialist	GS–15	17,550
Medical officer	GS–15	17,550
Systems analyst	GS–15	17,550
Information scientist	GS–15	17,550
Medical literature analyst (2)	GS–14	30,212
Systems analyst (3)	GS–14	45,318
Scientist	GS–14	15,106
Administrative staff assistant	GS–14	15,106
Supervisory programer	GS–14	15,106
Contracts officer	GS–14	15,106
Public health program specialist	GS–13	12,873
Scientist	GS–13	12,873
Medical literature analyst	GS–13	12,873
Searcher	GS–13	12,873
Supervisory programer	GS–13	12,873
Digital computer systems administrator	GS–13	12,873
Systems analyst (2)	GS–13	25,746
Librarian	GS–12	10,927
Public health program specialist	GS–12	10,927
Medical literature analyst	GS–12	10,927
Searcher	GS–12	10,927
Indexer (4)	GS–12	43,708
Senior programer	GS–12	10,927
Secretary	GS–9	7,696
Secretary	GS–7	6,451
Secretary (3)	GS–5	15,993
Clerk-typist (2)	GS–5	10,662
Input-typist (2)	GS–2	7,850
Total, 42 new positions		508,783
Review and approval of grants and contracts:		
Public health program specialist	GS–14	15,106
Regional resources officer	GS–14	15,106
Training officer	GS–14	15,106
Grants management officer	GS–13	12,873
Construction officer	GS–13	12,873
Publication officer	GS–11	9,221
Grants assistant (2)	GS–5	10,662
Total, 8 new positions		90,947
Total, 50 new positions, all activities		599,730

THURSDAY, APRIL 13, 1967.

BUILDINGS AND FACILITIES

WITNESSES

IAN K. BURGESS, DIRECTOR, DIVISION OF BUILDINGS AND FACILITIES
DR. LEONARD D. FENNINGER, DIRECTOR, BUREAU OF HEALTH MANPOWER
DR. RICHARD A. PRINDLE, DIRECTOR, BUREAU OF DISEASE PREVENTION AND ENVIRONMENTAL CONTROL
DR. JOHN J. WALSH, DIRECTOR, DIVISION OF DIRECT HEALTH SERVICES
DR. JAMES A. SHANNON, DIRECTOR, NATIONAL INSTITUTES OF HEALTH
RICHARD L. SEGGEL, EXECUTIVE OFFICER, NATIONAL INSTITUTES OF HEALTH
CHRIS A. HANSEN, DIRECTOR, DIVISION OF RESEARCH SERVICES, NIH
DR. WILLIAM H. STEWART, SURGEON GENERAL
JOHN H. KELSO, EXECUTIVE OFFICER
G. R. CLAGUE, ACTING CHIEF FINANCE OFFICER
JAMES B. CARDWELL, DEPUTY ASSISTANT SECRETARY, BUDGET
DR. LEO J. GEHRIG, DEPUTY SURGEON GENERAL

Object classification

[In thousands of dollars]

		1966 actual	1967 estimate	1968 estimate
	PUBLIC HEALTH SERVICE			
	Personnel compensation			
11.1	Permanent positions	76		
12.0	Personnel benefits	3		
22.0	Transportation of things	12		
25.1	Other services	1,227	4,600	4,000
26.0	Supplies and materials	111		
31.0	Equipment	736	500	200
32.0	Lands and structures	2,372	1,200	1,000
	Total, Public Health Service	4,537	6,300	5,200
	ALLOCATION TO GENERAL SERVICES ADMINISTRATION			
24.0	Printing and reproduction	20	50	60
25.1	Other services	2,100	2,800	3,700
32.0	Lands and structures	15,081	24,372	10,887
	Total, General Services Administration	17,201	27,222	14,647
99.0	Total obligations	21,737	33,522	19,847

Program and financing

[In thousands of dollars]

	Costs to this appropriation					Analysis of 1968 financing			
	Total estimate	To June 30, 1965	1966 actual	1967 estimate	1968 estimate	Deduct selected resources and unobligated balance, start of year	Add selected resources and unobligated balance, end of year	Appropriation required for 1968	Appropriation required to complete
Program by activities:									
1. Dental health center addition	2,808		27	73	650	150	2,058	2,558	
2. Planning for central air pollution research facility	1,815				300		1,515	1,815	
3. NIH animal center	13,966	3,751	45	793	1,000	1,047	167	120	8,210
4. Combined service facility, NIH	3,000				75		124	200	2,800
5. Multilevel parking facilities:									
(a) General office building extension	3,050			69	973	1,531	658	100	1,350
(b) Cancer-mental health/neurology buildings	2,110			77	1,161	2,033	872		
6. Incinerator facility, NIH	2,350			97	197	173	2,056	2,080	
7. Repairs and improvements	12,332	813	1,314	4,663	4,507	1,500	835	3,842	
8. Northeast shellfish sanitation research center	1,374			45	1,040	1,139	99		190
9. Modernization of PHS hospitals	69,096			1,746	3,116	4,368	1,252		62,982
10. Communicable disease facility, San Juan, P.R	1,480		23	500	957	957			
11. Northwest shellfish sanitation research center	1,118			45	770	1,073	303		
12. Solid waste research facility	765		54	711					
13. Laboratory facility, Cincinnati, Ohio	22,715			190	770	1,195	425		21,330
14. Appalachian environmental health field station	5,120			185	165	165			4,770
15. Arctic health research center animal facility	1,173			185	988	988			
16. Arctic health research center	4,588	370	1,882	2,336					
17. Isotope laboratory addition, NIH	500			20	220	480	260		
18. Facilities planning	125			125					
19. Child health and human development research facility, NIH	9,850			232	440	618	178		9,000
20. National environmental health sciences center	38,021			200	1,160	1,585	425		36,236
21. Clinical center addition, NIH	1,550		4	735	746	811	65		
22. Neurology-child health facility, Puerto Rico, NIH	2,520		18	210	990	2,292	1,302		
23. General office building extension	6,800	161	95	2,820	2,767	3,724	957		
24. Gerontology research facility, NIH	8,050		1,048	4,356	2,492	2,646	154		
25. Extension to clinical center cafeteria	695	7	21	530	124	137	13		
26. Library relocation, NIH	900	38	62	636	164	164			
27. Warehouse relocation, NIH	780	10	5	357	398	408	10		
28. Mental health-neurology-cancer cafeteria, NIH	890	29	23	406	382	432	50		
29. Biologics standards laboratory annex, NIH	5,063	1,020	2,681	1,294	68	68			

30. Communicable disease center	15,800	11,698	2,259	1,257	586	586			
31. Cancer research facility, NIH	10,788		559	5,433	3,756	4,796	1,040		
32. Service building 12, NIH	1,800	1,451	295	52	2	2			
33. Master utilities extension, NIH	4,775	579	502	969	1,044	2,725	1,681		
34. Animal quarters, NIH	2,606	2,574	20	10	2	2			
35. Research facilities, Lexington, Ky., NIH	400	294	102	4					
36. Library facilities	6,648	6,555	45	48					
37. Dental research building, NIH	3,623	3,596	13	14					
Total program costs, funded	271,044	32,946	11,097	31,423	32,010	37,795	16,500	10,715	146,868
Change in selected resources [1]			10,640	2,099	−12,163				
10 Total obligations			21,737	33,522	19,847				
Financing:									
16 Comparative transfer to other accounts			2,526						
21 Unobligated balance available, start of year			−52,268	−36,982	−13,306				
23 Unobligated balance transferred to "Buildings and facilities, Federal Water Pollution Control Administration"				8,433					
24 Unobligated balance available, end of year			36,982	13,306	4,174				
40 New obligational authority (appropriation)			8,977	18,279	10,715				
Relation of obligations to expenditures:									
10 Total obligations			21,737	33,522	19,847				
70 Receipts and other offsets (items 11–17)			2,526						
71 Obligations affecting expenditures			24,263	33,522	19,847				
72 Obligated balance, start of year			18,759	25,828	25,760				
73 Obligated balance transferred to "Buildings and facilities, Federal Water Pollution Control Administration"				−2,167					
74 Obligated balance, end of year			−25,828	−25,760	−13,597				
90 Expenditures			17,194	31,423	32,010				

[1] Selected resources as of June 30 are as follows: Unpaid undelivered orders, 1965, $11,750,000 (excludes $4,157,000 related to transfer to "Buildings and facilities, Federal Water Pollution Control Administration"); 1966, $22,390,000; 1967, $24,489,000; 1968, $12,326,000.

Mr. NATCHER. We take up next Public Health Service buildings and facilities.

We have with us Mr. Ian K. Burgess, Director of the Division of Buildings and Facilities. Who do you have with you?

GENERAL STATEMENT

Mr. BURGESS. We have here, Mr. Chairman, our executive officer, Mr. John H. Kelso, and Dr. John Walsh, Director of the Division of Direct Health Services.

Mr. NATCHER. We are glad to have you gentlemen with us.

Mr. BURGESS. The estimate for the appropriation, "Buildings and facilities," includes funds for all proposed design and construction projects recommended for 1968 for the Public Health Service except those for the Indian health program. The estimate, in the amount of $10,715,000, provides for the design or construction of six major projects in the sum of $6,873,000 plus repair and improvement funds for the whole Public Health Service other than to facilities concerned with the Indian health program in the sum of $3,842,000.

DENTAL HEALTH CENTER ADDITION

The largest item in our 1968 design and construction estimate is $2,558,000 for the construction of the dental health center addition in San Francisco. This facility, for which planning funds were appropriated in 1966, will provide needed space for expanded programs in the areas of research, continuing education, prevention and control studies, and for the clinical assessment of dental materials.

PLANNING FOR CENTRAL AIR POLLUTION CONTROL FACILITY

A provision of the Clean Air Act (Public Law 88–208) authorizes "the Secretary of the Department of Health, Education, and Welfare to construct such facilities as are necessary to carry out the provisions of the Act." For this purpose we are asking that $1,815,000 in funds be provided for planning the National Center for Air Pollution Control, to be located in the research triangle, North Carolina.

The activities to be provided for in the proposed facility include research and development programs, technical services, and training activities of the Center. The research and development programs include activities concerned with the development of control technology, research on the effects of air pollutants on health, and the development of standards and criteria for air quality and air pollutant emissions. The disciplines involved in these programs include the physical and engineering sciences, and statistical, medical, epidemiological, and other biological activities. Technical services and short-course training activities in support of Federal, State, and local government air pollution control would also be headquartered at the proposed facility.

Approximately 450,000 gross square feet of space to provide administrative- and laboratory-type facilities will be required for about 1,000 people, who will be needed to carry out these programs.

NIH ANIMAL CENTER

In accordance with our plan to develop the NIH Animal Center through phased construction, this estimate contains $120,000 to complete the construction of phase IA consisting of mental health animal research laboratories and a primate quarantine building. The architect-engineer, in developing the design to meet program requirements, now estimates the cost of the facility to be $1,479,000 which exceeds available funds by approximately $244,000. Every effort has been made to reduce this deficit while meeting the minimal needs in laboratories and animal buildings, and we have managed to reduce the $244,000 required to our request of $120,000.

COMBINED SERVICE FACILITY, NIH

We are recommending that $200,000 be provided for the planning of a combined service facility to serve NIH needs in supply activities, vehicle servicing and repair, and in fire prevention and protection. The estimated construction cost will be $2,800,000. By the middle of 1971, laboratory space at NIH will have increased by approximately 40 percent. This proposed expansion in NIH servicing capacity is essential if this new laboratory space is to be adequately supported. In addition, the proposed facility will correct certain existing problems. Both the present fire department and the vehicle servicing activity are surrounded by extensions to buildings. The problem of access to this area creates an obstacle for fire apparatus responding to an emergency. The noise and odors from the vehicle servicing area are a nuisance to occupants of adjacent structures. The combined services building would be located centrally and be more accessible to all areas of the reservation. Its activities will include shipping and receiving; central stores and warehousing space; vehicular repair and maintenance; gas station operations; and an engineroom, dormitory, watch and squad room, and storage.

MULTILEVEL PARKING FACILITIES

Planning funds of $100,000 are requested to extend the multilevel parking facility authorized in 1966 to serve the general office building at NIH. This extension will serve the increased parking population caused by the construction, now underway, of an addition to the general office building. The original parking facility was planned to accommodate 650 cars and the proposed extension will handle another 550 vehicles. Total cost of this extension, including planning funds, will be $1,450,000.

INCINERATOR FACILITY, NIH

Last year, Congress provided an appropriation of $270,000 for the planning of a replacement incinerator plant to be located on the NIH reservation in Bethesda. Because of the needs of the National Naval Medical Center and the Walter Reed Army Medical Center for similar incinerator facilities, a consulting engineering firm was engaged to study the feasibility of constructing a single plant to handle the combined refuse from the three installations. The consultants have recommended that a single incinerator with a capacity of 175 tons per

day be located on the grounds of the Forest Glen Annex, Walter Reed Army Medical Center, to serve the three units. All the organizations involved have concurred in this recommendation and the Department of the Army has indicated that the necessary land can be made available. The $2,080,000 requested by the PHS will support the entire cost of construction.

REPAIRS AND IMPROVEMENTS

The last item in our request is for $3,842,000 to support a large number of identified repair and improvement projects at the various field stations of the Service. Mr. Chairman, I shall be pleased to answer any questions that you or other members of the committee may have.

SUMMARY OF BUDGET REQUEST, BUILDINGS AND FACILITIES

Mr. NATCHER. Thank you very much, Mr. Burgess. Now on an appropriation basis you are asking for $10,715,000 compared with $18,279,000 or a reduction of $7,564,000; is that correct?

Mr. BURGESS. Yes, sir.

Mr. NATCHER. On an obligation basis, taking unobligated balances and other adjustments into consideration, you expect to obligate $33,522,000 this year and $19,847,000 next year, or a decrease of $13,675,000. That is correct, is it not?

Mr. BURGESS. Yes, sir.

Mr. NATCHER. Most construction programs in the Department have been held up this year with the plan to release the funds next year. This one seems to be in the opposite direction. Is there any particular reason for this, Mr. Burgess?

Mr. BURGESS. Yes, sir. It primarily relates to the time it takes to design a facility. We set up a schedule and this schedule often changes so that we have to adjust it as to when we believe we will need the construction funds. It reflects the need for construction funds in fiscal 1968.

DENTAL HEALTH CENTER ADDITION

Mr. NATCHER. The largest of the new items is $2,558,000 for the Dental Health Center addition. As you know, and I know all of us do, Mr. Fogarty was very much interested in this particular item. Tell us about the need and describe what is to be built, Mr. Burgess.

Mr. BURGESS. Sir, we are going to have an addition about doubling the existing Dental Health Center in San Francisco. It will be a building 130 feet wide, 86 feet deep, and 3 stories in height, plus its basement. This will give us a gross area of 45,000 square feet and net usable area of about 30,000. It will be physically attached to the present Center on the grounds of the San Francisco hospital.

Mr. NATCHER. This Center is necessary, you feel, Mr. Burgess?

Mr. BURGESS. Yes, sir.

CENTRAL AIR POLLUTION RESEARCH FACILITY

Mr. NATCHER. $1,815,000 is requested for the central air pollution research facility and this is just for planning and design.

Mr. BURGESS. Yes, sir.

Mr. NATCHER. I see you estimate the construction cost at $25 million.

Mr. BURGESS. Yes, sir.

Mr. NATCHER. Now, Mr. Burgess, give us a good justification of this request before we start in on a project of this size. What do you have to say to the committee?

Mr. BURGESS. Sir, our present air pollution research and development activities are in scattered locations in Cincinnati, mostly in leased and in temporary space. To carry out this research and development work there were certain program criteria defined for a new facility location. Among them was being close to higher institutions of learning that have strong schools or departments of engineering and medicine, a source of clean ambient air, and an area that had a relatively long agricultural growing season. I believe we surveyed about 31 locations before deciding on the research triangle in North Carolina.

Mr. NATCHER. This facility would be constructed in the research triangle in North Carolina?

Mr. BURGESS. Yes, sir, it is referred to as the Research Triangle Park.

Mr. CARDWELL. I should mention, Mr. Chairman, that Dr. Prindle, the Director of the Bureau involved in this activity, is here today. If you like, he perhaps could expand or enlarge on the need for this facility. Dr. Walsh is here for the same purpose, as is Dr. Fenninger. They each have buildings represented in this appropriation request and will be glad to add information as needed.

Mr. BURGESS. My responsibilities are primarily architectural and engineering. I am in the technical area. These gentlemen can answer much better than I about the program requirements.

Mr. NATCHER. Suppose we hear from you at this time. Now, this request is to plan a facility that would cost at least $25 million. Suppose you say a few words in support of it.

Dr. PRINDLE. Yes, sir. As you gentlemen know, air pollution research is expanding rapidly and has been given a very high priority in our budget requests this year. It has become absolutely necessary to have adequate facilities for the conduct of research and technical assistance programs in this field. For a number of years these have been in Cincinnati. As you are aware, a large part of this activity has been in the Sanitary Engineering Center at 4676 Columbia Parkway, the building known as the Robert A. Taft Sanitary Engineering Center. This building was transferred to the Federal Water Pollution Control Administration of the Department of the Interior when Reorganization Plan No. 2 went into effect, so that we are having to vacate that building. In addition to that building our air pollution activities had expanded beyond it to temporary quarters, leased space, and are in five widely scattered locations in the city of Cincinnati. In order to bring these together and to have a more effective activity, we felt the need for a new facility. In looking for a facility and recognizing the building requirements of other operations in Cincinnati, we decided to look elsewhere for a place which met the kind of criteria Mr. Burgess mentioned, including the availability of Government-owned land.

We found that the research triangle met these criteria including the capability of the three schools involved there, the land that was available—some 509 acres—the fact that we could do our activities that relate to air pollution damage to agriculture because of the longer growing season there, and the fact that we had relatively clean air there. It is much easier in our experimental work to dirty up the air, so to speak, than to clean it up for our exposure studies. Finally, a matter that came very much into consideration the fact that the National Institutes of Health intends to build its Environmenal Health Sciences Center there which will support our activities considerably. We will be jointly involved there working on similar problems and we felt this would be the ideal spot for our activity.

This large amount of money would be required to house the roughly 1,000 people we eventually expect to have there. This would involve almost all of our activities in air pollution with the exception of the auto testing laboratory which is located near Detroit, Mich., for obvious reasons, some of our field activities which are related to specific abatement actions, programs that are going on in specific field locations for a short time, and some of the headquarters activities that we felt necessary to retain here in Washington. All these activities were put together—research, technical assistance, and headquarters—for field-based operations at this one location. We anticipate starting with the design of this facility with this request. At the present time within the 1968 budget there are some 861 positions which could be moved into the research triangle area on a phased basis in temporary quarters while we are constructing the final facility.

INCINERATOR FOR NIH AND ARMY AND NAVY CENTERS

Mr. NATCHER. Thank you very much, Doctor. Now, Mr. Burgess, you are requesting $2,080,000 for an incinerator to serve the National Institutes of Health and the Army and Navy Medical Centers. This seems a little unusual when you consider the financial arrangement providing that NIH pay 100 percent of construction and 100 percent of the operating costs, as we understand the justifications, although it isn't really clear. Do you want Mr. Cardwell or one of these learned gentlemen to tell about this financial arrangement or do you want to try it, Mr. Burgess?

Mr. BURGESS. May I try it? They can cut me down if I am wrong.

Mr. NATCHER. All right. Go ahead.

Mr. BURGESS. The $270,000 was appropriated in 1967 for design. After this money was appropriated, the Walter Reed Army Medical Center and the Navy Medical Center came in with requests to the Bureau of the Budget for incinerators. The Bureau asked us to have an outside consultant determine the feasibility of building a single incinerator to serve these three units. This study was initiated and it was in late December or early January that the study was completed. The budget cycle is such that the construction funds were put in our budget before the end of this study. The consultants recommended a single incinerator to be located on the Walter Reed Army Medical Center Annex in Forest Glen to serve the three organizations. That

is basically why the item appears in our budget and not in the Department of Defense budget.

Mr. NATCHER. Is this the proper procedure, Mr. Burgess?

Mr. CARDWELL. We believe it is.

Mr. BURGESS. Yes. These costs are for design and construction. We are working informally to determine what the operating costs will be and how much each organization will contribute.

Mr. CARDWELL. There will be joint cost sharing on operations once it becomes operational.

Mr. NATCHER. Fine.

Mr. BURGESS. The important point is that savings of about $100,000 per year will accrue to the Government, according to the consultants.

NIH FIRE DEPARTMENT

Mr. NATCHER. You mention the NIH fire department. Just how large a fire department do you have, and basically why do you need it? I think I know the answer to it but suppose you tell us about it.

Mr. BURGESS. May I pass this one to Mr. Seggel or Mr. Hansen?

Mr. SEGGEL. Mr. Chairman, it is a very small fire department. I do not recall exactly; I think we have about 16 personnel to take care of fire emergencies on the NIH reservation and, of course, they handle a lot of problems that are not directly related to fire, such as chemical spills, and so forth.

Mr. NATCHER. As far as equipment is concerned, what type of equipment do you have?

Mr. SEGGEL. We have a fire engine, a pumper.

Mr. HANSEN. In addition, we have an emergency unit for rescue and first aid work and a truck for chemical disposal.

Mr. CARDWELL. As the chairman well knows, the National Institutes of Health are responsible for patient care. There are patients housed there.

Mr. SEGGEL. They need to be prepared for fire emergencies in NIH's large clinical center; also, we have many laboratories and in these we have had trouble with chemicals being spilled.

Mr. NATCHER. Mr. Smith.

NIH ANIMAL CENTER

Mr. SMITH. Tell me more about the NIH animal center. Where is it?

Mr. BURGESS. It is at Poolesville, Md., out in the country.

Mr. SMITH. How far along is it?

Mr. BURGESS. This is in the late stages of design now.

Mr. HANSEN. Phase 1 is in the late stage of design. We expect it to be completed in the next 3 to 4 months.

Mr. SMITH. Why do you locate an animal center there? Does this need to be in proximity of NIH?

Mr. HANSEN. It is a breeding, conditioning, and holding facility. We have space on the ground for animals that are required by the scientists on the ground. The other reason is that the amount of space

required was such that we did not have space to put it on the NIH grounds.

Mr. SMITH. Are these animals used at NIH?

Mr. HANSEN. The animals are produced at the animal center and trucked to NIH. The facility is also used for conditioning dogs and for holding farm-type animals which are used as a source for blood, and for experimentation. Sometimes calves, for instance, are used in experimentation at NIH. The animals are taken to the farm and held because we do not have facilities on the grounds.

Mr. NATCHER. Mr. Casey.

RENTAL FACILITIES IN WASHINGTON, D.C., AREA

Mr. CASEY. How many rental facilities do we have in the Washington area?

Mr. BURGESS. The Public Health Service has about 18 rental spaces in the Washington area.

Mr. CARDWELL. You could triple or quadruple that if you extend it to the whole Department. It is a large number.

Mr. CASEY. What do you have here on Westbard Avenue?

Mr. SEGGEL. The Westwood Building, sir. We have about 220,000 square feet of space there.

Mr. CASEY. It doesn't look like that much space.

Mr. SEGGEL. We have 1,500 people in that complex.

Mr. CASEY. And everyone drives a car?

Mr. CARDWELL. Yes. The NIH bumper sticker is seen everywhere.

Mr. CASEY. What do you do with that many people?

Mr. CARDWELL. Mr. Seggel.

Mr. SEGGEL. Most of our extramural research grant activities are in that building, including those of the Division of Research Grants.

Mr. CASEY. You mean that is where the applications are processed?

Mr. SEGGEL. That is correct. Our Institutes have their research and training grants activities in that building.

Mr. CASEY. Do you anticipate that you are going to have to build more buildings to house these people? Are you going to continue the rental method?

Mr. BURGESS. We requested funds for the design of a headquarters building. It was deleted. That was our original proposal.

Mr. CASEY. Can you house these people that are in these 18 buildings, is that what you mean?

Mr. BURGESS. We requested funds for a building to house people in 12 of those buildings. Unfortunately, Mr. Casey, it would not have included the Westwood Building.

Dr. GEHRIG. This is a particularly vexing problem to the Surgeon General in the operation of the Public Health Service because, as was indicated, there are approximately 18 locations and I think there are about 13 of them in which we have various organizational elements of the Public Health Service, distributed in Silver Spring, Md.; in Virginia; in Bethesda; in a host of other offices around there. It has posed for us an extremely difficult job of coordinating our efforts. This is a real difficult one for us.

Mr. CASEY. On these buildings that you lease or rent, does the building owner pay taxes on those buildings?

Mr. BURGESS. Yes, sir.

Mr. CASEY. In other words, if you had your own buildings they would be tax exempt?

Mr. BURGESS. Yes, sir.

Mr. CASEY. In that way they do contribute something in the way of taxes to the community although you pay them?

Mr. BURGESS. Yes, sir.

Mr. CASEY. What type of leases do you make on these buildings?

Mr. BURGESS. They are usually 5 years' firm or 10 years' firm leases. They are actually made for us in the Washington area by the General Services Administration, and we are assigned that space in the buildings.

Mr. CARDWELL. If we were to abandon the space for any reason, GSA would probably reassign it to another Government agency, if it were convenient for the use of another agency.

Mr. CASEY. Thank you, Mr. Chairman.

Mr. NATCHER. Mr. Burgess, we want to thank you and your associates for appearing before our committee at this time. The committee will adjourn until 10 o'clock in the morning.

JUSTIFICATION MATERIAL

Buildings and Facilities

Amounts available for obligation

	1967	1968
Appropriation	$18,279,000	$10,715,000
Unobligated balance brought forward	36,981,309	13,304,877
Unobligated balance transferred to "Buildings and facilities, Federal Water Pollution Control Administration"	−8,433,192	
Deduct unobligated balance carried forward	−13,304,877	−4,173,115
Total obligations	33,522,240	19,846,762

Obligations by activities

Description	1967 estimate	1968 estimate	Increase or decrease
Dental health center addition	$223,000	$2,000,000	+$1,777,000
Central air pollution research facility		1,815,000	+1,815,000
Northeast shellfish sanitation research center	1,184,000		−1,184,000
NIH animal center	1,742,557	120,000	−1,622,557
Combined service facility, NIH		180,000	+180,000
Multilevel parking facilities (NIH):			
(*a*) General office building extension	95,000	1,530,000	+1,435,000
(*b*) Cancer-mental health/neurology building	106,000	1,905,000	+1,799,000
Incinerator facility, NIH	243,000	1,800,000	+1,557,000
Modernization of PHS hospitals	2,404,000	2,458,000	+54,000
Repairs and improvements:			
(*a*) Bureau of Disease Prevention and Environmental Control	1,337,112	1,352,000	+14,888
(*b*) Bureau of Health Services	1,268,722	925,000	−343,722
(*c*) National Institutes of Health	1,665,845	500,000	−1,165,845
(*d*) National Library of Medicine	67,501	75,000	+7,499
(*e*) National Institute of Mental Health	169,150	990,000	+820,850
Total, repairs and improvements	4,508,330	3,842,000	−666,330
Communicable disease facility, San Juan, P.R.	1,457,169		−1,457,169
Northwest shellfish sanitation research center	1,070,000	48,000	−1,022,000
Solid waste research facility	422,946		−422,946
Laboratory facility, Cincinnati, Ohio	1,385,000		−1,385,000
Appalachian environmental health field station	350,000		−350,000
Arctic health research center animal facility	1,173,000		−1,173,000
Arctic health research center	479,936		−479,936
Isotope laboratory addition, NIH	40,000	415,000	+375,000
Facilities planning	125,000		−125,000
Child health and human development research facility, NIH	700,000	20,000	−680,000
National environmental health sciences center	1,785,000		−1,785,000
Clinical center addition, NIH	771,984	50,000	−721,984
Neurology-child health research facility, Puerto Rico	315,000	1,962,000	+1,647,000
General office building extension, NIH	6,202,000	308,000	−5,894,000
Gerontology research facility, NIH	325,000	443,000	+118,000
Extension to clinical center cafeteria			
Library relocation, NIH	38,400	10,024	−28,376
Warehouse relocation, building 13, NIH	665,000	67,000	−598,000
Mental health-neurology-cancer cafeteria, NIH	24,300	14,122	−10,178
Biologics standards laboratory annex, NIH	113,706		−113,706
Communicable disease center	1,585,967		−1,585,967
Cancer research facility, NIH	1,579,000	689,616	−889,384
Service building, building 12, NIH	11,829		−11,829
Master utilities extension	2,326,000	170,000	−2,156,000
Animal quarters, NIH	4,693		−4,695
Research facilities, Lexington, Ky., NIH	4,279		−4,279
Library facilities	47,112		−47,112
Dental research building, NIH	14,032		−14,032
Total obligations	33,522,240	19,846,762	−13,675,478

New obligational authority by activity

Description	1967 estimate	1968 estimate
Dental health center addition	----------	$2,558,000
Central air pollution research facility	----------	1,815,000
Northeast shellfish sanitation research center addition	$1,108,000	----------
NIH animal center	----------	120,000
Combined service facility, NIH	----------	200,000
Multilevel parking facilities:		
(a) General office building extension, NIH	1,489,000	100,000
(b) Cancer-mental health-neurology research buildings, NIH	1,985,000	----------
NIH incinerator facility	270,000	2,080,000
Modernization of PHS hospitals	5,021,000	----------
Repairs and improvements:		
(a) Disease prevention and environmental control	748,000	1,352,000
(b) Bureau of Health Services	582,850	925,000
(c) National Institutes of Health	500,000	500,000
(d) National Library of Medicine	----------	75,000
(e) National Institute of Mental Health	169,150	990,000
Communicable disease facility, San Juan, P.R.	1,300,000	----------
Northwest shellfish sanitation research center	1,000,000	----------
Solid waste research facility	395,000	----------
Laboratory facility, Cincinnati, Ohio	1,285,000	----------
Appalachian environmental health field station	330,000	----------
Arctic health research center-animal facility	1,173,000	----------
Arctic health research center, equipment	298,000	----------
Isotope laboratory addition, NIH	500,000	----------
Facilities planning	125,000	----------
Total, new obligational authority	18,279,000	10,715,000

Obligations by objects

Description	1967 estimate	1968 estimate	Increase or decrease
PUBLIC HEALTH SERVICE			
Other services	$4,600,000	4,000,000	−$600,000
Equipment	500,000	200,000	−300,000
Lands and structures	1,200,000	1,000,000	−200,000
Total, Public Health Service	6,300,000	5,200,000	−1,100,000
ALLOCATION TO GENERAL SERVICES ADMINISTRATION			
Printing and reproduction	50,000	60,000	+10,000
Other services	2,800,000	3,700,000	+900,000
Lands and structures	24,372,240	10,886,762	−13,485,478
Total, General Services Administration	27,222,240	14,646,762	−12,575,478
Total obligations	33,522,240	19,846,762	−13,675,478

Summary of changes

1967 appropriation	$18,279,000
1968 appropriation request	10,715,000
Total change	−7,564,000

INCREASES

1. Dental Health Center addition	2,558,000
2. Central Air Pollution Control Facility	1,815,000
3. NIH Animal Center	120,000
4. Combined service facility, NIH	200,000
5. Multilevel parking facility, planning, NIH	100,000
6. NIH incinerator facility	2,080,000
8. Repairs and improvements:	
Bureau of Disease Prevention and Environment Control	1,352,000
Bureau of Health Service	925,000
National Institutes of Health	500,000
National Library of Medicine	75,000
National Institute of Mental Health	990,000
Gross increase	10,715,000

DECREASES

1. Northeast Shellfish Sanitation Research Center addition	−1,108,000
2. Multilevel parking facilities:	
(*a*) General office building extension, NIH	−1,489,000
(*b*) Cancer-mental health-neurology research buildings, NIH	−1,985,000
3. NIH incinerator facility	−270,000
4. Modernization of PHS hospitals	−5,021,000
5. Repairs and improvements:	
(*a*) Disease Prevention and Environment Control	−748,000
(*b*) Bureau of Health Services	−582,850
(*c*) National Institutes of Health	−500,000
(*d*) National Institute of Mental Health	−169,150
6. Communicable Disease Facility, San Juan, P.R.	−1,300,000
7. Northwest Shellfish Sanitation Research Center	−1,000,000
8. Solid Waste Research Facility	−395,000
9. Laboratory facility, Cincinnati, Ohio	−1,285,000
10. Appalachian environmental health field station	−330,000
11. Arctic Health Research Center, animal facility	−1,173,000
12. Arctic Health Research Center, equipment	−298,000
13. Isotope laboratory addition, NIH	−500,000
14. Facilities planning	−125,000
Gross decrease	−18,279,000
Net change requested	−7,564,000

Explanation of transfers

	1967 estimate	Purpose
Transfer to: "Buildings and facilities, Federal Water Pollution Control Administration."	$8,433,192	To transfer to the Federal Water Pollution Control Administration the unobligated balance of funds related to projects administered by that agency.

INTRODUCTION

This appropriation includes all proposed direct construction items of the Public Health Service except construction of Indian health facilities, and all continuing projects except the Mental health-neurology facility, which was appropriated

under "Mental Health activities" and "Neurology and blindness activities" in 1961.

The justifications following are grouped under the appropriate Bureau headings, which include for each Bureau its portion of the estimate for major alterations, repairs, and improvements.

BUREAU OF HEALTH MANPOWER

Dental Health Center addition—Construction

1968 appropriation estimate $2,558,000

In 1966, $250,000 was appropriated for planning the physical expansion of the Dental Health Center in San Francisco. The major portion of the Division of Dental Health's program expansion over the past four years has been in the areas of applied epidemiological research and continuing education—the major programs which make up the Dental Health Center in San Francisco, California. This trend will continue over the next five years.

The Division is now restricted primarily by lack of space in which to expand its residency training, research, and short courses for private practitioners and dental public health workers. The proposed addition will increase significantly the numbers of dentists and dental workers that can be trained. It will further provide a base from which continuing education programs can be tested and demonstrated.

Furthermore, Division plans for 1968 call for an increased emphasis on prevention and control studies of periodontal diseases and cleft lip and cleft palate. Along with the operation of the National Cleft Lip and Palate Intelligence network, space is needed to conduct an active, experimental program of prevention and control of cleft lip and palate which will include Cancer-based field investigations. Data from these investigations will be processed under an accelerated data processing program in the new wing of the Center.

The space deficiency is a most serious drawback in the field of clinical assessment of dental materials and technology. The clinical application of current research findings from basic experiments in new materials and techniques has long been lacking. Additional space would enable a coordination of effort with the training program at the Center and would provide a facility for joint cooperation with the research interest of the Public Health Service hospital in San Francisco.

The proposed addition will be 130 feet wide, 86 feet deep, three stories in height, plus basement, with a gross area approximating 45,000 square feet having 30,000 square feet of net usable space.

Estimated progress schedule

Design:	
Award	July 1966.
Completion	June 1967.
Construction:	
Award	January 1968.
Completion	July 1969.

BUREAU OF DISEASE PREVENTION AND ENVIRONMENTAL CONTROL

National Center for Air Pollution Control facility—Planning and design

1968 appropriation estimate $1,815,000

Planning and design funds are requested for a facility to house the National Center for Air Pollution Control (NCAPC) to be located at the Research Triangle in North Carolina on donated land. This facility is proposed to provide permanent space in a single locality for the Center's programs, excluding Regional Office Personnel, temporary field investigational units, the Motor Vehicle Compliance Laboratory, and certain elements which will be retained in Washington. When complete the Center will house a staff of 1,000 people in approximately 450,000 gross square feet of space. The estimated construction cost of this facility is $25,000,000.

Specifically, the activities to be provided for in the proposed facility include the research and development programs and the technical services and training activities of the Center.

The research and development programs to be housed in the proposed facility include activities concerned with the development of control technology, research on the effects of air pollutants on health and the development of standards and criteria for air quality and air pollutant emissions. The disciplines involved in these programs include the physical and engineering sciences, and statistical, medical, epidemiological, and other biological activities. Technical services and short-course training activities in support of Federal, State, and local government air pollution control would also be headquartered at the proposed facility.

The air pollution programs proposed for the new facility will benefit significantly from the fact that the National Environmental Health Sciences Center (NEHCS) will also be located on the 509 acre site within the Research Triangle. The programs of the NEHSC, which emphasize fundamental, basic research on the biological effects of environmental hazards, will provide research data which will bear importantly on the success of the work of the NCAPC. The activity of the NCAPC is of a more mission-oriented nature, concerned not only with understanding the effects of air pollution, economic as well as biological, but especially with developing the engineering technology to permit control of air pollution. In addition to the technical advantages inherent in the proximity of the two Centers, significant economies of operation are anticipated through common use of supporting services such as power plant and distribution system, warehousing and material storage, buildings and grounds maintenance, motor pool, and food preparation service.

Critical considerations in determining the proposed site for the NCAPC also include the following: (a) a requirement for relatively uncontaminated air to permit controlled air pollution research activity, (b) the close access of educational, scientific resources and institutions competent in the medical, engineering, agricultural, and related scientific disciplines, and (c) a climate which is conducive to the type of plant growth which is required for research on the effects of air pollutants on vegetation.

The facility needs of the National Center for Air Pollution Control have reached a critical stage. A majority of the Center's personnel is now housed in overcrowded temporarily leased or assigned space in five widely scattered locations in Cincinnati, Ohio. Also, the Department of the Interior has taken custody of the Robert A. Taft facility in Cincinnati which currently houses the largest group of air pollution research personnel. This group will have to be relocated. During the past several years, the Federal air pollution control program has been significantly expanded. Further expansion is projected in order to carry out effectively the Federal responsibilities under the Clean Air Act and its amendments. The proposed facility, to provide permanent and appropriately designed housing for these expanded activities, is urgently needed for efficient conduct of these enlarged responsibilities.

Estimated progress schedule

Master site plan:	
Award	April 1967.
Completion	November 1967.
Design:	
Award	December 1967.
Completion	November 1969.
Construction:	
Award	March 1970.
Completion	April 1972.

Repairs and improvements

1968 appropriation estimate $1,352,000

1. *Communicable Disease Center, Atlanta, Ga., and vicinity, $720,600.*—Addition of a loading dock to handle direct deliveries of equipment, supplies and so forth, and installation of hoists to allow rapid servicing of equipment and to minimize injury to employees.

Conversion of non-laboratory space to laboratory space.

Complete painting of the facility.

Replacement of two package boilers and repair of incinerator.

Repair and surface treatment of roads and parking areas.

Field installations, $161,400

Renovation of animal, feed, and storage buildings and replacement of several small wooden structures with one steel building at the Plague Laboratory, San Francisco; replace oil burners; road improvement and repairs; and addition of emergency generator at the Savannah, Georgia field station.

2. *Shellfish Sanitation Research Centers, Dauphin Island, Ala., Narragansett, R.I., and Manchester, Wash., $165,000.*—Relocation of air refrigerant compressors, increase of salt water heat exchange capacity, relocation of water still and provision of delivery system to chemical labs, increase of sea water holding tank capacity, and other minor repairs and improvements at the Narragansett location. Insulation of chilled water pipes, repairs to the air conditioning system, resurfacing roads and parking areas, and other minor repairs at the Dauphin Island location. Repair and improvement of an existing structure on the northwest property to provide storage facility and facilities for holding experimental shellfish stocks and repairs to access roadways.

3. *Arctic Health Research Center, Fairbanks, Alaska, $55,000.*—Paving of parking lot and road and landscaping of mall area. The $55,000 represents the AHRC share of the project which is a joint effort of the University of Alaska, Alaska Water Laboratory and the Arctic Health Research Center.

4. *Pesticides Research Laboratory, Miami, Fla., $20,000.*—Correction of deficiencies in plumbing and electrical systems, paving of parking area and repair of walks.

5. *Solid Waste Facility, Johnson, City, Tenn., $50,000.*—Installation of sludge thickeners for new sewage treatment. Repairs and alterations of grinding equipment used in composting operations.

6. *Radiological Health Laboratories, Winchester, Mass., and Montgomery, Ala., $100,000.*—Provision of emergency generator, boiler repairs and pipe replacement, alteration of heating and air conditioning mechanical system and ductwork at the Winchester location. Renovation to convert animal room to laboratory space at Montgomery site.

7. *Foreign Quarantine.*—

Marcus Hook, Pa.

Exterior and interior painting of all structures, repairing and resurfacing of station roadways and landscaping of grounds, $9,000.

New Orleans, La.

Roof repairs, renovation and painting of Building 5 and interior alterations of Building 3, $18,000.

Rosebank, Staten Island, N.Y.

Remove cornices, rebuild parapet walls, waterproof and repaint chimney of Building 10. Replace wood siding with aluminum, Building 12. Paint exterior of all buildings except No. 12. Rewire electrical circuits of Building 1. Install fire detection and alarm system in all buildings, $34,000.

San Juan, P.R.

Replacement of roofs of 4 quarters buildings and garage. Elevation of two roadway storm drains, $13,000.

Tampa, Fla.

Exterior and interior painting of all structures and repair of boathouse, $6.000.

BUREAU OF HEALTH SERVICES

Repairs and improvements

1968 appropriation estimate	$925,000
1. Boston, Mass.:	
Incinerator reconstruction	15,000
Fire exit construction	105,000
Total	120,000
2. Detroit, Mich.:	
Emergency fire protection	37,500
Emergency water distribution	16,500
Total	54,000
3. New Orleans, La.: Fire escapes	45,000
4. Tampa, Fla.:	
General renovation	128,500
Elevator repairs	22,500
Total	151,000
5. Chicago, Ill.: Relocation of clinic—Adaptation of new space for the clinic which must be removed from the former PHS hospital building	455,000
6. Staten Island, N.Y.: Remodeling at Staten Island, N.Y., for multiphasic screening	100,000

NATIONAL INSTITUTES OF HEALTH

NIH Animal Center—construction

1968 appropriation estimate $120,000

In 1968, $120,000 is requested to complete construction of Phase IA of the NIH Animal Center project.

At the time of submission of the tentative drawings by the Architect/Engineer in August 1964, the accompanying A/E estimates of cost exceeded available funds by approximately $244,000. By careful evaluation and reappraisal of needs, it has been possible to reduce the $244,000 original deficit to $120,000. This amount is required to complete construction of Phase IA.

COMBINED SERVICE FACILITIES—PLANNING

1968 appropriation estimate $200,000

In 1968, $200,000 is requested for planning of the NIH Combined Services Buildings for certain NIH service activities including the fire department, vehicle repair and maintenance, and procurement and supply functions. The total cost of this facility is estimated at $3,000,000.

The NIH Fire Department, vehicle servicing, and supply activities have been located in their present structures for several years. However, the continued addition of physical facilities has reduced the effectiveness of these service functions. As a result they are now situated in less than desirable locations, lacking room for expansion and interfering with research program activities.

Both the present fire department and vehicle repair servicing functions are poorly situated in Service Building 12. The cul-de-sac access created by extensions to contiguous buildings, coupled with increased traffic volume in this area, has created a severe handicap for the Fire Department when responding to an emergency. The additional time required to negotiate the present routes may seriously affect the loss of life or property.

The renovation of Building 12 absorbed the garage space into the expansion for the Division of Computer Research and Technology. The noise and odor problems created by vehicle servicing make it imperative that the garage be relocated.

New construction projects on the Bethesda reservation, for which planning or total funds have been appropriated through 1966, will substantially increase

the total gross square feet of the existing facilities and the number of laboratories on the NIH reservation.

The combined Services Facilities building would consolidate all these service functions into a centrally located structure, equally accessible to all areas of the reservation, and with the necessary space to service the increase in laboratories and related facilities.

Specifically, this facility would provide space for:

1. An extension to the previously authorized Phase I warehouse consisting of an additional 62,000 gross square feet. This space will include housing for the total office operations of the Supply Management Branch in addition to the general storage space required.

2. Housing functions of the Vehicle Repair Shop and Transporting Unit of the Transportation Section, Office Services Branch. The 25,000 gross square feet allocated to this activity will accommodate the vehicle repair and maintenance operations (which services a fleet of 165 vehicles), including the wash and grease rack, stockroom, paint spray room, storage area, locker room, and office space. An additional 5,000 square feet would be developed to contain the gas station operation, including gasoline and diesel oil dispensing and storage facilities.

3. Adequate facilities for the total fire prevention and fire protection activities of the Plant Safety Branch, including space for the fire marshal, emergency, and service units. Functions to be housed within approximately 7,000 gross square feet are the engine room, offices, dormitory, watch and squad room, and storage.

Estimated progress schedule

Design:	
Award	December 1967.
Completion	May 1969.
Construction:	
Award	July 1969.
Completion	September 1971.

Addition to multilevel parking facility General Office Building—Planning

1968 appropriation estimate $100,000

In 1968, planning funds of $100,000 are requested for the design of an addition to the multilevel facility previously authorized to serve the parking population of the General Office Building. This addition is intended to accommodate 550 cars and would bring the total capacity of the General Office Building Multilevel Parking Facility to approximately 1200 cars. With the permanent on-grade parking of 550 spaces, a total of about 1750 spaces would then be available, sufficient to satisfy the parking needs of the employees working in Building 31 and other nearby buildings. This addition to the previously authorized facility would be on the same, or an immediately adjacent, site.

Construction will be similar to that of the previously authorized structure: lighting and ventilation as required; no elevators; and exterior finishes to be compatible with adjacent buildings. Topography may permit distribution of traffic directly to access roads from each level; if not, interior ramps will be required.

Construction funds of $1,350,000 will be required in 1969.

Estimated progress schedule

Design:	
Award	November 1967.
Completion	March 1969.
Construction:	
Award	May 1969.
Completion	July 1970.

NIH incinerator facility—Construction

1968 appropriation estimate $2,080,000

Planning funds of $270,000 were appropriated in 1967 and construction funds of $2,080,000 are requested in 1968 for a municipal type incinerator plant, rated at an approximate burning capacity of 175 tons per day.

At the request of the Bureau of the Budget, a consulting engineering firm was engaged to study the feasibility of constructing an incinerator plant which

would handle the combined wastes from the National Institutes of Health, (NIH), the National Naval Medical Center, (NNMC), and the Walter Reed Army Medical Center (WRAMC).

The final report on the incinerator study proposed an incinerator facility for the joint use of NIH, NNMC, and WRAMC to be located on available space at the Walter Reed Forest Glen Annex. The estimated construction cost was reduced from $3,270,000 to $2,080,000 based on information furnished by the engineering report.

NIH would provide funds for the entire cost of the incinerator planning and construction, including the cost of alterations necessary on the NIH reservation for revised handling and collection of wastes to conform with the proposed new incinerator operation. The Department of the Army would transfer title of the land required to the Department of Health, Education, and Welfare, and the completed facility would be operated by NIH.

Estimated progress schedule

Design:	
Award	June 1967.
Completion	February 1968.
Construction:	
Award	April 1968.
Completion	July 1969.

Repairs and improvements

1968 appropriation estimate	$500,000
1. NIH Reservation	325,000
(*a*) Construction of a small storage addition, building 13; installation of roof over portion of salvage yard; installation of vinyl asbestos tile, building 4	15,000
(*b*) Installation of frieght elevators, buildings 2 and 3	210,000
(*c*) Replacement of 25 percent of main air-conditioning filters, Clinical Center	100,000
2. Rocky Mountain Laboratory, Hamilton, Mont	175,000
(*a*) Replacement of second of three boilers	90,000
(*b*) Painting of interior and exterior of all buildings	85,000

NATIONAL LIBRARY OF MEDICINE

Repairs and improvements

1968 appropriation estimate	$75,000

New study rooms, $20,000

The Library has only nine study rooms. The legitimate demand for study rooms by scientists, scholars, bibliographers, historians, and others using the National Library of Medicine for long-term research projects greatly exceeds the supply. Implementation of the Medical Library Assistance Act, particularly those sections authorizing support for research and development and special scientific projects, make alterations for about 10 additional study rooms urgently necessary.

Improvements to the main reading room, $20,000

These funds are required to enlarge the service desk in the main reading room, to enlarge the annunciator board so that it will have as many numbers as there are seats, and to automate the book delivery system.

Site preparation for new computer, $35,000

A new computer will be installed in 1968. Renovation of the computer site and provision of conduits to remote indexer terminals will be required.

NATIONAL INSTITUTE OF MENTAL HEALTH

Repairs and improvements

1968 appropriation estimate	$990,000
Fort Worth, Tex.:	
Enclose stairwells	41,300
Combustion control	35,000
Replacement of fire protection water mains	61,700
Insulate attics	55,000
Install elevator—sidewalk type	19,400
Replacement of primary switchgear	136,300
Replacement of electrical feeders	106,300
Total	455,000
Lexington, Ky.:	
Can wash and sterilizing building	10,000
Flammable storage building	10,000
Refrigerated garbage room	9,000
Boiler replacement	506,000
Total	535,000

FRIDAY, APRIL 13, 1967.

SCIENTIFIC ACTIVITIES OVERSEAS (SPECIAL FOREIGN CURRENCY PROGRAM)

WITNESSES

DR. CHARLES L. WILLIAMS, JR., DIRECTOR, OFFICE OF INTERNATIONAL HEALTH
DR. DELMAR W. RUTHIG, COORDINATOR, SPECIAL FOREIGN CURRENCY PROGRAM, OFFICE OF INTERNATIONAL HEALTH
DR. WILLIAM H. STEWART, SURGEON GENERAL
G. R. CLAGUE, ACTING CHIEF FINANCE OFFICER
JAMES B. CARDWELL, DEPUTY ASSISTANT SECRETARY, BUDGET

Object classification

[In thousands of dollars]

		1966 actual	1967 estimate	1968 estimate
	PUBLIC HEALTH SERVICE			
21.0	Travel and transportation of persons	604	274	186
25.1	Other services	6,086	8,744	17,399
	Total obligations, Public Health Service	6,690	9,018	17,585
	ALLOCATION TO NATIONAL SCIENCE FOUNDATION			
25.1	Other services	460	1,058	1,100
	Total obligations National Science Foundation	460	1,058	1,100
99.0	Total obligations	7,150	10,076	18,685

Program and financing

[In thousands of dollars]

	1966 actual	1967 estimate	1968 estimate
Program by activities:			
Foreign health research (program costs, funded)	4,812	10,076	18,685
Change in selected resources [1]	2,338		
10 Total obligations	7,150	10,076	18,685
Financing:			
21 Unobligated balance available, start of year	−2,226	−76	
24 Unobligated balance available, end of year	76		
40 New obligational authority (appropriation)	5,000	10,000	18,685
Relation of obligations to expenditures:			
71 Total obligations (affecting expenditures)	7,150	10,076	18,685
72 Obligated balance, start of year	8,497	10,940	14,516
74 Obligated balance end of year	−10,940	−14,516	−21,201
90 Expenditures	4,707	6,500	12,000

[1] Selected resources as of June 30 are as follows: Unpaid undelivered orders, 1965, $7,377,000; 1966, $9,715,000; 1967, $9,715,000; 1968, $9,715,000.

Mr. NATCHER. The committee will come to order.

At this time we have Dr. Charles L. Williams, Jr., the Director of the Office of International Health, together with certain other members of his staff.

I believe you have a general statement and a biographical sketch for the committee. We will place the latter in the record and then we will be pleased to hear from you, Dr. Williams.

BIOGRAPHICAL SKETCH OF PRINCIPAL WITNESSS

DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE, PUBLIC HEALTH SERVICE

Name: Charles L. Williams, Jr., M.D.

Position: Director, Office of International Health.

Birthplace and date: New Orleans, Louisiana, January 19, 1916.

Education: University of Virginia, 1933–34; Tulane University, 1935–36; Tulane University, 1936–40, M.D. Degree; University of Michigan School of Public Health, 1944–45, MPH Degree.

1963–present: Service on Delegations of the United States of America to the Directing Bodies of the World Health Organization and Pan American Health Organization.

January 1967–present: Director, Office of International Health, Office of the Surgeon General, Washington, D.C.

February 1966–January 1967: Deputy Director, Office of International Health, Office of the Surgeon General, Washington, D.C.

January 1965–February 1966: Chief, Office of International Research, National Institutes of Health, Bethesda, Maryland.

April 1962–January 1965: Associate Director, Office of International Health, Office of the Surgeon General, USPHS, Washington, D.C. Administration of Division charged with conduct of technical aspects of relations with the World Health Organization and Pan American Health Organization. USPHS liaison with Agency for International Development.

October 1959–April 1962: Chief, Public Health Division, AID Mission to Peru, Lima, Peru. In charge of U.S. aid programs in health in Peru.

August 1957–October 1959: Deputy Chief, Division of Public Health, International Cooperation Administration, Washington, D.C. Administration of U.S. aid programs in health, world-wide.

September 1953–August 1957: Chief, Latin American Branch, Public Health Division, Foreign Operations Administration (International Cooperation Administration 1955–57). Chief of U.S. technical assistance programs in health in Latin America.

September 1951–September 1953: Associate Chief, Division of Health, Welfare, and Housing, Institute of Inter-American Affairs, Washington, D.C. Administration of U.S. technical assistance program in public health in Latin American countries.

September 1948–September 1951: Assistant Chief, Division of Commissioned Officers, USPHS, Washington, D.C. General personnel administration.

May 1947–September 1948: Chief of Planning Unit, Division of Commissioned Officers, USPHS, Washington, D.C. Performance of studies of PHS personnel principles and practices to assist in improving functioning of Commissioned Corps of PHS.

July 1945–April 1947: USPHS representative assigned to American Academy of Pediatrics to assist in performing a nationwide study of child health services and facilities.

November 1944–June 1945: Graduate Student, School of Public Health, University of Michigan.

February 1944–November 1944: Chief, Emergency Health and Sanitation Program, States Relations Division, USPHS, Washington, D.C. Immediate supervision over recruitment and assignment of USPHS personnel assigned to states under wartime Emergency Health and Sanitation Program.

February 1943–February 1944: Health Officer, Lenoir County, Kingston, North Carolina. General public health administration.

February 1942–February 1943: Assistant Health Officer, Craven County Health Department, New Bern, North Carolina. General public health administration with emphasis on venereal disease control, sanitation, and laboratory services.

July 1941–February 1942: Epidemiologist, Anson County Health Department, Wadesboro, North Carolina. Director of Venereal Disease Control.

July 1941: Commissioned Assistant Surgeon in United States Public Health Service and advanced through grades to rank of Medical Director, which he now holds.

1940–41: Internship, U.S. Public Health Service hospital, New Orleans, Louisiana.

ASSOCIATION MEMBERSHIPS: Fellow, American Medical Association, Life Fellow, American Public Health Association, American Society of Tropical Disease and Hygiene, Association of Military Surgeons of the United States, U.S.-Mexico Border Public Health Association, Society for International Development, Diplomate of American Board of Preventive Medicine & Public Health.

SPECIAL AWARDS, CITATIONS, OR PUBLICATIONS: Delta Omega, National Honorary Public Health Society, elected 1945; Secretary, National Society 1950–53; Vice President, 1954; President, 1955. Phi Kappa Phi, National Honorary Scholastic Society, 1945. Cited by the Club de las Americas, Washington, D.C., March 5, 1959, for "effective work in developing medical education and health programs in the Americas." "The American Academy of Pediatrics Study of Child Health Services." Bain, Katherine, M. D. and Williams, Charles L., Jr., M. D., American Journal of Public Health, 37, 1297, October 1947. "Community Health Services for Children in Eight Selected States," Williams, Charles L., Jr., M. D., Hubbard, John P., M. D., Bain, Katherine, M. D., American Journal of Public Health, 38, 75, January 1948. "Child Health Services in Kentucky," June 1948, Report of the American Academy of Pediatrics Study of Child Health Services in Kentucky. "Child Health Services in North Carolina," April 1948, Report of American Academy of Pediatrics Study in North Carolina. "Child Health Services in the District of Columbia," July 1948, Report of American Academy of Pediatrics Study in D. C., "Child Health Services and Pediatric Education," 1949, Report of the Committee for the Study of Child Health Services, The American Academy of Pediatrics. "Evolucion de los Programme Sanitarios Bilaterales," Boletin de la Oficina Sanitaria Pan Americana, 37, p. 27, July 1954.

General Statement

Dr. Williams. Mr. Chairman and members of the committee, I am Charles L. Williams, Jr., Director of the Office of International Health.

The Office of International Health, a staff office of the Surgeon General, is responsible for (1) development of Service policies concerning the relationship with bilateral and multilateral health agen-

cies; (2) participation with the State Department in formulating U.S. positions related to the World Health Organization and the Pan-American Health Organization and on other international health matters; (3) guidance to the five bureaus of the Public Health Service in their international health programs; and (4) for coordinating the special foreign currency programs of the Service.

Funds were first appropriated to the Public Health Service in 1961 for the special foreign currency program, which permits local currencies derived from sales of U.S. agricultural commodities to be used to support scientific projects which not only assist the Public Health Service in achieving its mission, but also benefit the foreign countries involved. A total of 172 projects were currently in effect on January 31, 1967, representing a net increase of 29 projects over June 30, 1966.

EXAMPLES OF THE USES OF EXCESS FOREIGN CURRENCY

A variety of unusual or unique opportunities exist in excess currency countries to carry out studies of substantive importance to medical science and to the health of the United States. For example, investigations in geographic pathology and epidemiology on an international basis are likely to continue to provide important clues to the causes of certain diseases which cannot be studied adequately in more restricted environments.

The Service has utilized surplus currency funds to support important international conferences, such as the Third World Conference on Medical Education held in New Delhi in November 1966. We are planning some assistance to the Fifth International Epidemiological Conference in Poland or Yugoslavia and a seminar on the evaluation of community mental health programs will be held in Israel during 1968. This utilization of excess currency funds helps to refine the present status of knowledge and understanding of existing problems and to help point the direction for further studies and research.

We are pleased to report that negotiations are near culmination on a contract between the Public Health Service and the Association of American Medical Colleges and between the AAMC and the Indian Association for the Advancement of Medical Education under which selected U.S. medical students and faculty members would be enabled to study and observe exotic disease entities in India that are rarely or never seen in the United States. We are anxious to extend this type of study and observational opportunity to other countries at an early date.

The National Library of Medicine supports scientific translation and abstracting projects in Israel, Poland, and Yugoslavia. This involves journal and monograph translations and the scanning of approximately 125 worldwide journals for relevant material on drugs and other areas of special importance. In addition, the Library supports the preparation and publication of critical reviews on health subjects of U.S. and international interest.

Among the new agreements negotiated during 1967 are projects in India, Israel, and the United Arab Republic for the improvement of diagnostic and therapeutic techniques in mental retardation, evaluation of different methods of controlling rheumatic fever, improved techniques in kidney dialysis, and methods of early detection of cerebral palsy.

In the last 2 years this program has grown at a rapidly increasing rate. The period of planning and exploration of resources has led way to vigorous action as the various units of the Service have become familiar with the resources available in excess currency countries.

The $10 million appropriated for 1967 has been fully committed. Additional projects totalling more than $15 million are now ready and will be supported to the extent of available funds. We are requesting an appropriation of $18,685,000 for 1968.

I shall be glad to answer any questions the committee may have.

GROWTH OF EXCESS FOREIGN CURRENCY PROGRAM

Mr. NATCHER. Thank you, Dr. Williams.

This program and the similar one in vocational rehabilitation seem to really be in high gear, which I assume accounts for the rather large increase you are requesting from $10 million this year to $18,685,000 for 1968.

Give us a few examples, Dr. Williams, of really good projects and results if you have them, and you might want to put a few more in the record.

Dr. WILLIAMS. I will be delighted, Mr. Chairman.

If you will permit me, I would like to make a general comment on the point you have just made.

Mr. NATCHER. Go ahead.

Dr. WILLIAMS. Merely to say I think your observation is quite correct, sir, that this program has grown slowly for many years. We are now seeing, however, a very rapid increase. This is perhaps due to two factors.

One is the complexity of the program. It has been difficult to get it started within the framework of the Public Health Service.

Secondly, is the fact that it really depends upon the establishment of scientist-to-scientist relationships between American scientists and the scientists in the countries with which we are working. These relationships, in order to be productive and in order to lead to actual research operating projects, have taken some years to establish, and we are only now beginning to see the results of the establishment of these relationships. Hence, the very rapid growth occurring now in this program.

I believe this is the major explanation for it. I will be delighted to give you some specific examples. Are you interested in any particular area?

SERPENTARIUM IN EGYPT

Mr. NATCHER. Give us an example or two, and then you might want to amplify that in the record.

Dr. WILLIAMS. Here is a project, Mr. Chairman, carried out by the National Institutes of Health, the National Institute for Neurological Diseases and Blindness, in Egypt. Under the aegis of this project, a serpentarium has been established in Egypt. A serpentarium, as you know, is a collection of poisonous snakes, of which there are quite a few varieties in Egypt.

It is quite interesting because snake venoms contain some 15 or 16 biochemically active and very useful enzymes not available elsewhere.

These enzymes are extremely useful in studying such things as nerve action and the interaction of chemicals at the nerve endings. This project has been extremely useful to us and has provided us with certain chemicals of a biochemical nature not available elsewhere, and which the National Institute of Neurological Diseases and Blindness has found extremely useful in other research.

Egypt has benefited from the project insofar as it has obtained, through the operation of the project, a serpentarium which has been of considerable use to them.

BLINDNESS REGISTER PROJECT IN EGYPT

Another project that has been carried out by the National Institutes of Health is a demonstration project, also in Egypt, sponsored by the National Institute of Neurological Diseases and Blindness as well, which is a project for the creation of a blindness register demonstration project.

Blindness in Egypt is perhaps 10 to 20 times more common than it is in the United States and, contrary to popular conception, the major cause of blindness in this country and in other Near East countries is not trachoma. This is an assumption that has been made and in this project we are finding some very different causes for the condition.

Among some of the interesting findings is that blindness is twice as common in the rural areas as it is in the urban areas of Egypt.

Mr. NATCHER. Why, Doctor?

Dr. WILLIAMS. We do not know, Mr. Chairman, and this is one of the things we are investigating because we are inclined to believe it may give us some leads as to the ways in which we might approach the problem in the United States which, as you know, is a serious one though not nearly as serious as it is in some of the world's less developed countries.

TRANSLATION OF FOREIGN LANGUAGE JOURNALS

There are some very interesting projects, Mr. Chairman, underway under the aegis of the National Library of Medicine. In particular, and worthy of note, are the projects for translation of foreign language journals.

For example, here is a journal translated into English routinely and regularly from Russian. These projects are done for the most part in Israel where, as you know, because of the very varied nature of their population, there are scientists available who are able to translate scientific journals from the Russian into English as well as from German and French and other languages. This is a continuing project which is done regularly by means of a contract or working arrangement with the National Science Foundation, which actually carries out the work because they have the agreement under which it is done.

There are perhaps a half dozen or so of these journals which are translated and we propose at some time in the future when funds are available, if they are available, to increase the coverage under this.

Mr. NATCHER. Suppose you submit for the record a few of the projects in addition to the ones you have explained to the committee.

Dr. WILLIAMS. I will be delighted.

(The information follows:)

EXAMPLES OF CURRENT SPECIAL INTERNATIONAL RESEARCH PROJECTS OF THE U.S. PUBLIC HEALTH SERVICE

NATIONAL COMMUNICABLE DISEASE CENTER

Project: INDIA—CDC–IND–2.
Title: Cooperative Studies on Characteristics of Indian Mycobacteria.
Principal Investigator: Dr. J. Frimodt-Moller, Madanapalle Tuberculosis Research Center, Madanapalle, S. India.

This project was developed to investigate the characteristics of Indian mycobacteria. To understand its purpose it should be noted that mycobacterial infections are more common than infections with the Tb bacillus; in fact, a large proportion of the population in the southeastern United States is infected with the former. These infections are largely benign but in India there are many clinical cases which can be studied. The experience in India therefore can be used to study the relationships between clinical symptoms and mycobacterial infections and thus increase diagnostic ability in the United States for those clinical mycobacterial infections which do occur; the Indian studies also provide the basis for experiments in therapy by which such therapy can be improved.

Progress: An important finding is the demonstration that certain strains of mycobacteria produce an immunologic reaction similar to BCG. This is true both with respect to the mycobacteria of the United States and the mycobacteria of India. Testing is now underway to determine the type of mycobacteria with the greatest protective effect against the Tb bacillus. We have already received 1,200 isolates from India which are now being typed and studied, and it is possible that from the animal studies now being conducted at the National Communicable Disease Center an immunizing agent superior to BCG can be developed for use in preventing tuberculosis.

NATIONAL COMMUNICABLE DISEASE CENTER

Project: POLAND—CDC–E–P–2.
Title: Studies on the Epidemiology and Biology of Trichinosis in Poland.
Principal Investigator: Dr. Czeslaw Gerwel, Director, Department of Biology and Medical Parasitology, Medical Academy, Poznan.

The study of trichinosis, including biochemical and clinical changes in man and chemotherapy of the disease, in the United States is hampered by the fact that not enough clinical material exists in any one area to justify a large-scale project. However, in Poland there are considerable epidemics of the disease with literally thousands of cases. NCDC has therefore instituted a project in Poland to study all facets of the disease. This project involves a dozen institutions and at least 20 part-time senior scientists as investigators. Investigations are being carried on into the epidemiology of trichinosis, the clinical and biochemical changes that occur in the course of the disease, coupled with a variety of known and experimental chemotherapies in a search for new and superior types of treatment for the disease.

Progress: This latter drug evaluation is rapidly moving forward and it is anticipated that not only will the Polish study teach us a great deal about trichinosis as it occurs in man, but will also provide us the superior methods of treatment of the diease which can be applied in the United States.

BUREAU OF HEALTH MANPOWER—DIVISION OF DENTAL HEALTH

Project: UNITED ARAB REPUBLIC—DPR–UAR–1.
Title: A Study of the Provision of Incremental Dental Care and Preventive Dental Technics to Children in an Area with Low Caries Incidence in Egypt.
Principal Investigator: Dr. Mohamed Zahran, Director, Dental Training Center, Ministry of Health, Cairo.

UAR–1 is a 5-year study to determine costs associated with an incremental dental care program which will first eliminate the backlog of dental problems, then maintain a preventive care program.

Incremental dental care programs, operated by means of a mobile dental unit, have been considered one of the most effective ways of making adequate dental services available to all children in areas with insufficient dental resources. Full participation of all children in communities in the United States with incremental dental care programs, however, has been prevented by an inability

to include all socio-economic classes in programs. The traditional concept of voluntary purchase and participation in organized health programs has negated their full effectiveness. Because of the increasing interest in establishing dental programs for all segments of the population, including those who are able to pay for service as well as for those who cannot, studies of the equivalent costs of manpower to provide service, time required to provide adequate care, and types of services delivered are needed. Studies of this type ultimately can lead to the development of more effective community service programs in the United States.

Progress: Baseline information has been obtained on the student population selected for the study. Treatment has been initiated and procedures established. Data obtained are being processed for the computer at the High Institute of Statistics, Cairo University. A low caries attack rate has eliminated the need for treating a large backlog of dental caries and will permit more refined studies of the effectiveness of topical applications of fluorides. Studies of the effectiveness of frequent oral prophylaxes as preventive and treatment measures in reducing the prevalence of periodontal disease should lead to a better understanding of the relationship between the amounts of calculus present and the severity of the disease.

NATIONAL CENTER FOR HEALTH STATISTICS

Project: INDIA—NCHS–IND–4.

Title: "Statistical Analysis of Growth and Physical Development in Children"—Indian Council of Medical Research, New Delhi

This is an analytical and methodological study to:

(1) Develop analytical techniques for studies utilizing data from standardized physical and anthropometric measurements of children correlated with demographic data.

(2) Provide base-line data for India on the growth and physical development of infants and children in relation to variables such as socio-economic status, living conditions, and geographic area.

(3) Provide a basis for comparative analysis with data on physical and anthropometric data being collected in U.S.A.

The substantive results planned for cover the relationships, interaction and effects of socio-economic status, environmental hygiene, nutrition, etc., on physical measurements, onset of puberty, dental development, rates of growth, health status, etc., in children.

Progress: Data already collected from a probability sample of 200,000 children, representative of India's child population, are being used to work out appropriate methods for handling such data and at the same time obtain substantive information on child growth and development. This involves editing, coding, and key punching the raw data and making tabulations and calculations on a digital computer. A complete analysis and evaluation of the methodology as well as the substantive findings will be produced. The substantive findings will be of primary importance for comparisons with similar anthropometric, physical, and health data now being collected on children in the U.S.A.

This study, together with a health and physical measurement study being carried out in the U.A.R., will be published in a joint report with the NCHS, using data on the physical development of U.S. children from the National Health Examination. The results of these studies will be of value to physicians, educators, nutrition specialists, health workers and others concerned with developing standards for children, obtaining indexes for obesity, studying patterns of growth and the physical development of children under changing patterns of food consumption.

FUNDING LEVELS IN ISRAEL AND INDIA

Mr. NATCHER. A large part of the increase will be used in Israel, which is understandable. They still have, for all practical purposes, a surplus of doctors; is that correct?

Dr. WILLIAMS. Yes, Mr. Chairman. I am not sure that I would say they have a surplus of doctors; they have a very high doctor-population ratio which, if I remember correctly, is higher even than that in the United States.

Mr. NATCHER. Probably the highest in the world, would you say?

Dr. WILLIAMS. This is correct. And it is true that some of the physicians in Israel encounter difficulty in making an adequate living. The reason we have so much work going on in Israel is quite simply due to the availability of very high grade scientific talent in the country.

Mr. NATCHER. You plan to spend $3.9 million in India. There we have the opposite, I believe, Dr. Williams.

Dr. WILLIAMS. Yes, sir.

Mr. NATCHER. Are you diverting doctors from medical service when there is a serious shortage in India?

Dr. WILLIAMS. Mr. Chairman, I hope not.

Our effort is to work with scientists in the universities and others who are already engaged in research activities rather than those who are working let's say in the rural areas providing care to people.

Mr. NATCHER. You are watching this matter from the standpoint of the supply?

Dr. WILLIAMS. Yes.

EXCESS CURRENCIES IN SOUTH AMERICA

Mr. NATCHER. Now Dr. Williams, the Department of Labor informs us that there are no surplus currencies in South or Central America, but you have $280,000 budgeted in Brazil.

Are you right about this, Doctor, or is the Department of Labor right in regard to the surplus currency situation?

Dr. WILLIAMS. Mr. Chairman, we are not absolutely certain. We have been informed by the Commodity Credit Corporation in the Treasury Department that they anticipate that Brazil will probably be declared an excess currency country during fiscal 1968.

For this reason, since there are good scientific resources available in Brazil, we have budgeted a small item for this country. If the currencies are available, we shall use them, and perhaps can use more. If the currencies do not become available, we will not use them.

Mr. NATCHER. Dr. Williams, what will your procedure be? Will you use those funds in some other country such as Israel or what action would you take?

Dr. WILLIAMS. We retain the appropriation, Mr. Chairman, in dollars until it is necessary to convert it into the specific local currencies needed at the time when the project is signed. So that we do have the opportunity during the year of making some adjustments depending on the way projects develop.

We cannot always foresee exactly how many projects will develop in which countries. Some changes occur because of the exigencies of the program as it develops during the year, so we have attempted to maintain it in a sufficiently flexible form so we can make these changes as we go along.

ISRAELI PROBLEM RELATED TO PAY RAISES

Mr. NATCHER. I believe, Dr. Williams, you had an administrative problem in Israel. There was a Government-directed pay raise for doctors in the medical school and they absorbed the cost for those who

are on these research projects by cutting back in other parts of the budget.

Then I believe, Dr. Williams, you disallowed funds for the salary increase. So they had a double cut.

Is there justification for complaint here, Dr. Williams? How did you finally settle this matter?

Dr. WILLIAMS. Mr. Chairman, this has been handled almost entirely at the National Institutes of Health and I do not have, and I am not in possession at the moment, all the details of the question.

I am familiar with it in general. My impression, however, is that the problem has been resolved, that the National Institutes of Health has made available a reasonable amount of additional funds to cover the salary increase and there no longer exists a serious problem.

Mr. NATCHER. Dr. Williams, if you would check that matter for us, and at this point in the record put in a short statement and give us a definite answer if you will, please.

Dr. WILLIAMS. Yes, sir; I will be happy to.

(The information follows:)

STATEMENT ON ISRAELI PAY RAISE

The implementation of the policy of the Department of Health, Education, and Welfare for provision of additional funds for salary adjustments resulting from the Israeli pay raise has been handled by the National Institutes of Health on the basis of individual research grants and agreements rather than on an institutional-wide basis.

The NIH supports 72 projects at 12 Israeli institutions. Since the announcement of this policy in July 1966, NIH, in both its research grant program and special foreign currency program, has received a total of 6 requests for additional funds.

As requests for additional funds are received, they are reviewed for conformance with DHEW policy and appropriate action is taken. In some cases the requests are not in such form that immediate payment can be made and it is necessary to solicit additional information.

Funds have been provided in the case of two of these requests and arrangements have recently been completed for payment of two others. There is every indication that information is forthcoming that will permit payment of the remaining two. None of the several Israeli institutions, with which NIH has been in contact concerning applications for additional funds for the pay raise, have advised NIH that they cannot comply with the policy or have proposed a modification or exception to the policy. In addition, NIH has attempted to maintain a continuing assessment of the impact of the DHEW policy and of problems of Israeli institutions in providing funds for the Israeli portion of the pay raise, through reports of returning visitors and the U.S. Embassy.

It has been operating experience that questions and problems incidental to the implementation of the DHEW policy are being resolved to the mutual satisfaction of both NIH and Israeli personnel and institutions.

PROCEDURES FOR IMPLEMENTING PHS POLICY CONCERNING ISRAELI REQUESTS FOR SCIENTIST SALARY ADJUSTMENTS—POLICY STATEMENT DATED JULY 14, 1966

"Awarding PHS Institutes and Divisions shall make funds available to meet salary and fringe benefit increases for scientific and technical personnel in Israeli institutions supported by PHS funds in proportion to the researcher's time or effort devoted to the research project. Such increases will be honored

on salaries earned on or after July 1, 1966, on the effective date of the negotiated salary agreement of the institution, or on the beginning of the project period, whichever is most recent, provided that Israeli funds are available to support the Israeli portion of the salary increase. The PHS portion of this salary increase shall be contingent upon the availability of appropriations. In no case will increases be met on salaries earned prior to July 1, 1966.

"The effective date of the pay raise at all grantee institutions in Israel is not known at this time and may vary according to the individual institution involved. The American Embassy in Israel has been requested to provide PHS with an effective date for each institution supported by PHS as soon as possible. Israeli institutions should also be asked to furnish the effective date in their requests to PHS supporting Institutes and Divisions, which should support only those requests from recipient institutions which intend to provide their portion of the salary increase. A copy of the new salary schedule in effect on July 1, 1966, on the effective date of the negotiated salary agreement of the institution, or on the beginning of the project period, whichever is most recent, should also be requested of the Israeli institution. It should also be made clear to recipient Israeli institutions that *PHS funds may not be used to pay any salary increase covering any period prior to the payment date approved by this policy.*"

Mr. NATCHER. Mr. Laird?

Mr. LAIRD. I have no questions.

Mr. NATCHER. Dr. Williams, we want to thank you and members of your staff for appearing at this time.

DR. WILLIAMS TO BE DEPUTY DIRECTOR OF THE PAN-AMERICAN HEALTH ORGANIZATION

Dr. STEWART. Mr. Chairman, subject to approval of the executive committee of the Pan-American Health Organization, Dr. Williams will become the Deputy Director of the Pan-American Health Organization in July, so this will be the last time he is appearing before this committee. He is an old member of the Public Health Service, being born in it, since his father was in the Public Health Service. I just wanted to say we all feel he has made a major contribution in the international field and always well represented the United States in the international health forums of the world.

Mr. NATCHER. We appreciate your passing this information along to the committee.

Dr. Williams, certainly our committee wishes you the best of everything in your new assignment. It has been a distinct privilege and honor for the committee to have you appear before it.

Dr. WILLIAMS. It has been an honor and privilege for me, Mr. Chairman. I regret only that this new position, interesting as it will be, will make it impossible for me to appear before the committee.

Thank you, Mr. Natcher and Dr. Stewart.

Mr. LAIRD. I have had the pleasure of attending several international meetings with Dr. Williams and we will certainly miss him in the Public Health Service. I am sure he will make an outstanding contribution, as he always has, in his new position.

Mr. NATCHER. Thank you very much, Dr. Williams.

Dr. WILLIAMS. Thank you, Mr. Chairman and Mr. Laird.

JUSTIFICATION MATERIAL

Scientific Activities Overseas (Special Foreign Currency Program)

Amounts available for obligation

	1967	1968
Appropriation	$10,000,000	$18,685,000
Unobligated balance brought forward	76,252	
Total	10,076,252	18,685,000

Obligations by activity

	1967 estimate	1968 estimate	Increase or decrease
Foreign health research (total obligations)	$10,076,252	$18,685,000	+$8,608,748

Obligations by object

	1967 estimate	1968 estimate	Increase or decrease
PUBLIC HEALTH SERVICE			
21 Travel and transportation of persons	$274,000	$186,000	−$88,000
25 Other services	8,748,752	17,399,000	+8,650,248
Total, Public Health Service	9,022,752	17,585,000	+8,562,248
ALLOCATION TO NATIONAL SCIENCE FOUNDATION			
25 Other services	1,053,500	1,100,000	+46,500
Total, National Science Foundation	1,053,500	1,100,000	+46,500
Total obligations by object	10,076,252	18,685,000	+8,608,748

Summary of changes

1967 enacted appropriation	$10,000,000
Unobligated balance brought forward	76,252
1967 total estimated obligations	10,076,252
1968 estimated obligations	18,685,000
Total change	+8,608,748

Increases

A. Program

1. Bureau of Health Manpower	360,000
2. Bureau of Disease Prevention and Environmental Control	8,320,000
3. Bureau of Health Services	3,155,000
4. National Institutes of Health	4,135,000
5. National Institute of Mental Health	65,000
6. National Center for Health Statistics	1,300,000
7. National Library of Medicine	1,350,000
Total program increases	+18,685,000

Decreases

Nonrecurring program costs of prior year	−10,076,252
Total net changes requested	+8,608,748

Scientific Activities Overseas (Special Foreign Currency Program)

INTRODUCTION

Section 104(k) of the Agricultural Trade Development and Assistance Act of 1954, as amended, authorizes excess foreign currencies derived from the sale of U.S. surplus farm products abroad and from other sources to be used:

> "to collect, collate, translate, abstract, and disseminate scientific and technological information and to conduct research and support scientific activities overseas including programs and projects of scientific cooperation between the United States and other countries . . ."

Excess foreign currencies are those currencies owned by the U.S. which have been determined by the Department of the Treasury to be in more than sufficient supply to finance for the next two or three years regular U.S. overseas operations. The funds appropriated to the Public Health Service are used to purchase these excess foreign currencies from the Department of the Treasury and the dollars are credited to the account of the Commodity Credit Corporation thus reducing its need for direct appropriations.

The Public Health Service first received appropriations for this program in 1961. Only the National Institutes of Health developed projects that year. In 1968 every bureau of the Service and the National Library of Medicine and National Center for Health Statistics will be engaged in the Program.

Summary of estimated obligations by country

	1967 estimate	1968 estimate
Brazil		$280,000
Burma		30,000
Ceylon	$2,500	30,000
India	1,714,000	3,094,000
Israel	3,295,500	6,687,000
Pakistan	1,340,000	1,735,000
Poland	1,775,500	3,185,000
Tunisia		235,000
United Arab Republic (Egypt)	1,007,500	1,275,000
Yugoslavia	941,252	2,134,000
Total	10,076,252	18,685,000

The following program narratives indicate the kinds of projects contemplated in the current and budget year. The highest priority projects will be supported to the extent possible within the total funds appropriated.

BUREAU OF HEALTH MANPOWER

Introduction

The Bureau of Health Manpower was established to provide a national source of information on health manpower needs now and for the future. The Bureau is a central point for planning and carrying out education and training programs designed to provide additional and better-qualified manpower for health.

Proposed projects

At present this Bureau, through the Division of Dental Health, supports ongoing dental research projects in Israel, India, and the United Arab Republic. In F.Y. 1968 the Division of Dental Health proposes to do fluoridation research in Poland, Egypt, and Yugoslavia. Since fluoridation continues to be an important dental public health measure in combating dental decay, more knowledge is needed on the relationships between ingested fluorides and dental caries. Data obtained from these studies, difficult to obtain elsewhere, will supplement information being gathered in the United States. For example, because only a negligible number of Israeli school children drink fluoridated water from a central community water supply, the incidence of caries among them can be compared to that of United States children who drink fluoridated water.

Estimated obligations by country

	1967 estimate	1968 estimate
India	$88,000	
Israel	43,000	
Poland	2,000	$120,000
United Arab Republic (Egypt)	6,000	120,000
Yugoslavia	2,000	120,000
Total	141,000	360,000

BUREAUS OF DISEASE PREVENTION AND ENVIRONMENTAL CONTROL

Introduction

Research and development staffs of the constituent National Centers of the Bureau of Disease Prevention and Environmental Control have become increasingly aware of the desirability of initiating programs of study abroad. There is a great and urgent need for information on prevention of diseases and control of environment. Various foreign countries afford the opportunity for study of pathogenesis, epidemiology and prevention of diseases which occur in quantity and severity much greater than that found in the United States; consequently, relevant information is more quickly obtained. Exposure to certain pollutants of industrial origin can be studied more easily in certain foreign countries. Similarly, various types of accidents occur with greater frequency and severity in certain foreign countries, thereby offering unique opportunities for the study of their prevention and control. In addition, foreign scientific competence of high quality, in fields such as toxicology, industrial waste treatment, and occupational health is available for utilization in studies of mutual and world-wide interest.

The current Bureau program involves agreements with Ceylon, India, Israel, Pakistan, Poland, the United Arab Republic, and Yugoslavia. In terms of U.S. dollars, it is estimated that $3,429,252 will be required in 1967 to support the current projects.

Proposed projects

The National Center for Chronic Disease Control proposes to conduct studies on cardiovascular and renal diseases, diabetes, neurological and sensory impairments, cancer, and mental retardation in India, Israel, Pakistan, Poland, the United Arab Republic, and Yugoslavia. In these countries, diets and social and economic living patterns differ from those in the United Sttaes and afford opportunities for comparative study of the incidence of chronic diseases against different environmental patterns. Findings from these studies can be compared with studies being conducted in the United States. The relationship of various diets to cardiovascular disease, for example, may reveal important knowledge for the prevention and control of this leading disability. In mental retardation, for example, various pre-natal practices can be studied for their possible relationships to mental retardation and compared to the occurrence of mental retardation in the United States. Similar examples could be given for other chronic disease areas proposed by the Center for study.

The National Communicable Disease Center is planning to study communicable diseases including tuberculosis, rabies, leptospirosis, and trichinosis; streptococci, mycobacteria and staphylococci; and the production of biologic reagents. These studies will be carried out in Ceylon, India, Israel, Poland, the United Arab Republic and Yugoslavia. The primary reason for doing research on communicable diseases in these foreign countries is that the incidence of these diseases is much higher there than in the U.S. In the case of research in some areas, such as the use of fluorescent antibodies, and virus transmission by insects, the studies will continue and supplement similar projects begun several years ago in outstanding research centers, both U.S. and foreign.

The National Center for Urban and Industrial Health proposes research on various subjects in Israel and Yugoslavia. Israel's ethnically heterogeneous population, high pedestrian accident rate, and relatively liberal regulations on the use of drugs afford valuable opportunities to study the relationships between osteoporosis and fractures, standards for licensing drivers with heart idsease, pedestrian behavior associated with traffic accidents, and the relationship of drug

use to driving behavior and traffic accidents. Because of Israel's subtropical climate, various studies relating the effects of heat and solar radiation to occupational health will also be conducted. The extensive coal and uranium mining industries in Yugoslavia provide ample data for studying the effects (biochemical, morbidity, and mortality) of work environment on the occupational health of workers.

The National Center for Air Pollution Control will support projects in Israel and Poland. In Israel the translation of foreign journals in the field of environmental health will be performed. Researchers in Poland will investigate respiratory tract diseases of cotton textile workers living in areas of various degrees of air pollution.

The National Center for Raidological Health proposes to do research concerning the effects of radiation on humans in certain regions where unusually high levels of radiation have been found. An evaluation study is being planned using standard radiation measurement techniques, in one such area in Southwest India where a highly elevated natural background radiation exists.

Estimated obligations by country

	1967 estimate	1968 estimate
Ceylon	$2,500	
India	386,500	$1,509,000
Israel	1,965,000	4,787,000
Pakistan	264,000	50,000
Poland	235,000	880,000
United Arab Republic (Egypt)	354,500	605,000
Yugoslavia	221,752	489,000
Total	3,429,252	8,320,000

BUREAU OF HEALTH SERVICES

Introduction

The International Research Program of the Bureau of Health Services proposes specific projects selected only if they have the following characteristics: (1) that the Bureau of Health Services has professional research competence and experience in the field of investigation; (2) that the specific project is likely to provide knowledge that can be a basis for improved conduct of the Bureau's therapeutic and rehabilitative responsibilities; and (3) that the project promises a significant contribution toward solving health or clinical problems in the geographic location where it is being conducted.

The Division of Hospitals has an ongoing five-year project in India concerning the role of arthropods in the transmission of leprosy and a three-year project in Pakistan supporting an investigation into the prevalence and etiology of severe and moderately severe anemia.

The Division of Mental Retardation proposes to study various pre-natal practices for their possible relationships to mental retardation and compared to the occurrence of mental retardation in the United States.

The Division of Medical Care Administration is interested in learning about systems of medical care in other countries that have had different experiences in this area than has the United States in order to better plan and conduct its own medical care administration activities. Projects will be conducted in Israel, Pakistan, and Yugoslavia.

Similarly, the Division of Community Health Services wishes to know more about leadership and communications in the health professions and cultural adaptations to health problems and services in India, Poland, and Yugoslavia.

Proposed projects

Clinical research projects

India.—Malnutrition and anemia in relation to cataract formation. Rehabilitation of leprosy patients. Cancer chemotherapy. Study of the effectiveness of cholera vaccine. Study of sickle-cell and non-sickle-cell population.

Yugoslavia.—Research into the hyperbaric treatment of tuberculous spondylitis of the dorsal spine.

Israel, Poland.—Development of techniques for rapid screening evidence of disease.

India, Poland, Israel, Brazil.—Psychological and psychiatric testing of different sociological background.

Burma, Ceylon, Tunisia, Egypt.—Evaluation of public health methods with respect to, for example, complications of pregnancy, prenatal mortality and prematurity, family planning, mental health programs, health education activities.

India, Pakistan, Israel, Tunisia, Ceylon.—Clinical training program.

Health services research projects

India, Pakistan, Tunisia, Egypt, Ceylon, Burma.—Preventive health services, rehabilitative services, ambulatory care, training of new categories of health aides, new health delivery systems.

Israel, Poland, Brazil, Yugoslavia.—Hospital administration, community medicine, construction of facilities.

Israel, India, Yugoslavia.—Compilations of health research studies conducted in other countries.

India, Poland, Yugoslavia.—Leadership and communication in the health professions. Medical care utilization. Cultural adaptations to health problems and services.

Estimated obligations by country

	1967 estimate	1968 estimate
Brazil		$180,000
Burma		30,000
Ceylon		30,000
India	$39,000	385,000
Israel	163,500	350,000
Pakistan	63,000	185,000
Poland		810,000
Tunisia		135,000
United Arab Republic (Egypt)		75,000
Yugoslavia	218,500	975,000
Total	484,000	3,155,000

National Institutes of Health

Introduction

The general objective of the NIH Special Foreign Currency Program is the support of scientific activities which are within the program interests and responsibilities of the National Institutes of Health and of mutual interest to the host country, its institutions and investigators. NIH believes that the support of selected foreign research and the development of biomedical research potential overseas with these funds will contribute to the biomedical sciences in the United States and the solution of public health problems of concern to the U.S. as well as the host country. Projects supported are directed principally toward the utilization of unique research opportunities which may be represented by a population with a high incidence of some clinical manifestation of medical interest; environmental, biological, and medical factors limited to certain geographical areas; specialized laboratory facilities; or the outstanding competence of scientific personnel within the host country.

Since the NIH started its program, 90 agreements in the fields of infectious diseases, tropical medicine, neurophysiology, cardiovascular diseases, developmental biology with implications for the programs of the childhood diseases and dental problems, epidemiology, behavorial sciences, and other fields directly related to Institute program interests have been initiated, negotiated and signed.

NIH agreements by institute

Institute:	*Number*
National Institute of Allergy and Infectious Diseases	19
National Institute of Arthritis and Metabolic Diseases	14
National Cancer Institute	12
National Institute of Child Health and Human Development	2
National Institute of Dental Research	11
National Heart Institute	8
National Institute of Mental Health	4
National Institute of Neurological Diseases and Blindness	19
Division of Biologics Standards	1
Total	90

Late in 1963, the NIH decided to extend the research opportunities available under this Program to researchers at U.S. academic institutions. The following table illustrates the experience of this decision.

Distribution of NIH agreements by program

	Intramural number [1]	Extramural number [2]	Tota number
Fiscal year 1962	17		17
Fiscal year 1963	12	1	13
Fiscal year 1964	12	6	18
Fiscal year 1965	10	9	19
Fiscal year 1966	10	13	23
Total	61	29	90

[1] NIH scientists serving as project officers.
[2] University scientists serving as project officers.

During 1966, the National Institutes of Health obligated the equivalent of $2,025,352 for research in the following countries:

India ($1,248,011) with the—

(1) Johns Hopkins Center for Medical Research and Training in Calcutta to *Investigate Respiratory and Enterovirus Infections in Children*;

(2) Tata Institute of Fundamental Research, Bombay to conduct *Investigations of Oral Cancer and Associated Oral Conditions in Indian Rural Populations*;

(3) Andhra Medical College, Visakhapatanam to investigate the *Protective Effect of ATP in Hemorrhagic Shock*;

(4) Christian Medical College Hospital, Vellore to conduct *Collaborative Neurologic Studies: Portland-Vellore*;

(5) Indian Institute of Science for *Metabolic Studies of Vitamin A*;

(6) Indian Council of Medical Research for *Investigations of Insect-Transmitted Viruses (arboviruses) in India*;

(7) All India Institute of Hygiene and Public Health for *Clinical and Pathophysiological Studies of Cholera*; and

(8) All India Institute of Hygiene and Public Health to *Investigate Methods Adaptable to Epidemiologic Studies of Leprosy.*

Israel ($608,801) with the—

(1) Weizmann Institute of Science, Rehovoth, for the *Study of the Pharmacological Properties of Synthetic Oligo-and Macromolecules*;

(2) Weizmann Institute of Science, Rehovoth, for Investigation of the *Regulation of Protein Synthesis: Initiation and Phasing Mechanism for Translation of the Genetic Message*;

(3) Weizmann Institute of Science, Rehovoth, for *Determination of the Forces Which Control the Structure of Proteins and Polypeptides at Interfaces*;

(4) Weizmann Institute of Science, Rehovoth, for the *Study of Synthetic Polypeptide Antigens*;

(5) Tel-Aviv Municipal Hospital, Tel Aviv for Investigations of *The Effects of Amyloid on the Gastrointestinal Tract*;

(6) Hebrew University, Hadassah Medical School, Jerusalem for *Studies on the Biology and Immunology of Trachoma Agents;*

(7) Hebrew University, Hadassah Medical School, Jerusalem for studies of the *Metabolism of Extraocular Muscles in Experimental Animals*;

(8) Hadassah School of Dental Medicine for the study of *Factors Influencing Resorption and All Growth in Collagen Implants Formed by Thermal Gelatin in vivo.*

Pakistan ($78,756) with the—

(1) Pakistan Medical Research Center, Lahore, West Pakistan for studies of *Mycobacterial Diseases in Pakistan.*

Poland ($95,938) with the—

(1) Nencki Institute of Experimental Biology, Warsaw for studies of *Properties of Actin and Other Muscle Proteins.*

Interest in this Program and its opportunities for research is increasing steadily, and the NIH is receiving large numbers of applications for review.

Likewise, PHS Study Sections are receiving essentially their first experience with review of such applications which in the past have been primarily intramural projects submitted through other NIH channels. This has generated much interest in the program on the part of the Study Sections, where the program has been well received. An interesting and fruitful development is the number of inquiries received from U.S. investigators seeking a means of maintaining a research association with young men they have trained who have returned to their homelands and are struggling to implant the concept of clinical investigation within the established hierarchy of indigenous academic systems. This is an extremely promising aspect of this program in terms of future contributions to biomedical research from these countries.

During 1967 and 1968, the National Institutes of Health will continue its support of research of mutual interest. Types of projects proposed, by country, are listed below:

India.—Study of Portal Hypertension and Liver Disease; Study of Structure and Functions of Primates–RNA; Investigations of Neurotoxins from Plant Materials; Studies of Epidemiology of Filariasis in India.

Israel.—Study of Plant Sterol Control of Serum Cholesterol; *In Vitro* Studies on the Immune System; Investigations of Antigenic Relationships Between Placenta and Kidney.

Pakistan.—Studies on Hookworm in Pakistan.

In addition to the above new types of projects, the National Institutes of Health proposes to continue its support of certain ongoing projects such as listed below:

Pakistan.—To develop, improve and demonstrate measures for the Prevention and Eventual Eradication of Cholera.

Israel.—Epidemiologic Studies of Multiple Sclerosis in Israel.

Estimated obligations by country

	1967 estimate	1968 estimate
India	$1,114,000	$1,000,000
Israel	816,500	935,000
Pakistan	1,008,500	1,300,000
Poland	646,000	500,000
United Arab Republic (Egypt)	527,500	300,000
Yugoslavia	189,000	100,000
Total	4,301,500	4,135,000

National Institute of Mental Health

INTRODUCTION

The general objective of the use of P. L. 480 funds by the NIMH is to increase the range of opportunities to do research relating to the etiology and epidemiology of mental disorders, the care, treatment and rehabilitation of the mentally ill, prevention of mental disorders and the promotion of mental health. Since the etiology of most mental disorders is complex involving biological, psychological, and socio-cultural factors and since the treatment and management of mental disorders is highly variable, cross-cultural studies and studies of a variety of population groups are particularly important in this field. Countries in which P. L. 480 funds are available provide a particularly high potential for such studies. Some of these funds will also be used to promote international exchange of ideas and reseach results through working seminars.

Types of projects proposed, by country, are as follows:

Israel.—Assessment of Ambivalence for Evaluating Significance of Opposed Attitudes in Psychoanalysis and Personality Theory.

International Research Seminar on Community Mental Health Programs.

Longitudinal Study of Relationships between:

a. Type of Family Structure;

b. Variety of Family Communication Patterns; and

c. Physiological and Psychiatric Characteristics of Individual Family Members.

Poland.—Learning and Lesions in Specific and Nonspecific Neurological Pathways of the Brain Stem.
Organization of the Brain, Extension.

Estimated obligations by country

	1967 estimate	1968 estimate
Israel	$66,000	$65,000
Poland	338,000	
Total	404,000	65,000

National Center for Health Statistics

INTRODUCTION

The National Center for Health Statistics conducts a special program designed to encourage and promote international research activities in the areas of vital and health statistics. All projects of the program are scientific research studies primarily designed to develop new and improved methods for the scientific study of human populations, their growth, and their health. This focus on scientific methodology ensures that the projects make a contribution to scientific knowledge generally applicable to the United States, the country where the projects are conducted, and to other countries with related methodological problems. Accordingly, these activities enhance the scientific knowledge of the United States, provide an opportunity for the exchange of scientific information and techniques on an international level, and supply a source of comparative statistics which enables the Center to better evaluate its statistical data and identify areas that may require further attenion and research.

Two imporant trends in the development of the program are now being stressed. One is the development of projects in which parts are carried on in more than one country so that comparable results from several countries are available. For example, projects are now under way in India and Egypt on the analysis of the physical measurements of school age children. These data will be comparable with information collected in the U.S. National Health Survey. Together, the three-country comparison of data will give significant basic information on child growth and development.

Another example is a detailed feasibility study of methods for measuring the utilization of medical care. This has been a very successfully coordinated project with comparable aspects carried on in the United States, England and Yugoslavia. Only the Yugoslavia portion of this three-country project is financed from this appropriation.

Interrelated projects are being conducted in Pakistan, India and Egypt in the microsimulation of dynamic populations and the testing of survey-registration methods for collecting data relating to death and birth rates. Phases of these projects relate to similar methodological studies being conducted as part of the research program of the National Center for Health Statistics in the United States.

The other major trend in the development of this program is the involvement of research talent from the faculties of various United States universities. The ability to coincide with the work programs of these universities permits the utilization of more American directed research talent than is available from the Center's regular staff and also assures that the projects are closely related to U.S. research interests. Faculty members from several of the major United States universities have undertaken responsible roles as consultants or project officers. In 1967 and beyond, further advantage will be taken of this trend.

In 1968, the program will include two additional countries, Tunisia and Israel. The areas of study in the more developed countries (Israel, Poland, and Yugoslavia) will concentrate on methodological research with emphasis on cross-national comparability, particularly with the United States. In the developing countries of Pakistan, India, Tunisia, and Egypt, emphasis will be given on methodological and simulation studies on various aspects of the population dynamics problems. More specifically, the studies projected for the several countries are reflected below. In each instance, the studies will continue over

periods from three to four years and will be funded in their entirety from the 1968 request.

Egypt.—Continuing development of microsimulation models on population dynamics. Utilizing sampling surveys to measure the completeness of birth and death registration, as well as the attitudes toward and the impact of health measures on family size and population growth. For these studies, $175,000 are requested in 1968.

India.—Population dynamics through computer simulation methods and testing models against actual situations. Develop a "population laboratory" for testing methods of applying health programs, the efficacy of health programs, etc. For these studies, $200,000 are requested in 1968.

Israel.—Statistical survey methodology for improving survey estimates through replication processes in multivariate analysis of multistage samples. Assess health differentials in migrants as compared to the stable population. For these studies, $150,000 are requested in 1968.

Pakistan.—Establish a national birth and death registration system to provide continuing and improved measurement of population change, as well as to furnish indices of health conditions. Develop methods for the appraisal of medical care distribution in the general population from established medical care facilities. For these studies, $200,000 are requested in 1968.

Poland.—Expand a chronic respiratory disease study, as related to atmospheric factors, initiated on a pretest basis during 1965–1967. Develop methodology for evaluating the outcome of medical care in serious hospital episodes and post-hospitalization rehabilitation services. For these studies, $225,000 are requested in 1968.

Tunisia.—Several studies on population dynamics to obtain independent validations of the findings in other developing countries with respect to methodology and the values of population parameters. For these studies, $100,000 are requested in 1968.

Yugoslavia.—Develop and test methodology in establishing comprehensive data on all types of medical care received in a large population for comparison with large-scale medical care service operations in the United States and other systems. For these studies, $250,000 are requested in 1968.

Estimated obligations by country

	1967 estimate	1968 estimate
India	$70,500	$200,000
Israel		150,000
Pakistan	4,500	200,000
Poland	100,000	225,000
Tunisia		100,000
United Arab Republic (Egypt)	119,500	175,000
Yugoslavia	110,000	250,000
Total	404,500	1,300,000

National Library of Medicine

INTRODUCTION

The National Library of Medicine conducts a special international research program utilizing foreign currencies to improve biomedical communications. This program serves the U.S. scientific biomedical and health community by making foreign literature more readily and easily available in the form of translations, abstracts, directories, scholarly critical reviews, indexes of biomedical literature, and histories of medicine. Supervision of the scientific and technical content of these activities is the responsibility of the National Library of Medicine. The National Science Foundation, under an agreement with the National Library of Medicine, is responsible for financial negotiations and agreements with foreign contractors in Israel, Poland, and Yugoslavia. The Library maintains programming responsibility and also will make, where appropriate, direct research grants to medical institutions and universities when this mechanism can accomplish program objectives more effectively.

The special foreign currency program will continue to improve biomedical communications through a variety of activities. These will involve the development

of new modes of communications, selective dissemination of information, and the continuation of abstracting, indexing, translating activities and preparation and publication of critical reviews and reports on the status of research. These activities will provide more extensive interdisciplinary coverage. There will be increased cooperation with professional societies to identify the most significant foreign literature, new communication techniques, and the needs of users. New experimental projects will be undertaken toward these goals. These projects will not duplicate existing information services but will reinforce and increase their effectiveness in information dissemination.

During 1967 and 1968 the following types of projects, by country, are proposed by the National Library of Medicine.

Brazil.—In 1968, program funds will support critical reviews in such areas as tropical medicine, biophysics, immunology, and hematology. The program also will include support for translations of selected biomedical literature.

Poland.—In 1967 and 1968, ten Polish biomedical journals will be translated and published in English for special distribution to medical libraries in the U.S. The Library will support a specialized abstracting program in oral research. Abstracts are prepared from the foreign literature for publication in the Oral Abstracts Journal of the American Dental Association. This activity involves the cooperative efforts of the American Dental Association and the Polish Dental Association and supplements the program in oral research abstracting underway in Israel.

The Library supports a program of critical reviews prepared in Poland and designed to identify trends and to stimulate future research. Critical reviews are prepared by leading scientists, sometimes in collaboration with United States colleagues for joint authorship. Reviews are encouraged in areas such as neurophysiology, antibiotics, and congenital anomalies. This special activity is another way of improving scientist-to-scientist communication and knowledge of the state of research in special subject matter fields.

In 1968, the Library will support an experiment in obtaining abstracts of Polish biomedical journals without undertaking full translation. These abstracts will be distributed to United States abstracting services for one year to determine their usefulness.

Israel.—Activities in Israel include specialized abstracting of the drug literature; specialized abstracting of oral research literature; translations of selected journals, monographs, and articles; preparation of histories of medicine; and translations of ancient scholarly medical texts and manuscripts. In 1967 and 1968, special foreign currency program funds will be used to support indexing foreign biomedical literature and critical reviews in Israel.

Yugoslavia.—Program funds in Yugoslavia support the translation and publication of English versions of three Yugoslav biomedical journals and a comprehensive journal containing selections from many Yugoslav journals.

In 1967 and 1968, funds in Yugoslavia will support the preparation of critical reviews.

India.—The program in India will continue with the surveying, cataloging, and microfilming of rare manuscripts. Microfilm copies are deposited in appropriate Indian institutions and in the National Library of Medicine for use by United States scholars. Translation of scholarly historical texts relating the Unani and Ayurvedic will continue in 1967.

Estimated obligations by country

	1967 estimate	1968 estimate
Brazil		$100,000
India	$16,000	
Israel	241,500	400,000
Poland	454,500	650,000
Yugoslavia	200,000	200,000
Total	912,000	1,350,000

FRIDAY, APRIL 14, 1967.

RETIRED PAY OF COMMISSIONED OFFICERS

WITNESSES

DR. LEO J. GEHRIG, DEPUTY SURGEON GENERAL
DR. JOHN J. WALSH, DIRECTOR, DIVISION OF DIRECT HEALTH SERVICES
DR. WILLIAM H. STEWART, SURGEON GENERAL
G. R. CLAGUE, ACTING CHIEF FINANCE OFFICER
JAMES B. CARDWELL, DEPUTY ASSISTANT SECRETARY, BUDGET

Object classification

[In thousands of dollars]

		1966 actual	1967 estimate	1968 estimate
13.0	Benefits for former personnel	4,278	5,183	5,898
25.1	Other services	2,246	4,122	5,997
25.2	Services of other agencies	1,310	1,438	1,496
99.0	Total obligations	7,834	10,743	13,391

Program and financing

[In thousands of dollars]

		1966 actual	1967 estimate	1968 estimate
	Program by activities:			
	1. Retirement payments	4,188	5,077	5,779
	2. Survivors' benefits	90	106	119
	3. Dependents' medical care	3,556	5,560	7,493
10	Total obligations	7,834	10,743	13,391
	Financing:			
40	New obligational authority (appropriation)	7,834	10,743	13,391
	Relation of obligations to expenditures:			
71	Total obligations (affecting expenditures)	7,834	10,743	13,391
72	Obligated balance, start of year	1,179	1,755	3,498
74	Obligated balance, end of year	−1,755	−3,498	−4,889
90	Expenditures	7,259	9,000	12,000

Mr. NATCHER. We take up next the retired pay of commissioned officers, and I believe Dr. Leo J. Gehrig, the Deputy Surgeon General has a statement to make to the committee?

Dr. GEHRIG. I do, Mr. Chairman.

Mr. NATCHER. In accordance with the subcommittee's practice this year we will place your biographical sketch in the record and then we will be pleased to hear from you.

BIOGRAPHICAL SKETCH OF PRINCIPAL WITNESS

Name: Leo J. Gehrig, M.D.
Position: Deputy Surgeon General.
Birthplace and date: Mapleton, Minn., April 25, 1918.
Education: University of Minnesota, B.S., B.M., M.D.
Internship: Salt Lake County General Hospital, University of Utah Medical School, 1944–45.
Residency:
Thoracic surgery, Overhold Thoracic Clinic, 1947–50.
General surgery, U.S. Public Health Service Hospital, Staten Island, N.Y., 1952–55.
PHS executive career development program, 1960–61.
Experience:
Deputy Surgeon General, November 1965 to present.
Chief, Bureau of Medical Services, April 1964–November 1965.
Deputy Chief, Bureau of Medical Services, U.S. Public Health Service, Washington, D.C., 1962–April 1964.
Medical Director, U.S. Peace Corps, 1961–62.
Program Officer, Bureau of Medical Services, 1960–61.
Deputy Chief, Division of Hospitals, Bureau of Medical Services, U.S. Public Health Service, 1959–60.
Assistant Chief, Division of Hospitals, Bureau of Medical Services, U.S. Public Health Service, 1957–59.
Deputy Chief, Surgery, U.S. Public Health Service Hospital, Seattle, Wash., 1955–57.
Chief Thoracic Surgery, U.S. Public Health Service Hospital, Staten Island, N.Y., 1950–52.
Acting Director, Tuberculosis Control, Territorial Department of Health, Juneau, Alaska, 1946–47.
Association Memberships:
Diplomate, American Board of Surgery.
Diplomate, American Board of Thoracic Surgery.
Fellow, American College of Surgeons.
Alpha Omega Alpha Honorary Medical Society.

General Statement

Dr. Gehrig. This appropriation authorizes such amounts as may be necessary for certain mandatory payments under two separate programs.

PAYMENTS TO RETIRED OFFICERS AND SURVIVORS

The first program covers payments to retired officers of the Public Health Service and to survivors of deceased retired officers. Benefits to retired officers are authorized by section 211 of the Public Health Service Act and 10 U.S.C. 1201, while those to survivors are authorized by the Retired Serviceman's Family Protection Plan (10 U.S.C., ch. 73; 42 U.S.C. 213a). The amounts of these benefits are fixed by law and payments are not subject to administrative control. The estimated requirement of $5,898,000 for fiscal year 1968 is based on a projection of beneficiaries now being paid with adjustments for anticipated additions and terminations. On June 30, 1966, 618 retired officers and 48 survivors annuitants were on the roll. It is estimated that the number of retired officers will reach 682 by June 30, 1967, and 747 by the end of fiscal year 1968. The projection contemplates that payments will be made to 54 survivor annuitants on June 30, 1967 and to 60 on June 30, 1968.

DEPENDENTS' MEDICAL CARE

The second program financed under this appropriation is the provision of medical care to dependents and retired personnel under the Dependents' Medical Care Act (10 U.S.C., ch. 55). Expenses of the dependents' medical care program cover the cost of medical care provided under contractual arrangements either in non-Federal or uniformed service facilities, to dependents of eligible personnel of the Coast Guard, the Environmental Science Services Administration, and Public Health Service. Public Law 89–614, approved September 30, 1966, liberalizes the medical provisions of the Dependents' Medical Care Act to provide benefits to retired personnel and dependents that will be more in line with those provided under the Federal Employees Health Benefits Act and the new social security health program for the aged. The major new benefits provide out-patient care and improved in-patient care to dependents. They provide a program of care in civilian hospitals for retired personnel and their dependents. They provide aid to military parents who have physically or mentally handicapped children who need special care. The provisions of this law became effective January 1, 1967, except for those provisions related to patient care for dependents of active duty personnel. This part of the amendments became effective October 1, 1966. The 1968 estimate of $7,493,000 is $1,933,000 above estimated requirements for fiscal year 1967. The increase is principally related to the necessity to fund the expanded benefit program for a full year during 1968 instead of only a part of a year as in 1967.

The total estimate for 1968, covering both programs, is $13,391,000. I shall try to answer any questions which you may have.

Mr. NATCHER. Thank you, Dr. Gehrig.

Doctor, you estimate the cost under this indefinite appropriation will total $10,743,000 this year and $13,391,000 next year. There is no administrative control over this matter, is there, Doctor?

Dr. GEHRIG. No, there is not.

Mr. NATCHER. The justification of course will appear in the record. Do you have any other statement to make to the committee?

Dr. GEHRIG. No, sir; I believe, as you have indicated, there is no administrative control on the program. I think the record will document the expanded program which is the primary cause for this increase.

Mr. NATCHER. Mr. Laird?

Mr. LAIRD. No questions.

Mr. NATCHER. Dr. Gehrig, we want to thank you and the members of your staff for appearing at this time.

JUSTIFICATION MATERIAL

Retired Pay of Commissioned Officers

Amounts available for obligation

	1967	1968
Appropriation (indefinite)	$10,743,000	$13,391,000

Obligations by activity

	1967 estimate	1968 estimate	Increase or decrease
Retirement payments	$5,077,000	$5,779,000	+$702,000
Survivors' benefits	106,000	119,000	+13,000
Dependents' medical care	5,560,000	7,493,000	+1,933,000
Total obligations	10,743,000	13,391,000	+2,648,000

Obligations by object

	1967 estimate	1968 estimate	Increase or decrease
13 Benefits for former personnel	$5,183,000	$5,898,000	+$715,000
25 Other services	4,122,000	5,997,000	+1,875,000
Services of other agencies	1,438,000	1,496,000	+58,000
Total obligations by object	10,743,000	13,391,000	+2,648,000

Summary of changes

1967 enacted appropriation (indefinite)	$10,743,000
1968 estimated obligation (indefinite)	13,391,000
Total change	+2,648,000

Increases

A. Built-in:	
1. Projection of estimated retirements during 1967 to full year	162,000
2. Estimated additional retirements during 1968	540,000
3. Estimated increase in survivors' benefits	13,000
4. Increased patient load in both Federal and non-Federal hospitals and higher average daily rate for contract hospitalization of dependents	200,000
5. To carry on a full year basis in 1968 the cost of liberalized benefits for dependents' medical care authorized by Public Law 89-614	1,733,000
Total built-in items	2,648,000
Total change requested	2,648,000

EXPLANATION OF CHANGES

An estimated increase of $702,000 is to provide for the full year of 1968 the payments to officers placed on the retired roll during 1967 and for the net increase of 65 officers estimated to be added to the retired list during 1968.

An increase of $200,000 is estimated to provide for increased patient load in both Federal and non-Federal hospitals and for higher average daily rates for contract hospitalization of dependents.

An increase of $1,733,000 is estimated to carry on a full year basis the cost resulting from the passage of the Military Medical Benefits Amendments of 1966 (Public Law 89-614) approved September 30, 1966.

	1967 estimate	1968 estimate	Increase or decrease
Retirement payments	$5,077,000	$5,779,000	+$702,000

This estimate provides for mandatory payments to officers who have been retired for age, disability, or specific periods of service in accordance with provisions of law. Fifteen officers will be eligible for age retirement during 1968, and provision is made for the retirement of 10 officers for disability and 50 officers for years of service.

On June 30, 1966, there were 618 officers on the retired list. During 1967, through December 31, 1966, four officers have been retired for disability, 53 officers for service, and 10 for age. Four additional officers will become eligible for age retirement. It is estimated that a total of 74 officers will be retired during the fiscal year and that 10 will be dropped from the roll, resulting in an estimated 682 officers on the retired list as of June 30, 1967.

It is estimated that 50 officers will be retired for service and 10 for disability during 1968. Since 15 officers will reach the mandatory retirement age of 64 years, provision has been made for the retirement of a total of 75 officers during 1968. It is estimated that 10 officers will be dropped from the roll during the year, resulting in an estimated total of 747 officers on the retired list as of June 30, 1968.

Table of increases and decreases of retirements

	Fiscal year—						
	1962	1963	1964	1965	1966	1967 estimate	1968 estimate
Retired for—							
Disability	16	11	12	10	10	5	10
Age	6	10	12	12	19	14	15
Years of service	40	25	47	54	66	55	50
Total retirements	62	46	71	76	95	74	75
Dropped:							
Death	20	16	12	15	12	10	10
Other	0	2	0	0	1	0	0
Total dropped	20	18	12	15	13	10	10
Net increase or decrease in officers on retired roll, end of fiscal year	42	28	59	61	82	64	65
Officers on retired roll, end of fiscal year	388	416	475	536	618	682	747

	1967 estimate	1968 estimate	Increase or decrease
Survivors' benefits	$106,000	$119,000	+$13,000

This estimate provides for the payment of annuities to the survivors of deceased retired officers who elected to receive reduced retirement payments under the Retired Serviceman's Family Protection Plan.

The estimate is based on payments to the survivors of the following numbers of officers:

June 30, 1966	48
June 30, 1967 (estimate)	54
June 30, 1968 (estimate)	60

	1967 estimate	1968 estimate	Increase or decrease
Dependents' medical care	$5,560,000	$7,493,000	+$1,933,000

The Dependents' Medical Care Act (10 U.S.C., Chapter 55) provides for an improved and uniform program of medical care for active duty and retired members of the uniformed services and their dependents. This activity covers the cost of medical care to be furnished in facilities outside the Public Health Service, both non-Federal and uniformed service facilities, to dependents of eligible personnel of the Coast Guard, the Coast and Geodetic[1] Survey, and the Public Health Service; and to retired personnel of these services.

A comparison of the estimated workloads and costs is shown in the following table:

	1967 estimate	1968 estimate
I. Contract hospitalization of dependents:		
1. Average daily patient load of hospitalization	86	90
2. Total annual patient days	31,390	32,940
3. Average cost per day	$75.60	$76.35
4. Total contract hospitalization, rounded	$2,373,000	$2,515,000
II. Federal hospitalization:		
Dependents:		
1. Average daily patient load of hospitalization	70	72
2. Total annual patient days	25,550	26,352
3. Approved reimbursable rate	$46.25	$46.25
4. Total, dependents	$1,181,688	$1,218,780
Rounded	$1,182,000	$1,219,000
Retired personnel:		
5. Average daily patient load of hospitalization	26	28
6. Total annual patient days	9,490	10,248
7. Approved reimbursable rate	$27	$27
8. Total, retired personnel	$256,230	$276,696
Rounded	$256,000	$277,000
9. Total, Federal hospitalization	$1,438,000	$1,496,000
III. Cost of liberalized dependents medical care benefits under Public Law 89-614	$1,749,000	$3,482,000
IV. Total costs of dependents' medical care	$5,560,000	$7,493,000

The expenses incurred for this activity are mandatory obligations of the Public Health Service. They arise because a dependent or a retired person utilizes an approved hospital facility. The amount of expense incurred varies, depending upon the hospital system which the Public Health Service beneficiary enters: (1) if care is rendered by a Public Health Service facility there is no charge under the Dependents' Medical Care Act (these costs are chargeable to "Hospitals and medical care"); (2) if care is received from a facility of another uniformed service, the Public Health Service is billed directly by that organization; and (3) if medical care is given by a private facility, a contractor such as Blue Cross pays the hospital and bills the executive agent in the Department of Defense, who in turn bills the Public Health Service for the services rendered. Since unit costs are variable to an extensive degree and the workload

[1] Coast and Geodetic Survey now included in Environmental Science Services Administration.

is not created through program operations of the Public Health Service, the costs of the Dependents' Medical Care program are neither precisely predictable nor subject to administrative controls.

Public Law 89-614, approved September 30, 1966, liberalizes the medical provisions of the Dependents' Medical Care Act to provide benefits to retired personnel and dependents that will be more in line with those provided under the Federal Employee Health Benefits Act and the new Social Security health program for the aged. The major new benefits provide outpatient care and improved inpatient care to dependents. They provide a program of care in civilian hospitals for retired personnel and their dependents. They provide aid to military parents who have physically or mentally handicapped children who need special care. The provisions of this law became effective January 1, 1967, except for those provisions related to patient care for active duty dependents. This part of the amendment became effective October 1, 1966.

The new legislation is part of the Department of Defense program for providing such services. In connection with the development of the proposal, a set of cost estimates were prepared by that Department which included provision for the Coast Guard, Coast and Geodetic Survey, and the Public Health Service. We are informed that those estimates included $3,482,000 for these groups as an added expense in 1968 arising from new legislation. As of the effective dates of these services, the cost in 1967 is estimated at $1,749,000. These figures are included in the estimates developed above.

The 1968 increase in fund requirements therefore reflects $200,000 for increased workload and unit rates in the basic program, and $1,733,000 to carry on a full year basis the new legislation.

FRIDAY, APRIL 14, 1967.

COMPREHENSIVE HEALTH PLANNING AND SERVICES

WITNESSES

DR. EUGENE H. GUTHRIE, ASSOCIATE SURGEON GENERAL
DR. JAMES H. CAVANAUGH, DIRECTOR, OFFICE OF COMPREHENSIVE HEALTH PLANNING AND DEVELOPMENT
RONALD BRAND, ASSISTANT TO THE DIRECTOR, OFFICE OF COMPREHENSIVE HEALTH PLANNING AND DEVELOPMENT
DR. WILLIAM H. STEWART, SURGEON GENERAL
G. R. CLAGUE, ACTING CHIEF FINANCE OFFICER, PUBLIC HEALTH SERVICE
JAMES B. CARDWELL, DEPUTY ASSISTANT SECRETARY, BUDGET

Object classification

[In thousands of dollars]

		1966 actual	1967 estimate	1968 estimate
	Personnel compensation:			
11.1	Permanent positions	866	954	2,414
11.3	Positions other than permanent	----------	----------	162
11.5	Other personnel compensation	----------	----------	6
	Total personnel compensation	866	954	2,582
12.0	Personnel benefits	76	87	207
21.0	Travel and transportation of persons	41	32	459
22.0	Transportation of things	5	6	54
23.0	Rent, communications, and utilities	21	14	147
24.0	Printing and reproduction	14	13	58
25.1	Other services	9	8	30
25.2	Services of other agencies	----------	----------	6
26.0	Supplies and materials	7	8	36
31.0	Equipment	5	5	49
41.0	Grants, subsidies, and contributions	101,075	117,929	140,000
99.0	Total obligations	102,118	119,057	143,628

Personnel summary

	1966 actual	1967 estimate	1968 estimate
Total number of permanent positions	104	107	244
Full-time equivalent of other positions	0	0	12
Average number of all employees	94	97	228
Average GS grade	8.0	8.2	8.7
Average GS salary	$8,429	$9,028	$9,402

Program and financing

[In thousands of dollars]

	1966 actual	1967 estimate	1968 estimate
Program by activities:			
1. Grants:			
(a) Planning	2,352	5,000	15,000
(b) Formula	53,209	55,250	62,500
(c) Project:			
(1) Cancer	10,176	14,500	14,500
(2) Mental retardation	4,498	5,500	5,500
(3) Tuberculosis control	9,430	14,950	17,500
(4) Venereal disease control	6,230	6,229	7,000
(5) Radiological health	2,500	2,500	2,500
(6) Chronic and disabling diseases	12,680	10,500	10,500
(7) Improving the provision of health services		3,500	5,000
2. Direct operations:			
(a) Review and approval	541	611	1,200
(b) Program direction and technical assistance	503	517	2,428
Total program costs, funded—obligations	102,118	119,057	143,628
10 Financing:			
16 Comparative transfers from other accounts	−102,118	−119,057	
40 New obligational authority (appropriation)			143,628
Relation of obligations to expenditures:			
10 Total obligations	102,118	119,057	143,628
70 Receipts and other offsets (items 11-17)	−102,118	−119,057	
71 Obligations affecting expenditures			143,628
74 Obligated balance, end of year			−55,628
90 Expenditures			88,000

Mr. NATCHER. At this time we will take up Comprehensive Health Planning and Services under the Public Health Service.

We have before the committee at this time Dr. Eugene H. Guthrie, Associate Surgeon General.

Doctor, do you have a statement for the committee?

Dr. GUTHRIE. Yes, sir; I do.

Mr. NATCHER. We will place your biographical sketch in the record and then will be pleased to hear from you.

BIOGRAPHICAL SKETCH OF PRINCIPAL WITNESS

Name: Eugene H. Guthrie, M.D.
Position: Associate Surgeon General for Operations.
Birthplace and date: Washington, D.C.; April 9, 1924.
Education:
Undergraduate:
Haverford College, Pennsylvania.
Duke University, North Carolina.
Graduate:
George Washington University School of Medicine, (M.D. degree), 1951.
University of Michigan School of Public Health, (M.P.H. degree), 1955.
Smith-Reed-Russell Medical Honor Society, George Washington University.
Delta Omega, Public Health Honor Society, University of Michigan.

Experience:

February 8, 1966 to present:
Assistant Surgeon General for Operations.

August 1963 to January 1964:
Temporarily assigned as Staff Director, Surgeon General's Advisory Committee on Smoking and Health, Public Health Service.

1962–66:
Chief, Division of Chronic Diseases, Bureau of State Services, Public Health Service.

1962: Chief, Neurological and Sensory Disease Service Branch, Division of Chronic Diseases, Bureau of State Services, Public Health Service, and Special Assistant to Director of National Institute of Neurological Diseases and Blindness for Professional and Technical Assistance.

1959–62: Chief Program Officer, Office of the Chief, Bureau of State Services, Public Health Service.

1956–59: Chief, School Health and Rural Health Activities, Division of General Health Services, Public Health Service.

1955–56: Public Health Resident, State Department of Public Health, Berkeley, Calif.

1954–55: University of Michigan School of Public Health (M.P.H.), Ann Arbor, Mich.

1953–54: Public Health Resident, Montgomery County Health Department, Rockville, Md.

1952–53: Medical Officer, USPHS Hospital, Baltimore, Md.

1951–52: Internship, USPHS Hospital, Baltimore, Md.

1951: Commissioned Officer in the Public Health Service.

1942–45: Medical Corps, U.S. Coast Guard.

Associations:

American Medical Association.

American Public Health Association.

U.S. Public Health Service Commissioned Officers Association.

United States-Mexico Border Public Health Association.

American School Health Association.

DHEW Member, Interdepartmental Committee on Health of the School Aged Child, 1957–59.

DHEW Committee on Agricultural Migrants, 1957–59.

DHEW Alternate Member, Interagency Advisory Group, President's Council on Youth Fitness, 1957–59.

Member, Working Group, President's Committee on Migratory Labor, 1957–59.

Consultant on Health and Fitness, Boy Scouts of America, 1958–59.

Associate Editor, The Journal of School Health, 1960–63.

Member, Commissioned Officer's Award Board, U.S. Public Health Service, 1963–64.

Member, Medical Committee of President's Commission on Employment of the Handicapped, 1963 to present.

Secretary, National Interagency Council on Smoking and Health, 1964 to present.

Board of Directors, Armed Forces Relief and Benefit Association, 1966.

Awards and Honors:

Meritorious Service Medal, USPHS, 1964 "Who's Who in America," 1964–65.

Newsmaker of the Year, Science-Associated Press Poll, 1964.

Publications:

Professional Nursing Home (February 1963): "Here are the Problems that Stand in the Way of Adequate Medical Services."

George Washington University Magazine (Summer 1964): "PHS Tackles an Old Indian Habit."

Medical Tribune (Nov. 11, 1964) Guest editorial: "Smoking—A Communicable Disease."

Boletin de la oficina sanitaria panamericana (December 1964): "Progresses recientes en la lucha centra las enfermedades cronicas."

The Journal of School Health (February 1965): "Smoking and Health—One Year Later."

Public Health Reports (March 1966): "What's Happened Since the Terry Report."

General Statement

Dr. Guthrie. I am pleased to have this opportunity to discuss with you the partnership for health program as it is shaped by Public Law 89–749 and also to report on what the Public Health Service has been doing to get ready for this new program.

As you know, this measure was passed by the 89th Congress during the last days of its session and signed into law by President Johnson just 5 months ago, on November 3, 1966. The intervening months have provided the Public Health Service with an opportunity to think and work through some of the problems and possibilities involved in programing. Now we are ready to begin a significant redirection of our efforts to protect the health of the Nation's population.

We consider that the leadtime provided by Congress and the President, prior to appropriations, has been most valuable. I know we are in a better position to explore with you today the opportunities inherent in this measure than we were 5 months ago.

Response to the New Legislation

This period has also given our non-Federal partners an opportunity to evaluate the law, and their response has been highly favorable. The States have indicated their eagerness to participate and so have many counties, cities, and towns. Professional health associations are working closely with us, as are voluntary health organizations, and leaders from the many segments of our society which have a stake in public health.

The context in which we are working and in which Public Law 749 was enacted is one of change—change in our view of the nature of health problems, change in our organization of health care, and change in the working relationships between local governments, State governments, the private sector, and the Federal Government. In this time of transition we are also striving to preserve and protect those concepts and techniques which have proved their worth. There are many accomplishments and programs of which we can be proud and which we must and will perpetuate.

Public Law 749 provides a promising blend of old and new. It introduces a new technique in public health—that of comprehensive health planning—it modernizes an established technique—the management of grants program—and it fuses grants to planning so as to achieve the best possible return from our total health investment.

Today the total expenditure for health care in this country from all sectors, has grown to $43 billion, or approximately 6 percent of the gross national product. Although shortages such as manpower are very real, it is the abundance of the health enterprise, not its paucity, that gives us challenge.

History of the Partnership in Health Concept

In 1936 the Social Security Act laid the foundations of a Federal-State partnership in health by providing a general health program. In the intervening years, specific health problems aroused public and congressional concern and these problems were isolated for special attack with earmarked grants. One result was a salutary growth of

health resources, and some dramatic breakthroughs in health protection. Another result was that Federal assistance increasingly favored some dozen programs of disease control, locking State health efforts into the support of nationally defined health goals. And these goals did not always correspond to the most urgent needs of the State and its communities.

Awareness of this shortcoming prompted the search for alternate patterns of partnership. Two major readjustments were identified as imperative: (1) A chance for the States and localities to identify their own priorities of health needs, and (2) a change in funding which would free them to program according to those needs. These, in essence, are the opportunities which have been opened up by Public Law 749.

The newest concepts present in this law relate to planning. Section 314, in (a), (b), and (c), moves the decisionmaking process into the States and localities, closer to the people, closer to the professional providers of health care, and closer to the organizations most familiar with local health problems and resources.

These provisions of the act encourage planning, not as a static blueprint, but as a dynamic, continuing process of identifying needs and resources, evaluating progress, and making the choices that will most effectively serve the changing health needs of the people. This planning involves the selection of priorities, identification of obsolete activities, emphasis upon most urgent activities, and intelligent allocaton of dollars, manpower, and facilities to provide services to the people.

Planning in itself is not new to public health. There has been planning, and its value is being proved in programs such as Hill-Burton with emphasis on planning for facilities; in the program for community mental health centers; and most recently in the regional medical programs for heart, cancer, and stroke. But there has not been, anywhere, the kind of comprehensive health planning which would enable a State Governor, for example, to view—and frequently review—the various health needs and resources of his State and determine their appropriate relationships in order to provide the best possible health care to the greatest number of people.

NEED FOR PLANNING

Perhaps planning would be less necessary if there were no competition for resources and if our funds for public health were unlimited. But this is not the case. Our investment in health is large and getting larger, but at some point there must be a limit. We do not and cannot assume that an infinite supply of money, manpower, or facilities will ever be available for health needs. There are too many other competing demands for attention and resources, both national and local.

Under these circumstances, I believe we are obliged to take our cue from the business world. And I wonder if any successful commercial enterprise in this country could afford to jeopardize its operations by failing to provide for careful and comprehensive planning. Yet, this is what we have done for years in providing public health services. In the proposal now before you we are requesting $15 million to build

a planning mechanism aimed at maximizing the return on our $43 billion health investment. I believe this represents a bargain.

PROJECT GRANT FUNDS

Thus far I have spoken to the provisions of the law which introduce the new concept of comprehensive health planning. Now I would like to discuss the remaining provisions of the law which modernize the Federal funding provisions for programs planned by the States, localities, and nongovernmental bodies. Section 314, in (d) and (e), continues Federal grants for the direct support of health services and their improvement. Previously, the Federal Government identified the categories of activity which were considered urgent. If a State determined that the needs of its population made it more important and desirable to concentrate on a problem other than the category identified in the national program, the State health agency had no sure way of using Federal funds for its own most urgent priorities. Under these sections, each State will be able to use its health services money to strike hard at specific problems where the need is greatest and success most attainable. Project grant funds are pooled to broaden their availability for innovation and demonstration across wide problem fronts—such as urban and rural health services—or against specific target areas—such as narcotics addiction.

PREPARATION FOR IMPLEMENTING THE ACT

I would like to report now on what the Public Health Service has been doing with the leadtime given us by passage of Public Law 749 last November.

Shortly after the President signed Public Law 89-749, the Surgeon General established within his immediate office the Office of Comprehensive Health Planning and Development. We have brought together in this office a select group of individuals to develop our implementation plans. We have been conferring with representatives of other Federal agencies and with officials, including the Public Health Service regional health directors, to encourage and assist in the development of coordinated planning efforts by the States.

We have been consulting with representatives of State, county, and local governments; with university officials, with representatives of professional organizations such as the American Medical Association, the Association of American Medical Colleges, the American Hospital Association, the American Public Health Association, the American Institute of Planners; and with many voluntary organizations which have a longstanding interest and involvement in health affairs. These include the American Heart Association, the American Cancer Society, the National Tuberculosis Association and others. These meetings have done much to shape our initial thinking and indicate the direction we must take in launching this nationwide program.

Early in January, Secretary Gardner wrote to each of the State Governors and expressed his belief—a belief we fully share—that Public Law 89-749 is one of the most significant health measures passed by the Congress. The Secretary advised each Governor that the Department's regional director and the Public Health Service's

regional health director were available to discuss both the purposes and machinery of the act in greater detail.

The response from the States to the Secretary's letter has been most gratifying. For example, the Honorable William L. Guy, Governor of the State of North Dakota and chairman of the National Governors' Conference, wrote to the Governor of each State:

> This new health legislation could be a milestone in our continuing progress toward improved Federal-State relations.

We are greatly encouraged by the interest and enthusiasm which the States are demonstrating.

DECISIONMAKING IN REGIONAL OFFICES

Within the brief period since this new law was passed, and within the limits of resources thus far available, we have been reshaping a major part of our operating structure in order to place the management of key segments of this program closer to the communities where the people and their needs exist. The nine Public Health Service regional offices are making ready to receive grant applications, arrange for and supervise review, and make the actual grant awards. This is an important change in management. One advantage is that the States will have a single point of access to information on Federal funds and programs. Formerly, they had to direct their applications to as many as 15 different offices in Washington—a procedure which often led to confusion, inappropriate competition, and lack of coordination.

We are creating in each of the nine regions a comprehensive health advisory committee to advise the regional health director on health matters relating to his region and to assist him in the grant review process. The advisory committees will include members from hospitals, industry, universities, private practice, voluntary groups, and other areas of public health. This committee system, in addition to serving a vital purpose in support of the regional health directors, can bring outstanding, nongovernmental talent into the grant review process and thus serve the partnership concept we seek to strengthen.

Gentlemen, we do not expect that the States will use identical planning methods or that they will schedule their activities in a uniform manner, nor would this be desirable. We anticipate, however, that there will be a continuous sharing of information, on techniques and ideas developed in the different States, through a variety of channels. A most important channel which we intend to keep strong and viable is the close working relation between regional health directors and the Office of the Surgeon General. This is essential to the mutual progress of programs in the States and in the Federal Government.

These are some of the possibilities which I see ahead. Now we are ready to propose the financial support we feel is essential and realistic to make this program operative. For these purposes, we are requesting an appropriation of $143,628,000 for fiscal 1968, an increase of $20,071,000 and 40 positions over the 1967 level.

Mr. Chairman, I shall be glad to answer any questions you or the committee may have.

SUMMARY OF BUDGET REQUEST FOR COMPREHENSIVE HEALTH PLANNING

Mr. NATCHER. Thank you, Dr. Guthrie.

The amount you estimate to be available for 1967 is $123,557,000, and the appropriation requested for 1968 is $143,628,000, which is an increase, of course, of $20,071,000.

EXPENDITURE IDENTIFICATION BY DISEASE CATEGORY

Doctor, some people have been worried that there would be no identification of these funds by categories such as VD and TB, but I see on page 222 that you have part of the funds identified for these various categories.

Are you going to control their use in such a way that these amounts are spent as they are broken down on that particular page?

Dr. GUTHRIE. Mr. Chairman, as I indicated, the prime purpose of this new legislation is to place the opportunity for decisionmaking at the State and local level and we believe that the States and the communities are in the best position to determine the priority of program needs for these funds.

As your question indicates, project grant money that was formerly categorized makes up the base of this new program appropriation. Many of these grants will be continuations of existing programs. Our best estimate today and the best estimate of our colleagues in the States and communities lead us to present this estimate of where these funds will be spent.

Mr. NATCHER. Dr. Guthrie, do you intend for these amounts to be expended as set forth on this page, or will this be a matter where the States will make adjustments and make changes in these amounts?

Dr. GUTHRIE. This is our estimate of where they will spend these funds. We will not require the States to spend the funds for these purposes, but this is our estimate together with theirs as to where we think the program priorities exist at this time.

Mr. LAIRD. This is from estimates they have given you of what they think they will be doing in 1968?

Dr. GUTHRIE. It is a combination, Mr. Laird. It is based on the estimates we have now of the projects that are already funded and the continuation of these projects plus the planning by our own program chiefs in these areas.

This is an estimate of need and determination as to where they think the project money would go if it is no longer categorized in this appropriation.

Mr. NATCHER. Mr. Laird, I asked him this question because of some people's complaints. From the statement Dr. Guthrie makes to the committee I can see the reason they are complaining because it is right indefinite. Is that not correct?

You set these amounts out for each of the disease categories, but you have nothing definite to say to the committee to assure us that these amounts will be expended for these particular categories.

Dr. GUTHRIE. Sir, we visualize the intent of the law is not to enforce a requirement on the part of the Federal Government that these funds must be spent for a specific categorical program.

We present this estimate of the project use not as a form of constraint upon the States but as our judgment of where we think the

funds will be expended. This judgment is based on a knowledge of what the States and communities believe their needs to be. We are providing the opportunity for the States to make this decision so that they may use the money on their priority needs.

We have talked to State program people who will be submitting these projects to us and their judgment is that this is where they think the primary needs are.

Mr. NATCHER. Mr. Laird, go right ahead.

Mr. LAIRD. I have nothing else.

Mr. NATCHER. Go ahead, Doctor.

SUPPORT FOR NONCATEGORICAL APPROACH

Dr. GUTHRIE. I might add that many of the organizations currently developing these projects and involved in operating them are quite supportive of the concept of the noncategorical approach.

Prior to this, we would have had to restrict these expenditures to the categorical grants regardless of what the determination of need from the State might have been.

In this new program the States can establish their own priorities for projects according to their needs rather than to federally determined categorical priorities. We think this is a distinct improvement and we are supported in this concept. I think the justifications that were made at the time this legislation was passed were very much in favor of moving in this direction.

Our categorization in the past has led to a great deal of fragmentation, and a great deal of difficulty in allocating the funds from the Federal Government to meet the needs that actually existed in the States and communities.

FORMULA GRANTS

Mr. NATCHER. Dr. Guthrie, you have an increase requested from $55,250,000 to $62,500,000, for formula grants. These could be spent for any health purpose according to priorities set by the States, including supplementation of the fund set forth on page 221 by category.

I believe that is correct, is it not, Doctor?

Dr. GUTHRIE. Yes, sir.

PLANNING GRANTS

Mr. NATCHER. For planning grants, you are requesting $15 million, which is an increase of $6 million.

Why do you need this increase, Doctor?

Dr. GUTHRIE. This increase will bring our appropriation to its authorized amount.

As you are aware, this part of the planning is in three sections. Section 314(a) supports the development of the State comprehensive planning agency. In fiscal year 1967 with the approval of the supplemental appropriation, we will have a minimum grant of $25,000 available to each State to develop the comprehensive agency. The increase of $2,500,000 for this act in 1968 will increase the amount to a total of $5 million for comprehensive planning. That will make the minimum grant to a State $50,000. We believe we should move this to the maximum authorized as rapidly as possible because the

planning grant to the State agency is really the keystone of this whole piece of legislation.

The increase in section 314(b) goes for comprehensive areawide planning, formerly available exclusively for facilities planning. The present authorization is $5 million and the request in 1968 is a $2.5 million increase to bring this section to the full authorization of $7.5 million. These funds are available to local comprehensive planning agencies at the city-county level.

The increase for section 314(c) provides for a million dollar increase for training, and for studies and demonstrations in the health planning process.

FUTURE COST OF PLANNING GRANT PROGRAM

Mr. NATCHER. Can you give us any idea on the future cost of the planning grant program? What do you have in mind for future costs?

Dr. GUTHRIE. This authorization extends only through 1968. The present authorizations will end at the close of the fiscal 1968 year.

Mr. NATCHER. Of course, Dr. Guthrie, you know you will ask for an extension. Can you give us any idea—assuming the extension is granted—on the costs for the program?

Dr. GUTHRIE. Our plans for extension of the authority will increase from 15 to 25 million in fiscal year 1969.

Mr. NATCHER. Then you will not finish your planning in the fiscal year 1968 and you believe this program will go on into the future?

Dr. GUTHRIE. We certainly hope it will go on into the future. The planning process, in itself, does not produce an individual given plan that we can file in a book, or a drawer. The planning process under section 314(a) we anticipate will establish a State agency for comprehensive planning. We hope this planning will be a very dynamic process bringing together the total forces in the State, both public and private, provider and consumers, medical groups, and health groups, to plan and look at objectives they wish to set for programs in the States.

This is a continuous process of setting objectives and making decisions on the choices available for applying resources to meet these objectives.

Whether the resources come from the Federal Government, the State government or private sources, the real purpose of the planning agency is to set objectives, identify the choices available and recommend the allocation of resources. This is a continuing process and we think section 314(a) is the keystone of this act.

Mr. NATCHER. Assuming now that it is authorized and goes on into the future. Can you give us any idea what you have in mind for the future in this program, Doctor?

Dr. GUTHRIE. I don't think from dollar point of view the planning process is going to be such a costly one. The main procedure here is to bring together the people who are involved in the development and operation of health programs. By bringing them all together at one place, to understand clearly what the total objectives are in the States in all of the health programs, and by that process, to determine what resources they need and to make plans for getting them.

For instance, we know that all the States have developed a comprehensive plan in mental health. In many of the States these plans call for a great increase in health manpower. These plans call for many additional psychiatrists, general practitioners and many other health professionals to work in the mental health field. We know mental retardation planning in the States has produced a comprehensive plan in each of them. We know in many instances that if you add up all of these requirements for manpower they will total many more physicians than they are going to get in the State in the next 10 years. These plans also call for hospital beds which don't exist.

People must have an opportunity to see all of these plans at one point and decide what kind of priorities they are going to give them such as "Do we need more training institutions," or "Do we need more facilities," or "Do we need more funds to pay for services?" This gives them an opportunity to look at these plans and to make the choices. It doesn't take a great deal of money to do this sort of thing. We expect the planning agency will utilize the information that is available from a number of specific program areas in the State. One way to visualize this operation is to see the various areas such as mental health, mental retardation and the environmental programs, as individual, vertical efforts. The comprehensive planning process is a lateral bridge across all of these efforts. It gives States and communities an opportunity to look at all of these things on a continuing basis.

This lateral process won't take a great deal of additional money. The real costs come in the vertical efforts; the actual building of facilities, establishing training resources and funding of service programs.

Mr. NATCHER. As you know, we have discussed the programs in connection with the project grants in earlier hearings. Do you have any additional statement to make, Doctor? Is there anything additional you wish to say along this line, concerning any of the projects?

Dr. GUTHRIE. I don't believe so, Mr. Chairman.

ADMINISTRATIVE COST OF DECENTRALIZING PROJECT APPROVAL

Mr. NATCHER. You indicate in the justifications that you plan to decentralize the approval of the project grant applications to the regional offices. Now, Doctor, won't this be more expensive?

Dr. GUTHRIE. It will increase geographically the number of areas where we will be processing our grants. In other words, many of these applications, as I mentioned in my opening statement, came into a number of different places in Washington.

In our proposal to decentralize the administration of this program into the field, we think very much that the opportunity to utilize non-Government people in this program at the State and regional level is one of the most promising aspects of this new program. It is a great opportunity to involve the people who are really operating these programs and planning them. Right now the way we do it in Washington limits this opportunity.

We now have in the regional offices some machinery for this. We will have to extend this machinery in order to provide a competent grant review and assure the most effective use of these funds. But we think in so doing that the additional money required to establish

this process will give us a net effect of a much more effective and efficient use of the funds. Now, instead of having to go to many sources, the applicant will go to one source. The regional health director will have as his additional responsibility now the knowledge of all of these programs and the opportunity to not only select Public Health Service resources and advise the States on the use of these, but he also can advise where other funds can be utilized for these purposes. This would cut down a potential which exists now for considerable duplication.

Mr. NATCHER. Doctor, how would you divide the money among the regions?

Dr. GUTHRIE. At the present time we don't believe that we would allocate the funds on a regional basis, but rather in the grants review process, the States, as well as the regions, will determine a priority of the projects they receive. These would then be sent forward on a priority basis and we will interdigitate the priorities from the regions and have one central accounting service for the expenditure of funds. We do not propose to duplicate the funding arrangements. We think we can keep a central fiscal operation on this program but decentralize the program aspect. We want to get the programing aspect of this out closer to the people involved. The money handling can be done, I think, quite efficiently on a centralized basis.

EVALUATION OF PROJECTS IN DIFFERENT REGIONS

Mr. NATCHER. What system will you use to assure uniformity so that one region doesn't approve projects that might be turned down in another region?

Dr. GUTHRIE. There are two sides to this coin, as you would well imagine. One is that we want to acknowledge the different situations and circumstances that exist in different parts of the country. What might be considered a very unsophisticated project in a highly scientific community in one area of the country might be a very appropriate program in a less sophisticated area of the country where they need the service. So we would not want to apply the same criteria in one section of the country we do in the other.

Now, when it comes to the evaluation of a project, it must be technically sound. We will insure in our review process that a technically nonacceptable project would not be put into effect. We will use our present technical staff and consultants that exist in all the operating bureaus of the service to give to our regional people the technical project review assistance.

Then we will ask our regional staff and their advisory groups to assess the need for the project and the sensibility of a project in a given area of the country and then they will make this known to us in their project ratings. So that when we fund projects we will have a system which will have screened these projects first for their technical capability and competence and then, secondly, on the basis of the need for this project from a program point of view in a given area of the country.

I think we will take care of meeting the needs for flexibility to a given community's circumstances and at the same time assuring the scientific technical quality in each of the projects.

INCREASED AUTHORIZATION FOR PERSONNEL

Mr. NATCHER. The budget schedules show you have 204 permanent positions. How many of these do you actually have now and how many are you requesting in the supplemental, Doctor?

Dr. GUTHRIE. Our present staffing in 1967—including the supplemental—comes to a toal of 204.

Mr. NATCHER. Including those requested in the supplemental?

Dr. GUTHRIE. Yes.

Mr. NATCHER. That will make you a total of 204?

Dr. GUTHRIE. Yes, sir. We requested 97 positions in our supplemental.

Mr. NATCHER. You are requesting an additional 40 positions for fiscal year 1968?

Dr. GUTHRIE. Yes, sir.

Mr. NATCHER. You have authorized how many positions right now?

Dr. GUTHRIE. We have 107.

Mr. NATCHER. Of the 40 new positions that you request in 1968, what would happen, Doctor, if they were not approved by the committee? What position would you be in? Does your program really require any of them, Doctor?

Dr. GUTHRIE. Yes, sir. We plan in this program to offer to the States and communities a person assigned from the Public Health Service. In discussions with State organizations they have indicated that, because of the newness of the program and the desire to implement this as rapidly as possible, they would like the assistance of a person from Public Health Service assigned to the agency. In our 1968 request we are asking for 25 positions to make these assignments to the States.

In addition to this, in the operation of a council, it is very important that we have a professional executive secretary who is responsible for the handling of the council's business. This includes the review of the grants, the conduct of site visits to the projects, bringing the council together, making the grant information available to them and in a sense being the major domo for the operation of that activity. The request carries the position of an executive secretary for the council in each of the nine regions.

I think in order to really implement this program at the State level, the 25 State assignees are a critical part of the request. The executive secretary, I think, with all of the experience we have had in other grant programs, and of which you are knowledgeable, is a critical pivot man in this operation. We think that these positions are essential in the operation of this project in 1968.

The remaining positions provide six people for our headquarters staff whose responsibility will be in the design and the development of the information and evaluation system for this new program.

For the first time now we will have the opportunity of gathering information that comes from the States—first from the metropolitan and county planning organizations, then from the State organization on a comprehensive basis, and then into our own planning process at the regional and national level.

I think it would be indeed unfortunate if we don't make the maximum opportunity of utilizing this information, not only to measure

the effectiveness and efficiency of the grants program, but also for the purpose of planning and knowing what the specific health needs are as they are reflected in this planning process.

We don't have this opportunity now. We have no mechanism or machinery that enables us to do this really on a comprehensive basis of a total health program. It seems to me for a very small investment, and with the capability now of our new machine technology, we should be able to make this kind of information very dynamic and effective in the planning process.

We can, I hope, bring to you a much more accountable situation on where these funds go, exactly how they support the programs, and, indeed, the areas of future development that we should make. I think this is an important part of the program and the few positions here—it won't take many to develop this and operate it—but I think without these positions it would be indeed a great loss of an opportunity.

REGIONAL APPROVAL OF PROJECTS

Mr. LAIRD. I can't quite follow, Doctor, how these projects are going to be approved at the regional level. They are going to be submitted there?

Dr. GUTHRIE. Yes, sir.

Mr. LAIRD. And they will approve or disapprove the request.

Dr. GUTHRIE. They will be submitted and then they will be reviewed, in a sense, in a two-stage review, quite similar to what we do now. They are first reviewed on a technical basis so that we know that the applicant has a plan of operation that meets accepted criteria. The regional office will arrange for that kind of technical review.

Mr. LAIRD. What are they doing now?

Dr. GUTHRIE. These projects don't go to the regional office for technical review.

Mr. LAIRD. They all come here?

Dr. GUTHRIE. Yes, sir.

Mr. LAIRD. They are never reviewed by the regional office?

Dr. GUTHRIE. Some of them are reviewed in the regional office now; some of them are.

Mr. LAIRD. I thought they all went to the regional office.

Dr. GUTHRIE. No. Some of our projects come direct.

Mr. LAIRD. They come direct to your office?

Dr. GUTHRIE. Yes, sir.

Mr. LAIRD. What percentage?

Dr. GUTHRIE. I am just guessing, and I will correct this for you specifically, but I would guess probably 75 percent of them come directly to Washington.

Mr. LAIRD. Do you communicate with the regional office about these?

Dr. GUTHRIE. We ask the regions to give us comments on projects.

Mr. LAIRD. They must go there, too, then?

Dr. GUTHRIE. Yes, sir.

Mr. LAIRD. Then they go to both places?

Dr. GUTHRIE. In many instances; yes, sir.

Mr. LAIRD. What is the regional office going to do? I would like to understand what the regional offices are doing now that they won't do under this program, or vice versa, what they are going to do in the future that they don't do now?

Dr. GUTHRIE. At the present time they are not responsible for technical reviews; they are not responsible for the technical consultation to the project applicants.

Mr. LAIRD. In the future they are going to approve them then?

Dr. GUTHRIE. Yes, sir.

Mr. LAIRD. They are to approve them in the regional office?

Dr. GUTHRIE. Review and approve.

Mr. LAIRD. Now, from what I understand, you aren't going to make an allocation of funds to the regions?

Dr. GUTHRIE. That is correct.

Mr. LAIRD. What if, in total for the several regions, they approve something way above the amount of money that is available?

Dr. GUTHRIE. Then only the top priority projects would be funded.

Mr. LAIRD. They will assign priorities at the regional offices as they approve them?

Dr. GUTHRIE. Yes.

Mr. LAIRD. This is going to be like an NIH advisory group, or a study group?

Dr. GUTHRIE. They will have an advisory committee composed of non-Federal people to assist in this review.

Mr. LAIRD. This will be somewhat comparable to the National Institutes of Health procedure then?

Dr. GUTHRIE. Yes, sir.

Mr. LAIRD. They will be something comparable to study sections then out at the regional level.

Dr. GUTHRIE. Comparable. Comparable, really, to council action rather than study section action. It would be quite comparable to the kind of review committee action that we have, not only at NIH, but in the Bureau of Health Services and in the Bureau of Disease Prevention and Environmental Control.

Mr. LAIRD. You will get into situations when you will have many approved projects that you won't be able to fund, won't you?

Dr. GUTHRIE. What we would do is as we do now. We have certain dates by which an applicant submits the application. If he submits it by a certain date, then he can be assured that it will be reviewed by a certain date. Then we do this several times during the course of the year.

Now, what we would propose to do would be to allocate our funds in such a way that the top priority projects would be funded and those that do not have sufficient priority and do not meet the criteria of excellence would be left in competition for the remaining funds until the close of the year. Now, if we have enough funds for the approved projects, this will take care of it.

If we have more approved projects than we have funds, we propose to fund the best ones first.

PERSONNEL LEVELS UNDER DECENTRALIZED APPROVAL PLAN

Mr. LAIRD. How many people will this cut down on as far as the Washington office is concerned?

Dr. GUTHRIE. So far as I know, I don't anticipate a reduction of personnel in the Washington office.

Mr. LAIRD. When you take these site visits and other work away I would think there would be some reduction.

Dr. GUTHRIE. We would continue to use the same professional people we have in the programs right now for the technical followup of projects.

The positions that are in this request are for the administration of the grants. The technical input, whether TB or VD or chronic disease, will still be carried out by the program people. As these program people have indicated to you during this appropriation review, they will still continue to consult on these projects—we will use the existing staff. We will not put new staff into this.

Mr. LAIRD. I want to get this straight. There must be some saving at this end if you are going to shift responsibilities and work to the field. What this committee wants is to get health services to people, not just load down the administration. I just don't quite follow this.

Dr. GUTHRIE. I think really, Mr. Laird, that the opportunity that you mention of getting services to people is also our main concern. However we are now doing this in a fashion far removed from the people in the States and communities.

By reviewing and approving grants at the regional level and utilizing many more non-Federal specialists than we are capable of doing now out of Washington, I think we will be able to bring much more effective consultation to these projects. We will be able to make our own resources more readily useful to the States and communities in carrying out the projects. Before, it was a pretty cut-and-dried allocation of funds on a categorical basis. Now, with the flexibility of the new program, the States are able to allocate these funds according to their priorities. I think what we are doing is shifting this decision-making machinery closer to the people.

Mr. LAIRD. I approve of that. I am all for this rather than the categorical approach, but it seems to me you are doing this and then adding more people, more payroll, more personnel costs.

Dr. GUTHRIE. If we move it out to the people, there is no question we have got to put the machinery out there to make it work and we don't have it there now.

Mr. LAIRD. Shouldn't it be a case of the States putting the machinery out there?

Dr. GUTHRIE. The States and us.

Mr. LAIRD. I thought we were going to get away from this ever-increasing Federal administration. I thought it would be the States that would be more closely involved in the program, and the local communities and the counties, rather than having more Federal costs involved, we are trying to move away from having more Federal personnel costs. This budget increases the Federal personnel cost.

PERSONNEL ASSIGNED TO THE STATES

Dr. GUTHRIE. Most of these people, however, are going into the States. Fifty people in this program are state assignees.

Mr. LAIRD. Why do we want to assign people to the States? You are giving them each $25,000 planning money in the supplemental. You are giving them each $50,000 in this bill. That is $75,000 that is going to be available to them in 13 months. You won't have any of the supplemental money until June sometime.

Here you have $75,000. Why can you recruit people better than the States?

Dr. GUTHRIE. Well, I think in this area, for the newness of the program, for one thing——

Mr. LAIRD. You are going to have to get new people.

Dr. GUTHRIE. I know it; but I mean the newness of the program makes it sometimes more difficult for the States to have funds available and recruit people.

Mr. LAIRD. Why do you want to hire the people? We are trying to get away from that. We are trying to get this program down to the States and local communities.

Dr. GUTHRIE. This is at their request.

We know we have requests for many more people than we can put into the States and the communities right now. I don't think it is in any sense an attempt to redirect professional people, because really the basic intent of this is to make the funds more sensitive to providing health services to people.

Mr. LAIRD. Do you have a comment on that, Dr. Stewart?

Dr. STEWART. I can only second what Dr. Guthrie has said with regard to the people assigned to the States. This is on request of the States. They feel a real need to have help in starting out this whole new planning program. This new Federal-State partnership makes it necessary that we have these positions to get this comprehensive planning started at the State and local level.

Dr. CAVANAUGH. We would provide the training in Washington for our regional staff so they would have knowledge about the multiplicity of Federal health programs that we currently have available and that were enacted by previous sessions of Congress. So that as they go into the States they would be able to give the States the type of information that related to mental health programing in one area, to mental retardation program planning in——

Mr. LAIRD. You have that kind of program now for the State health officers, as well as the deputies and other State health personnel.

Dr. CAVANAUGH. We do.

Mr. LAIRD. This isn't anything new. I thought you were bringing these people in and having regional meetings with them rather frequently now. In this budget there are all sorts of regional meetings to provide that kind of service to these types of people.

Dr. CAVANAUGH. The budget figures are requested for the regional advisory councils. These funds will provide for the new review process, bringing people from the cities, from the universities, from various other areas to review the program at the regional level, to review the grants and to advise the regional health director.

Mr. LAIRD. You don't think you should allocate this money by regions then?

Dr. GUTHRIE. I think it would be very difficult to do this at this time with the information we now have. Now, I don't want to prejudge the future, but we are going into a transition period, moving from a highly categorized to a noncategorized basis. I think it would be wiser at this stage not to prejudge the exact amount of funds that ought to be allocated to one part of the country or to another. I think if we asked our advisory groups and the States to determine the priority of need for these projects, the mechanics of funding will be relatively

similar in the way we do business right now. As we gain experience, it may become more sensible to arrange some type of funding that allocates these funds by regions or on some other basis. If we have the kind of information that would make this sensible, I think we would certainly entertain that system; but in our present knowledge and with the machinery now available, we would go into business on the basis recommended.

INVESTMENT IN HEALTH

Mr. LAIRD. On page 5 you talk about providing public health services:

> In the proposal now before you, we are requesting $15 million to build a planning mechanism aimed at maximizing the return on the $43 billion health investment.

I think that should be $43 billion health cost because our health investment in America is many times greater than $43 billion. Do you understand that?

Dr. GUTHRIE. Yes, sir.

Mr. LAIRD. I think those might be annual costs you are talking about there. When you talk about return on investment, our health investment in America is many, many times greater than $43 billion.

Dr. GUTHRIE. I would agree with that.

REGIONAL REVIEW OF APPLICATIONS

Dr. STEWART. May I go back to the analogy you were using with NIH, because it is a good one for this mechanism that we are establishing. NIH has a Division of Research Grants to which all applications are submitted. They arrange for the technical review. They operate the study sections, which review the technical validity. The applications then go to the Institutes and the council reviews for priority relevance to program needs and this type of thing.

We want the regional offices to arrange the review, just as DRG does. They will receive the applications; they will arrange for the technical review wherever it is appropriate. In the program, if that is where the technical people are, or if there are outside experts in the area to review it. They will also, working with the States and their advisory group, do the council action in the sense of setting priority, but here priority rather than being on scientific merit is of relevance to the health needs and priorities as determined by the States. So it is analogous in a sense to the NIH mechanism.

The reason for the latter part being in the regional offices is that there is so much variation in need and availability of resources in various sections of the country. In fact, even within a city or within counties of the country these is so much variation, and the regional staff is charged with being knowledgeable of these variations, while working with the States and localities.

Mr. NATCHER. Thank you very much, gentlemen.

JUSTIFICATION MATERIAL

Comprehensive Health Planning and Services

Amounts available for obligation

	1967	1968
Appropriation	$4,500,000	$143,628,000
Comparative transfers from:		
"Injury control"	80,000	
"Chronic diseases"	59,513,000	
"Community health services"	10,577,000	
"Communicable diseases"	232,000	
"Control of tuberculosis"	17,950,000	
"Control of veneral diseases"	6,229,000	
"Dental services and resources"	1,000,000	
"Hospital construction activities"	5,000,000	
"Medical care services"	6,700,000	
"Radiological health"	5,000,000	
"Mental health research and services"	6,750,000	
"Office of the Surgeon General, salaries and expenses"	26,000	
Total	123,557,000	143,628,000

Obligations by activity

Description	1967 estimate		1968 estimate		Increase or decrease	
	Positions	Amount	Positions	Amount	Positions	Amount
Grants:						
Planning		[1] $9,000,000		$15,000,000		+$6,000,000
Formula		55,250,000		62,500,000		+7,250,000
Project:						
Cancer		14,500,000		14,500,000		
Mental retardation		5,500,000		5,500,000		
Tuberculosis control		14,950,000		17,500,000		+2,550,000
Venereal disease control		6,229,000		7,000,000		+771,000
Radiological health		2,500,000		2,500,000		
Chronic and disabling diseases		10,500,000		10,500,000		
Improving the provision of health services		3,500,000		5,000,000		+1,500,000
Direct operations	204	1,628,000	244	3,628,000	+40	+2,000,000
Review and approval	81	756,000	90	1,200,000	+9	+444,000
Program direction and technical assistance	123	872,000	154	2,428,000	+31	+1,556,000
Total obligations	204	123,557,000	244	143,628,000	+40	+20,071,000

[1] Includes $5,000,000 appropriated in 1967 under the head, "Hospital construction activities," for the purposes of areawide planning of health facilities.

Obligations by objects

	1967 estimate	1968 estimate	Increase or decrease
Total number of permanent positions	204	244	+40
Full-time equivalent of all other positions	2	12	+10
Average number of all employees	111	228	+117
11 Personnel compensation:			
Permanent positions	$1,123,000	$2,414,000	+$1,291,000
Positions other than permanent	31,000	162,000	+131,000
Other personnel compensation	1,000	6,000	+5,000
Total personnel compensation	1,155,000	2,582,000	+1,427,000
12 Personnel benefits	103,000	207,000	+104,000
21 Travel and transportation of persons	62,000	459,000	+397,000
22 Transportation of things	30,000	54,000	+24,000
23 Rent, communications and utilities	34,000	147,000	+113,000
24 Printing and reproduction	34,000	58,000	+24,000
25 Other services	12,000	30,000	+18,000
Project contracts	150,000		−150,000
Services of other agencies		6,000	+6,000
26 Supplies and materials	12,000	36,000	+24,000
31 Equipment	36,000	49,000	+13,000
41 Grants, subsidies, and contributions	121,929,000	140,000,000	+18,071,000
Total obligations by object	123,557,000	143,628,000	+20,071,000

Summary of changes

1967 proposed supplemental	$4,500,000
Comparative transfers from:	
Injury control	80,000
Chronic diseases	59,513,000
Community health services	10,577,000
Communicable diseases	232,000
Control of tuberculosis	17,950,000
Control of venereal diseases	6,229,000
Dental services and resources	1,000,000
Hospital construction activities	5,000,000
Medical care services	6,700,000
Radiological health	5,000,000
Mental health research and services	6,750,000
Office of the Surgeon General, salaries and expenses	26,000
Total estimated obligations, 1967	123,557,000
1968 estimated obligations	143,628,000
Total change	+20,071,000

Increases	Base		Changes from base	
	Positions	Amount	Positions	Amount
A. Built-in:				
1. Annualization of 97 new positions and related costs authorized in 1967				$1,427,000
B. Program:				
1. Planning grants		[1] $9,000,000		6,000,000
2. Formula grants		55,250,000		7,250,000
3. Project grants:				
(a) Tuberculosis control		14,950,000		2,550,000
(b) Venereal disease control		6,229,000		771,000
(c) Improving the provision of health services		3,500,000		1,500,000
4. Review and approval of grants	81	756,000	9	140,000
5. Program direction and technical assistance	123	872,000	31	635,000
Total program increases			40	20,273,000
Decreases:				
A. Nonrecurring program costs related to new staff in 1967				−197,000
B. One less day of pay in 1968 (261 days in 1967, 260 days in 1968)				−5,000
Total decreases				−202,000
Total net changes requested			+40	+20,071,000

[1] Includes $5,000,000 appropriated in 1967 under the head, "Hospital construction activities," for the purposes of area-wide planning of health facilities.

EXPLANATION OF CHANGES

Planning grants

An increase of $6,000,000 is requested to be distributed among the following areas:

(1) Grants to States for comprehensive State health planning ($2,500,000);

(2) Project grants for areawide health planning ($2,500,000);

(3) Project grants for training, studies, and demonstrations for comprehensive health planning ($1,000,000).

Formula grants

An increase of $7,250,000 is requested to support grants to States for comprehensive public health services. These grants will assist State health and mental health agencies to establish and maintain adequate public health services of all kinds including training of personnel for State and local health work.

Project grants

(*a*) *Tuberculosis control.*—An increase of $2,550,000 is requested to improve and intensify nationwide tuberculosis control activities.

(*b*) *Venereal disease control.*—An increase of $771,000 is requested to support the nationwide effort to eradicate syphilis. This will provide increased case-finding and follow-up efforts which are required to maintain the eradication effort.

(*c*) *Improving the provision of health services.*—An increase of $1,500,000 is requested to support more projects on the development, testing, and evaluation of methods of providing health services to communities, improvement of laboratory services and other supporting services essential to meet new demands such as those created by medicare, and to improve and increase the provision of family planning services.

Review and approval

An increase of nine positions and $140,000 is requested to strengthen the review and approval activities of this program. Executive secretaries will be assigned to each of the nine regional offices to provide professional, full-time support to the regional grant review committees.

Program direction and technical assistance

An increase of 31 positions and $635,000 is requested to provide intensive and in-depth field and headquarters support and assistance to State and local communities in implementing the provisions of P.L. 89-749. Twenty-five positions will be made available for assignment to State or local planning agencies on request, to work under the supervision of the local director and as part of his staff. The remaining six positions will work in the area of developing methods of measuring program accomplishments.

Built-in

An increase of $1,427,000 is requested to support the full year costs of 97 positions new in 1967 and funded for 15 per cent of the year. The increase is partially offset by $197,000 for nonrecurring contracts, equipment and other program costs.

AUTHORIZING LEGISLATION

"Grants to States for Comprehensive State Health Planning

"SEC. 314. (a)(1) AUTHORIZATION.—In order to assist the States in comprehensive and continuing planning for their current and future health needs, the Surgeon General is authorized during the period beginning July 1, 1966, and ending June 30, 1968, to make grants to States which have submitted, and had approved by the Surgeon General, State plans for comprehensive State health planning. For the purposes of carrying out this subsection, there are hereby authorized to be appropriated $2,500,000 for the fiscal year ending June 30, 1967, and $5,000,000 for the fiscal year ending June 30, 1968.

"Project Grants for Areawide Health Planning

"(b) The Surgeon General is authorized, during the period beginning July 1, 1966, and ending June 30, 1968, to make, with the approval of the State agency administering or supervising the administration of the State plan approved under subsection (a), project grants to any other public or nonprofit private agency or organization to cover not to exceed 75 per centum of the costs of projects for developing (and from time to time revising) comprehensive regional, metropolitan area, or other local area plans for coordination of existing and planned health services, including the facilities and persons required for provision of such services; except that in the case of project grants made in any State prior to July 1, 1968, approval of such State agency shall be required only if such State has such a State plan in effect at the time of such grants. For the purposes of carrying out this subsection, there are hereby authorized to be appropriated $5,000,000 for the fiscal year ending June 30, 1967, and $7,500,000 for the fiscal year ending June 30, 1968.

"Project Grants for Training, Studies, and Demonstrations

"(c) The Surgeon General is also authorized, during the period beginning July 1, 1966, and ending June 30, 1968, to make grants to any public or nonprofit private agency, institution, or other organization to cover all or any part of the cost of projects for training, studies, or demonstrations looking toward the development of improved or more effective comprehensive health planning throughout the Nation. For the purposes of carrying out this subsection, there are hereby authorized to be appropriated $1,500,000 for the fiscal year ending June 30, 1967, and $2,500,00 for the fiscal year ending June 30, 1968.

"Grants for Comprehensive Public Health Services

"(d)(1) AUTHORIZATION OF APPROPRIATIONS.—There are authorized to be appropriated $62,500,000 for the fiscal year ending June 30, 1968, to enable the Surgeon General to make grants to State health or mental health authorities to assist the States in establishing and maintaining adequate public health services, including the training of personel for State and local health work. The sums so appropriated shall be used for making payments to States which have submitted and had approved by the Surgeon General, State plans for provision of public health services.

"Project Grants for Health Services Development

"(e) There are authorized to be appropriated $62,500,000 for the fiscal year ending June 30, 1968, for grants to any public or nonprofit private agency, institution, or organization to cover part of the cost of (1) providing services to meet health needs of limited geographic scope or of specialized regional or national significance, (2) stimulating and supporting for an initial period new programs of health services, or (3) undertaking studies, demonstrations, or training designed to develop new methods or improve existing methods of providing health services. Such grants may be made pursuant to clause (1) or (2) of the preceding sentence with respect to projects involving the furnishing of public health services only if such services are provided in accordance with such plans as have been developed pursuant to subsection (a).

Explanation of transfers

	1967 estimate	Purpose
Comparative transfers from—		
Injury control	80,000	Transfer and consolidation of functions to carry out provisions of the Comprehensive Health Planning and Public Health Services Act of 1966.
Chronic diseases	59,513,000	
Community health practice and research	10,577,000	
Communicable diseases	232,000	
Control of tuberculosis	17,950,000	
Control of venereal diseases	6,229,000	
Dental services and resources	1,000,000	
Medical care services	6,700,000	
Hospital construction activities	5,000,000	
Radiological health	5,000,000	
Mental health research services	6,750,000	
Office of the Surgeon General, salaries and expenses	26,000	

Introduction

In enacting the "Partnership for Health" legislation (P.L. 89–749), the Congress declared that "fulfillment of our national purpose depends on promoting and assuring the highest level of health attainable for every person, in an environment which contributes positively to healthful individual and family living." Recognizing the changing character of health problems, the Congress found that "attainment of this goal depends on an effective partnership, involving close intergovernmental collaboration, official and voluntary efforts, and participation of individuals and organization."

The Congress then declared that "Federal financial assistance must be directed to support the marshalling of all health resources." Additionally, it found that "comprehensive planning for health services, health manpower and health facilities is essential at every level of government." This comprehensive health planning program will provide the resources for developing and strengthening this partnership effort.

Comprehensive health planning is aimed at ensuring that the health needs of the nation receive necessary attention and action. It seeks to achieve an effective allocation of scarce resources between the many pressing health needs of the nation.

In any given State there are more than 40 different programs receiving Federal support for health or health related purposes. These include funds that create resources, provide services or support programs to encourage innovation and to demonstrate new methods. These programs are interrelated in purpose and combined at the point of delivery with State, local and private dollars.

A great deal of planning is undertaken in connection with each of these programs, considered separately. Some of the planning is Statewide. Some of it is based on a locality or a metropolitan area.

But nowhere at the Federal level and seldom in the States has there been a satisfactory method for relating these plans to each other and deciding on relative priorities. The Comprehensive Health Planning and Health Services Act of 1966 is an attempt to provide a focus for this kind of planning and this kind of decision.

Comprehensive health planning neither negates nor diminishes the need for continued or expanded functional or specialized planning. Operating State agencies and other organizations will continue to plan for specialized programs, such

as the construction of health facilities, the development and expansion of community mental health programs, regional medical programs, programs in environmental control, or services for the chronically ill or mentally retarded, and increasing the supply and effective utilization of trained health manpower. The Comprehensive Health Planning legislation provides a framework for strengthening these efforts by relating objectives in these specialized areas to each other and to the overall needs and resources of the State.

Under the provisions of P.L. 89–749 three programs were authorized to begin in fiscal year 1967. This included comprehensive State health planning, areawide health planning, and training, studies and demonstrations for comprehensive health planning. In 1968, subsections (d) and (e) of Section 314 become effective, providing for (1) replacement of a variety of separate categorical formula grants for health services by a single State grant for comprehensive public health services, and (2) expanding and increasing the flexibility available for the types of programs to be supported under the Project Grants for Health Services Development.

The Public Health Service is requesting $143,628,000 in 1968, an increase of $20,071,000 over the 1967 level, to carry out the activities authorized by the Comprehensive Health Planning and Public Health Services Amendments of 1966.

Summary of program

Planning grants	1967 estimate	1968 estimate	Increase
A. Grants to States for comprehensive State health planning	$2,500,000	$5,000,000	+$2,500,000
B. Project grants for areawide health planning	[1] 5,000,000	7,500,000	+2,500,000
C. Project grants for training, studies, and demonstrations	1,500,000	2,500,000	+1,000,000

[1] Authority is requested in the proposed supplemental to permit the unobligated balance of funds appropriated for areawide planning of health facilities, as authorized by sec. 318, to be used for the broadened areawide health planning activities authorized under subsec. 314(b) of the Public Health Services Act, as amended by Public Law 89–749.

The test of the effectiveness of Federal, State and local health efforts is the impact on the health of the individual. The new medicare program has revealed some serious gaps in our ability to provide all needed health services and to make them available and accessible to citizens in each community.

How can we focus all community health resources on the primary problem, provision of health services to people? One approach is an effective comprehensive health planning program directed at utilizing and coordinating all of the health resources available to the community.

The planning process supported by this new program provides for development of local planning approaches which will assist the States and communities to set their own health goals rather than relying on Federal determination of local needs. It will give States some of the resources needed to coordinate the numerous and varied health programs presently operating. By identifying priorities and needs the community will be able to correct deficiencies and provide better health services.

The following programs provide basic support for the development and strengthening of planning for health at Federal, State and local levels.

A. *Formula grants for comprehensive State health planning*

The Surgeon General is authorized to make formula grants to States based on population and per capita income to assist the States in comprehensive and continuing planning for their current and future health needs. For the fiscal years 1967–1968, the period covered under the present authorization, the grant may cover up to 100 per cent of the State's cost for this program. The grant awarded to any State must equal at least one per cent of the total amount appropriated for the program in each fiscal year. These grants may be made only to State agencies. Eligibility of a State to receive the grants depends upon approval by the Surgeon General of a State plan for comprehensive health planning. The plan must designate or establish a State health planning agency and a State health planning council which will be advisory to the agency.

In 1968, we are requesting $5,000,000 for formula planning grants, an increase of $2,500,000 over the level requested in 1967. If $5,000,000 is appropriated, each State would receive a minimum of $50,000 in 1968.

This grant will support comprehensive State-wide planning for health services (public and private), including the facilities and manpower required to provide such services and the coordination of area-wide health planning activities; to stimulate cooperative efforts among State, local and private agencies and organizations concerned with health matters; and to increase cooperation between these groups and similar groups in the fields of education, welfare, and rehabilitation.

The law requires that a majority of the membership of each State health planning council shall consist of representatives of consumers of health services. The use of these councils will bring together service providers and consumers to identify areas of need and to establish goals and priorities for the various health programs, assuring that their efforts will coincide with other economic and social development programs within the State.

In developing its comprehensive plan for health services, the State agency will work with all applicable resources—including government, voluntary, and private agencies. As an example, this would involve health, welfare and education agencies, medical societies, and voluntary organizations engaged in a specific disease control and rehabilitation program, to evaluate plans and develop coordinated actions that relate to the total health needs of the population.

B. Project grants for area-wide health planning

Within a State, the needs of various communities and regions differ widely. To enable an area to develop programs tailored to its own requirements and to fit into a State-wide comprehensive plan, project grants for area-wide planning will be awarded to public or nonprofit regional, metropolitan area, or other local area health planning agencies. The grant may cover up to 75 per cent of the agency's costs. A total of $7,500,000 is requested in 1968 for these area-wide planning grants, an increase of $2,500,000 over the 1967 level.

Effective July 1, 1967, P.L. 89–749 repeals Section 318 of the Public Health Service Act which provides grants for area-wide health facility planning. As a result, area-wide planning groups will broaden the scope of their activities from their previous focus on facility planning to planning for the provision of the full spectrum of health services in their area. This differs from the previous concentration by some of these area-wide groups on planning for the provision of services solely from a hospital or medical facility base. Applications for the support of these area-wide health planning projects must be submitted to the designated State planning agency funded under the formula grant for planning provisions of P.L. 89–749.

These grants will assist in developing (and from time to time revising) comprehensive regional, metropolitan area, or other local area plans for coordination of existing and planned health services, including the facilities and persons required for the provision of such services. The area-wide health planning agency, in collaboration with other planning and operating agencies and organizations, should serve as the focus for community discussion and identification of health goals and needs and as the stimulator of action to coordinate and make maximum use of existing and planned facilities, services and manpower in the fields of physical, mental, and environmental health.

Under this program, some communities will be able to build on the initial developmental and planning work of area-wide hospital and medical facilities planning groups.

In development of an area-wide plan, cooperation among local resources such as departments of health, welfare, education and rehabilitation, voluntary organizations, medical societies, hospitals and other facilities will be essential. All specific health service projects, such as home care, mass immunization, and screening programs will be considered in developing the area-wide plan and will be tailored to meet special health, manpower and facilities problems that may exist in the area.

Current patterns of health services in some communities are not meeting the needs of the people, although available health resources, if properly organized, would be sufficient. Thus, a project in an urban area might develop a plan redirecting and coordinating the use of available or additional health resources to meet the needs of all persons in the area. A variety of approaches could be adopted, depending upon the nature of the area and the specific problems involved. Development of a single community emergency service, for example, instead of three or four different ones, each of which duplicates use of expensive equipment and scarce personnel, might lead to a beter utilization of health services.

Another area might develop a plan whereby rural people could be brought to a central service point if the sparse population made it impractical to construct facilities or provide services throughout the area.

C. Project grants for training, studies, and demonstrations for comprehensive health planning

Much of the success of both State and area-wide comprehensive health planning activities will depend upon the skills and techniques of planning personnel. Since few persons in the health field have been trained in, or have been able to devote their full efforts to comprehensive health planning, there is a need for experimentation with and training in techniques, such as program evaluation and planning, health status surveys, analyses of patient origin and preference and projections of population growth and movement and systems and cost benefit analysis. Concurrently, there is a need for studies, demonstrations and training aimed at developing closer working relationships between health personnel and others concerned with community planning and development.

Section 314(c) of the PHS Act authorizes the Surgeon General to make grants for training, studies, or demonstrations for the development of improved or more effective comprehensive health planning throughout the nation. Highest priority for Section 314(c) support will be given to training activities, especially those that promise most immediately to increase the supply of qualified health planners.

Among the projects which would be supported are:

A. A variety of university-based training programs. The development of curricula would have high priority among the initial efforts of these institutions. The curricula would provide (1) full-time graduate study in comprehensive health planning, (2) specialized courses in planning available to students enrolled in graduate health programs, (3) specialized health courses available to students enrolled in graduate planning or related programs, and (4) a program of continuing education including short courses, conferences, symposia or other methods of providing initial or refresher training for health and planning professionals and orienting citizens or other interested groups.

B. Studies and demonstrations which would aid a community to develop or improve its capacity to organize and conduct comprehensive health planning. For example, employment in health departments, hospital planning councils or health and welfare agencies of persons trained in planning to introduce techniques and methods of planning and to maintain liaison with related planning agencies; assignment of public health personnel to other agencies to provide technical assistance with health aspects of other programs; establishment of community councils of health, health-related welfare and planning officials to develop broad strategies for program coordination.

C. Projects demonstrating different organizational and operational systems for multi-state metropolitan planning. These may utilize State or regional commissions, existing general purpose regional councils of government, such as Washington's Council of Governments, or San Francisco's Association of Bay Area Governments.

D. Studies and demonstrations which would provide generally new knowledge, methods and techniques contributing to the improvement of planning activities. For example, development of information systems to serve health and other community planning needs, or special projects linking health services with the community development activity, such as urban renewal, conservation, or rehabilitation.

In 1968 we are requesting $2,500,000 for these grants, an increase of $1,000,000 over the 1967 level.

Allocations of grants to States for comprehensive State health planning

State or territory	1966 allocation	1967 allocation	1968 estimate
Alabama		$52,200	$104,400
Alaska		25,000	50,000
Arizona		25,000	50,000
Arkansas		31,200	62,500
California		158,200	316,300
Colorado		25,000	50,000
Connecticut		25,000	50,000
Delaware		25,000	50,000
District of Columbia		25,000	50,000
Florida		68,000	136,100
Georgia		59,200	118,300
Hawaii		25,000	50,000
Idaho		25,000	50,000
Illinois		92,300	184,700
Indiana		50,700	101,300
Iowa		30,600	61,300
Kansas		25,100	50,200
Kentucky		45,800	91,700
Louisiana		49,700	99,400
Maine		25,000	50,000
Maryland		32,400	64,800
Massachusetts		47,600	95,200
Michigan		78,700	157,400
Minnesota		39,500	79,000
Mississippi		42,600	85,200
Missouri		45,600	91,300
Montana		25,000	50,000
Nebraska		25,000	50,000
Nevada		25,000	50,000
New Hampshire		25,000	50,000
New Jersey		59,500	118,900
New Mexico		25,000	50,000
New York		150,800	301,600
North Carolina		67,800	135,500
North Dakota		25,000	50,000
Ohio		102,200	204,300
Oklahoma		31,400	62,900
Oregon		25,000	50,000
Pennsylvania		116,900	233,700
Rhode Island		25,000	50,000
South Carolina		40,500	81,000
South Dakota		25,000	50,000
Tennessee		54,600	109,100
Texas		127,200	254,500
Utah		25,000	50,000
Vermont		25,000	50,000
Virginia		52,500	105,000
Washington		29,900	59,900
West Virginia		25,000	50,000
Wisconsin		43,900	87,800
Wyoming		25,000	50,000
Guam		25,000	50,000
Puerto Rico		48,400	96,700
Virgin Islands		25,000	50,000
American Samoa		25,000	50,000
Total		2,500,000	5,000,000

Formula grants

	1967 estimate	1968 estimate	Increase
Grants, subsidies, and contributions	$55,250,000	$62,500,000	+$7,250,000

Since 1935, the Public Health Service, through grants-in-aid, has provided financial assistance to States for public health activities on a continuing basis. This assistance has usually been in the form of separate categorical grants earmarked for use in meeting specific disease problems. Grants were made for general health services, tuberculosis control, chronic disease services, heart disease control, cancer control, mental health services, dental health services, radiological health services, and home health services. Funds appropriated for each of these categories could not be transferred by the States to any other of the specific categories, and could not be used to support other public health activities. This lack of flexibility shaped a highly structured approach in federally-assisted health programs.

Public Law 89–749 removed the categorical restrictions effective with fiscal year 1968 and authorized the Surgeon General to make grants to State health and mental health authorities to assist States in establishing and maintaining adequate public health services including the training of personnel for State and local health work. This new single grant to States provides a flexible means for support, development and expansion of public health services aimed at meeting the health needs of the citizens of each State according to priorities established by the State.

From the amount appropriated each year, the Surgeon General is authorized to make allotments determined on the basis of population and financial need to States which have a State plan approved by the Surgeon General. The State plan must be administered by the State health authority (or, with respect to mental health, the State mental health authority), and must give assurances that the grants will promote public health services in localities and that there will be maximum local participation. Health services under the plan must be in accordance with standards prescribed by the Surgeon General as to scope and quality

New funding provisions of P.L. 89–749 are:

1. Each State will be paid from its annual allotment a Federal share of the expenditures incurred by the State in accordance with its approved plan. The level of Federal matching of State funds will vary from State to State, ranging from one-third to two-thirds of the costs incurred, depending on each State's per capita income.

2. Public health services supported by these grants must be in accordance with plans developed by the State planning agency created under the provisions of P.L. 89–749.

3. At least 15 per cent of a State's allotment must be available only to the State mental health authority for the provision of mental health services.

Activities that might be supported by these funds are (a) nursing services to treat, care for, rehabilitate, control, or reduce the impact of chronic diseases; (b) stimulation of programs for the prevention and control of dental disease; (c) organize and assist manpower programs to extend and make more efficient use of professional health resources; (d) immunization, epidemiology, follow-up care, case finding and treatment services for rheumatic fever, tuberculosis, venereal diseases, or other communicable diseases; (e) provision, expansion, and coordination of services to reach persons who do not have ready access to such services; (f) prevention or reduction of the incidence or impact of mental illness or disability by community mental health services; (b) protecting people from foodborne diseases, radiation, pesticides, and other environmental hazards, and (i) reducing the toll of death and disability from accidents.

A total of $62,500,000 is requested for this grant program in 1968, an increase of $7,250,000 over the 1967 level.

Allocations of grants for comprehensive public health services

State or territory	1966 allocation [1]	1967 allocation [1]	1968 estimate
Alabama	$1,250,200	$1,192,500	$1,316,100
Alaska	371,100	371,800	381,400
Arizona	549,000	550,500	607,400
Arkansas	847,000	799,200	867,900
California	3,763,500	3,651,100	4,316,200
Colorado	587,300	582,600	652,100
Connecticut	628,500	623,100	724,200
Delaware	364,200	364,900	382,900
District of Columbia	394,200	393,500	421,900
Florida	1,801,900	1,708,600	1,917,400
Georgia	1,361,100	1,301,000	1,457,700
Hawaii	394,300	393,500	418,700
Idaho	425,100	421,900	446,300
Illinois	2,386,200	2,282,100	2,659,000
Indiana	1,288,900	1,226,500	1,399,400
Iowa	881,100	816,900	913,500
Kansas	716,400	675,500	754,600
Kentucky	1,155,400	1,090,700	1,202,600
Louisiana	1,148,000	1,105,900	1,232,600
Maine	461,400	460,300	494,900
Maryland	820,400	804,000	931,000
Massachusetts	1,332,600	1,252,700	1,441,900
Michigan	1,994,100	1,879,500	2,173,900
Minnesota	1,048,000	989,600	1,115,300
Mississippi	1,033,300	971,300	1,053,100
Missouri	1,270,600	1,202,400	1,360,900
Montana	411,900	412,100	436,800
Nebraska	531,400	526,000	577,200
Nevada	375,800	379,000	395,000
New Hampshire	391,500	392,400	416,300
New Jersey	1,497,800	1,443,900	1,686,400
New Mexico	463,400	465,400	501,300
New York	4,002,800	3,802,500	4,444,400
North Carolina	1,538,000	1,464,700	1,640,500
North Dakota	411,700	410,500	433,300
Ohio	$2,508,100	$2,373,800	$2,736,100
Oklahoma	852,700	804,500	890,900
Oregon	592,200	584,200	652,900
Pennsylvania	3,038,800	2,856,900	3,264,100
Rhode Island	405,900	406,000	437,600
South Carolina	927,300	874,600	965,500
South Dakota	420,500	417,400	441,400
Tennessee	1,340,200	1,275,300	1,411,800
Texas	2,858,100	2,747,000	3,125,000
Utah	446,800	444,500	479,900
Vermont	378,900	378,100	392,300
Virginia	1,256,400	1,196,300	1,354,700
Washington	827,600	773,400	878,200
West Virginia	677,800	650,500	713,600
Wisconsin	1,150,800	1,089,400	1,235,700
Wyoming	373,800	373,400	385,000
Guam	298,700	304,200	307,000
Puerto Rico	1,041,200	1,026,700	1,120,500
Virgin Islands	256,100	265,700	267,300
American Samoa			266,400
Total	57,550,000	55,250,000	62,500,000

[1] Totals shown represent a combination of grants for cancer control, chronic illness and aged, dental health, general health, heart disease control, home health services, mental health, radiological health, and tuberculosis control.

Summary of program

Project grants for health service development	1967 estimate	1968 estimate	Increase
Cancer	$14,500,000	$14,500,000	
Mental retardation	5,500,000	5,500,000	
Tuberculosis control	14,950,000	17,500,000	+$2,550,000
Venereal disease control	6,229,000	7,500,000	+771,000
Radiological health	2,500,000	2,500,000	
Chronic and disabling diseases	10,500,000	10,500,000	
Improving the provision of health services	3,500,000	5,000,000	+1,500,000

Under P.L. 89–749, part (e) of Section 314 authorizing project grants for health service development becomes effective on July 1, 1967. The distribution of funds for these project grants, shown above, is advisory only. The figures shown represent the best estimates at the current time of the probable distribution of funds required to support project grant applications to meet various health problems. This increased flexibility is another action to permit greater participation by local communities and the States in the identification of health problems and allocation of the resources.

Another major change in the same direction, is the planned decentralization of review and approval on these grants to the regions. Nine regional Health Advisory Review Committees are being established to advise the Regional Health Director and to recommend approval or disapproval of project grants.

Health services grants applications to be supported under this grant program must be reviewed by the designated State Planning Agency funded under Section 314(a).

These grants are awarded to non-profit organizations and institutions, and State and local health agencies for developing, testing, and evaluating community services with emphasis on the application of new techniques and methods in demonstrating the provision of health services and training.

The projects supported by this grant serve as the bridge between research and full-scale application of new or improved health service. Once proven in a demonstration or pilot undertaking in a variety of settings, these methods are disseminated to other communities and integrated into ongoing health programs.

Some objectives of this program are:

1. To effect further reductions in the death rates from cervical cancer. In 1967, support will be extended to more than 150 hospital-based detection projects, aimed at a low income, high incidence group.

2. To provide a two-pronged approach to the health problems of the mentally retarded. Project grants will support educational institutions, communities, and States in planning, development, and coordination of training programs to increase the number of skilled workers in mental retardation. Additional grants will provide assistance for coordination of resources and information, development of statistical bases, and demonstration of improved means of delivering services and care.

3. To support the establishment of high-quality out-patient clinical programs for the treatment and prevention of tuberculosis in cities, counties and regions where such a need exists. An increase of $2,550,000 is requested for 1968 for expanded programs in this area.

4. To provide personnel in lieu of funds to State and local health agencies in establishing and maintaining effective venereal disease control programs. An increase of $771,000 is requested for 1968 to support epidemiological investigations and follow-up treatment to reduce the level of infections syphilis.

5. To support field testing of techniques for early detection, improved diagnosis, and rehabilitation of chronic respiratory disease victims, demonstrations of satellite community clinical services for neurological patients; and demonstrations of hemodialysis procedures in the treatment of chronic kidney disease. For heart disease, stroke, and related problems of the aged, project grants will support field testing of techniques for mass screening, diagnostic validation, treatment, rehabilitation, and follow up.

6. To support the training of specialists and technicians who must carry out the wide range of radiological health problems in States and at the local level. Lack of sufficient trained personnel contributes to unnecessary radiation exposure for members of various occupations and the public.

7. To support an increased number of projects in areas such as coordination of care, improved organization of health services, family planning services, and improvement of laboratory services, an increase of $1,500,000 is requested for project grants to improve the provision of health services.

In summary, a total of $62,500,000 is requested for these Comprehensive Health Services Project Grants in 1968. This is an increase of $4,821,000 over 1967.

Direct operations

	1967 estimate		1968 estimate		Increase or decrease	
	Positions	Amount	Positions	Amount	Positions	Amount
Personnel compensation and benefits	204	$1,258,000	244	$2,789,000	+40	+$1,531,000
Other expenses		370,000		839,000		+469,000
Total	204	1,628,000	244	3,628,000	+40	+2,000,000

A full professional staff is essential if the Public Health Service is to provide the necessary imaginative and efficient programming, analysis, evaluation, and administration of the grant programs authorized by the Comprehensive Health Planning and Public Health Services Act of 1966.

An increase of 40 positions and $775,000 is requested in new program to administer the provisions of this act. The additional staff requested will provide the type of central direction and field organization required to make the programs truly effective. A detailed summary of the requested increases is provided below.

	1967 estimate	1968 estimate	Increase
Review and approval	$756,000	$1,200,000	+$444,000

In 1968, for the first time, all applications for formula grants and project grants for Comprehensive Health Services will be received, reviewed and approved in the regional offices. The practice to date has been to have one advisory committee in Washington, D.C. review all grant applications, and for approval of all grants to be made solely at headquarters.

In line with the present policy as stated by both the Secretary and the Surgeon General, every effort is being made to bring the decisions on health needs and services closer to the State and local level. To that end we have requested a strengthening of the regional offices in 1967.

We also plan to establish Regional Health Advisory Committees in each of the nine D.H.E.W. regions. All grant applications will be sent to the regional office rather than a multiplicity of programs in Washington. The Regional Health Advisory Review Committees will review these grants, and make their recommendations for approval and disapproval to the Regional Health Director. These committees will review applications for Planning Grants to States, Area-wide Planning Grants, Formula grants for health services, and Project grants for health services.

Experience in other programs has shown that a full-time professional executive secretary is necessary to the successful operation of such a review committee. This individual assists in the initial review of grant applications; performs site and review visits along with committee members, and works closely with potential grant applicants.

We are therefore requesting nine positions and $140,000 to establish an executive secretary position in each of nine regions so as to strengthen the regional review process. Such staff support is a prerequisite for gaining full value from the non-federal experts who will serve as members of these review committees.

An additional increase of $304,000 provides for built-in changes due to the annualization of 18 positions new in 1967 and their related costs.

	1967 estimate	1968 estimate	Increase
Program direction and technical assistance	$872,000	$2,428,000	+$1,556,000

Recognizing that trained manpower is one of the major keys to the success of State and local planning, an increase of 25 positions is requested to make Federal personnel available for assignment. This will make a total of 50 such positions available for assignment to State and local planning agencies in 1968. They will be placed in planning agencies on request, operating under the supervision of the local director and as a part of his staff. The assignees will form part of the essential nucleus of trained manpower needed to move forward in planning at the State and local level. Without such personnel the identification of problems, the gathering and analysis of data and the application of planning already done by other groups will continue to proceed slowly and on a part-time basis.

In recent years the Public Health Service has been concerned about the need for developing better methods for determining the impact of its formula grant and project grant programs. Requests from the States indicate that they too are concerned about developing better ways of measuring the total impact of health programs.

In the past our measurement of effectiveness of grant funds to the States was usually expressed in terms such as numbers of personnel employed, laboratory examinations performed, or home health visits made. Although this information has been helpful, it has failed to indicate the impact of Federal dollars on the health status of people. With the growth of improved measurement tools, such as refined sampling techniques, cost-benefit analysis and greater capability to handle large quantities of data, we believe more meaningful indices of accomplishments can be developed and serve as a basis for improved program evaluation.

We are requesting an increase of six positions to work specifically on developing improved methods of measuring program accomplishments.

An increase of 31 positions and $635,000 is requested to expand the program direction and technical assistance activity. An additional increase of $1,123,000 for built-in changes resulting from new positions authorized in 1967 is partially offset by a decrease of $202,000 for nonrecurring program costs and one less day's pay in 1968.

New positions requested, fiscal year 1968

Direct operations

	Grade	Annual salary
Review and approval: (9) Public health program specialist	GS-14	135,954
Total (9)		135,954
Program direction and technical assistance:		
Public health program specialist (11)	GS-14	166,166
Public health program specialist (10)	GS-13	128,730
Public health program specialist (6)	GS-12	65,562
Public health program specialist	GS-9	7,696
Administrative assistant	GS-7	6,451
Clerical assistant	GS-5	5,331
Clerical assistant	GS-4	4,776
Total (31)		384,712
Total new positions, all activities (40)		502,66

FRIDAY, APRIL 14, 1967.

OFFICE OF THE SURGEON GENERAL, SALARIES AND EXPENSES

WITNESSES

DR. LEO J. GEHRIG, DEPUTY SURGEON GENERAL
JOHN H. KELSO, EXECUTIVE OFFICER
DR. WILLIAM H. STEWART, SURGEON GENERAL
G. R. CLAGUE, ACTING CHIEF FINANCE OFFICER
JAMES B. CARDWELL, DEPUTY ASSISTANT SECRETARY, BUDGET

Object classification

[In thousands of dollars]

		1966 actual	1967 estimate	1968 estimate
	Personnel compensation:			
11.1	Permanent positions	4,998	6,090	7,147
11.3	Positions other than permanent	48	46	49
11.5	Other personnel compensation	40	4	4
	Total personnel compensation	5,086	6,141	7,200
12.0	Personnel benefits	442	538	600
21.0	Travel and transportation of persons	146	232	261
22.0	Transportation of things	14	19	27
23.0	Rent, communications, and utilities	216	206	239
24.0	Printing and reproduction	198	200	242
25.1	Other services	88	35	36
25.2	Services of other agencies	288	242	350
26.0	Supplies and materials	66	63	69
31.0	Equipment	44	45	64
99.0	Total obligations	6,587	7,722	9,087

Personnel summary

	1966 actual	1967 estimate	1968 estimate
Total number of permanent positions	607	665	775
Full-time equivalent of other positions	7	7	7
Average number of all employees	521	585	677
Average GS grade	8.0	8.2	8.7
Average GS salary	$8,429	$9,028	$9,403

Program and financing

[In thousands of dollars]

		1966 actual	1967 estimate	1968 estimate
	Program by activities:			
	1. International health activities	254	266	319
	2. Management and central services	6,239	7,456	8,768
	3. Adjustment of prior year costs	−30		
	Total program costs, funded [1]	6,463	7,722	9,087
	Change in selected resources [2]	124		
10	Total obligations	6,587	7,722	9,087
	Financing:			
16	Comparative transfers to other accounts	44	43	
25	Unobligated balance lapsing	226	33	
	New obligational authority	6,858	7,798	9,087
	New obligational authority:			
40	Appropriation	6,648	7,858	9,087
41	Transferred to "Hospitals and medical care" (42 U.S.C. 226)		−60	
42	Transferred from (42 U.S.C. 226)—			
	"Chronic diseases and health of the aged"	15		
	"Community health practice and research"	10		
	"Communicable disease activities"	25		
	"Control of tuberculosis"	5		
	"Control of venereal diseases"	5		
	"Hospital construction activities"	6		
	"Environmental health sciences"	8		
	"Air pollution"	10		
	"Environmental engineering and sanitation"	3		
	"Occupational health"	2		
	"Radiological health"	6		
	"Hospitals and medical care"	11		
	"Foreign quarantine activities"	1		
	"Indian health activities"	11		
	"General research and services, National Institutes of Health"	2		
	"National Institute of General Medical Sciences"	2		
	"National Institute of Child Health and Human Development"	1		
	"National Cancer Institute"	55		
	"National Institute of Mental Health"	12		
	"National Heart Institute"	3		
	"National Institute of Arthritis and Metabolic Diseases"	3		
	"National Institute of Allergy and Infectious Diseases"	1		
	"National Institute of Neurological Diseases and Blindness"	2		
	"National Library of Medicine"	1		
	"Water supply and water pollution control"	10		
43	Appropriation (adjusted)	6,858	7,798	9,087
	Relation of obligations to expenditures:			
10	Total obligations	6,587	7,722	9,087
70	Receipts and other offsets (items 11 to 17)	44	43	
71	Obligations affecting expenditures	6,632	7,765	9,087
72	Obligated balance, start of year	129	342	1,207
74	Obligated balance, end of year	−342	−1,207	−1,094
77	Adjustments in expired accounts	−30		
90	Expenditures	6,389	6,900	9,200

[1] Includes capital outlay as follows: 1966, $31,000; 1967, $40,000; 1968, $64,000.
[2] Selected resources as of June 30 are as follows: Unpaid undelivered orders: 1965, $190,000 (1966 adjustments, −$30,000); 1966, $284,000; 1976, $284,000; 1968, $284,000.

Mr. NATCHER. Mr. Gehrig, you will justify this request, is that correct?

Dr. GEHRIG. Yes, sir.

Mr. NATCHER. Do you have a statement to make to the committee, Dr. Gehrig?

Dr. GEHRIG. I do.

Mr. NATCHER. We will be glad to hear from you at this time.

Dr. GEHRIG. I have with me Mr. John Kelso, the Executive Officer for the Public Health Service, and Mr. G. R. Clague, Acting Chief Finance Officer.

Mr. NATCHER. We are glad to have you with us again, gentlemen. All right, Doctor, you go right ahead.

GENERAL STATEMENT

Dr. GEHRIG. Mr. Chairman and members of the committee, I am pleased to appear before you to discuss salaries and expenses of the Office of the Surgeon General. This appropriation finances the principal staff offices which seek to coordinate the activities of the five bureaus, the National Library of Medicine and the National Center for Health Statistics and to establish effective relationships with other agencies whose missions are related to health. It also supports certain functions which can most efficiently be conducted on a centralized basis.

The Surgeon General and other witnesses have already discussed with you the major reorganization of the Service which has just been put into effect. One of its primary purposes was to realine our programs to generate a more cohesive attack upon each of our major missions. Another principal purpose was to bring the same kind of cohesion to the operations of the Service as a whole.

Our activities are extremely diverse. We work with a great variety of partners and serve a variety of clienteles. Yet everything we do is directed toward the same ultimate goal, to improve the health of people. Priorities need to be assessed, policies determined and activities interrelated in the context of this total commitment to health.

The Office of the Surgeon General is the place where these many lines of activity converge. It is also the point of primary interaction between the Service and the Office of the Secretary, the other agencies of the Department with health missions, and other Federal and non-Federal agencies whose work relates to ours.

For these reasons we have considered that the strengthening of the Office of the Surgeon General is a matter of high urgency. We have given it full and thoughtful attention in the reorganization process. We have been particularly concerned with improving our capability for planning and evaluation, for activties related to legislation, and for efficient administrative and personnel management.

We are requesting, therefore, an increase in 1968 of 110 positions and $1,365,000 over the comparable figures for 1967.

Enormous growth, both in size and in diversity of responsibility, has characterized the Public Health Service in recent years. In less than two decades it has become the world's foremost supporter of biomedical research, a primary force in the development of health manpower and facilities, and a source of stimulation and support for new ways of bringing health care within reach of all the American people. The responsibilities of the Surgeon General have broadened and increased accordingly.

Yet there has been no corresponding increase in the immediate staff support essential to him in discharging these heavy responsibilities. The 110 new positions requested are intended to help meet this need.

They include 59 for the Office of Administrative Management, 16 for the Office of Program Planning and Evaluation, 15 for the Office of Personnel and 20 for other organizational units of the Office of the Surgeon General.

OFFICE OF ADMINISTRATIVE MANAGEMENT

The Office of Administrative Management has been newly established under the reorganization of the Public Health Service. It brings together, under the direction of the Executive Officer, the servicewide management support units located in the Office of the Surgeon General. This office advises the Surgeon General and his top-level staff officers on management implications of Public Health Service plans and operations. It assists in establishing policy and providing servicewide leadership in the areas of budget and fiscal administration, procurement and materiel management, internal audit, data management, organizational planning, and planning and utilization of buildings and facilities.

We are requesting 59 additional positions to cope with the constantly expanding workload resulting from new and expanded programs. We need to improve the effectiveness of our administration of grants and contracts which are becoming more numerous each year. We plan to establish a system development staff to develop, operate, and maintain a coordinated management and program information system for the Office of the Surgeon General.

FINANCIAL MANAGEMENT

While substantial progress has been made in improving overall financial management, we have not always been able to keep pace with problems of rapid program growth. We must still grapple with the growing volume of financial information and devise techniques for extracting from this mass the essential data needed for making key decisions. A significant strengthening is needed in our capacity to assess quickly and accurately the budgetary implications of policy and program proposals, to process and report current accounting and other fiscal data in more meaningful forms, and to update and simplify our entire system of budgetary and expenditure controls. These advances are essential components of the Surgeon General's total effort to exert more effective direction and leadership over program development and implementation in the Public Health Service.

CONSTRUCTION PLANNING

The continuing growth of the Service generates a continuing need for expansion and improvement of its physical plant. We are requesting seven additional positions in the Division of Buildings and Facilities to strengthen our competency in construction planning, in development of guides and procedures for maintenance and repair, in acquisition of new space, and in the design and layout of research laboratories and hospitals.

PROGRAM PLANNING AND EVALUATION

In the Office of Program Planning and Evaluation, we are requesting 16 additional positions to help provide staff services relative to longe-range planning, evaluation, and health policy formulation. This office faces important new and expanded responsibilities including coordination of a servicewide planning-programing-budgeting system. It is also applying methods of health systems analysis and research to identify cost-benefit criteria applicable to various program areas.

Mr. NATCHER. Regarding the 16 additional positions, this is the item for which you are requesting an additional $191,700?

Dr. GEHRIG. The 16 positions are related to an increase in dollar costs of $186,600.

Mr. CARDWELL. If you included nonpersonal service costs, your figure of $191,700 would be correct.

Mr. NATCHER. Go right ahead, Doctor.

Dr. GEGRIG. Fundamental to the success of our health programs and those we carry out with other agencies of Government is our ability to attract, develop, and retain high quality health personnel. The personnel function of the service has been the subject of several studies, and we are continuing our review of this vital area. Fifteen positions are requested in this budget to improve our personnel efforts particularly in recruitment, career development, and the automation of personnel information and processing procedures.

Mr. Chairman, we are at a time when the just aspirations of the American people for better health far exceed the resources available to fulfill them. At such a time there is a critical need for responsible administration, for striking and maintaining a balance among competing demands for support—demands each of which is fully justified but none of which can be fully met because of limits on the total resource.

The Office of the Surgeon General should be equipped to view the Nation's health broadly and in depth and to present to you and to the Nation a balanced picture of needs and priorities. The increases we request this year are intended to help us direct the programs of the Service in such a way that maximum benefit is achieved.

I shall be glad to answer any questions the committee may have.

SUMMARY OF BUDGET REQUEST

Mr. NATCHER. The adjusted appropriation for 1967 is $7,722,000 and the request for 1968 is $9,087,000, an increase of $1,365,000, and 110 positions. There are increases for each of the eight identified parts of your office, except the Office of Information. From time to time we hear rumblings about not allowing any additional personnel increase for administration and executive direction.

Do you want to say anything to the committee along this line? I go back to what I just said—you are asking increases for each of your activities that are identified in the budget schedules except one.

Dr. GEHRIG. There are identifiable areas within the Office of the Surgeon General in which increases are not anticipated, and I would be pleased to submit to you a list of those areas in which no increase is planned.

Mr. NATCHER. Suppose you submit that.

Dr. GEHRIG. We will.

(The information follows:)

ORGANIZATIONS AND FUNCTIONS IN THE OFFICE OF THE SURGEON GENERAL FOR WHICH NO POSITION INCREASES ARE REQUESTED FOR 1968

International Health Activities:
- Bilateral Programs Staff
- Technical Resources Staff

Management and Central Services:
- Office of Program Planning and Evaluation:
  - Office of the Director
- Office of Extramural Programs:
  - Office of the Director
  - Committee Management Staff
  - Policy and Procedure Staff
- Office of Administrative Management:
  - Office of the Director
  - Division of Buildings and Facilities:
    - Facilities Requirement Branch
    - Maintenance and Repair Branch
  - Division of Grants and Contracts:
    - Office of the Director
    - Negotiated Contracts Branch
  - Division of Internal Audit
  - Division of Procurement and Materiel Management
  - Office of Personnel:
    - Employee Relations
    - Job Evaluation
    - Research and Standards
    - Program Evaluation
    - Manpower Reports
    - OSG Services
    - Administrative Services
    - Program Direction
  - Office of Information

Dr. GEHRIG. In looking across the activities of the Office of the Surgeon General, we have attempted to be selective in our planned increases within these offices. We have also attempted to establish a priority of needs within them. The Surgeon General, as I indicated in my statement, has had a broad and diverse area of responsibility, and in our attempt to better equip him to manage it from the point of view of priority setting, information for his judgments as well as those of the committee and elsewhere have, in our opinion, required this spread of increase in positions.

PAYMENTS TO CIVIL SERVICE BOARD OF EXAMINERS

Mr. NATCHER. You have an increase of $93,000 budgeted for payments to Civil Service Boards of Examiners. We have touched on this a little in connection with our other budgets, but I still am uncertain as to the details. As I understand it now, Doctor, we have had this general activity in the past but the cost has been small and it

hasn't been set out as an identifiable item in the budget. There is a change proposed and the cost seems to be up. Do you want to explain this to us now, Doctor?

Dr. GEHRIG. The Civil Service Commission is modernizing the entire system for recruiting and staffing the civil service. It is establishing a network of 65 Interagency Boards of Examiners in major population centers to replace the more than 650 existing individual Agency Boards in order to provide a more efficient and effective method for filling positions in the Federal competitive civil service. The cost of the network of Interagency Boards of Examiners is to be shared by all participating agencies on a pro rata basis. The $93,000 is the estimated PHS share of this cost, and is, as far as the PHS is concerned, a mandatory requirement.

Mr. NATCHER. Mr. Laird?

Mr. LAIRD. No questions.

Mr. NATCHER. Thank you very much, Doctor.

JUSTIFICATION MATERIAL

Office of the Surgeon General, Salaries and Expenses

Amounts available for obligation

	1967	1968
Appropriation	$7,858,000	$9,087,000
Transfer to "Hospitals and medical care"	−60,000	
Comparative transfer from "Communicable disease activities"	135,000	
Comparative transfer to—		
"Health manpower and utilization"	−53,000	
"National Library of Medicine"	−62,000	
"Comprehensive health planning and services"	−26,000	
"Office of the General Counsel, salaries and expenses"	−37,000	
Total	7,755,000	9,087,000

Obligations by activity

	1967 estimate		1968 estimate		Increase or decrease	
	Positions	Amount	Positions	Amount	Positions	Amount
International health activities	25	$266,000	29	$319,000	+4	+$53,000
Management and central services:						
Immediate Office of the Surgeon General	41	618,800	49	718,800	+8	+100,000
Office of Program Planning and Evaluation	50	536,200	66	722,800	+16	+186,600
Office of Legislative Affairs	8	78,300	14	134,400	+6	+56,100
Office of Extramural Programs	18	243,400	20	277,400	+2	+34,000
Office of Administrative Management	283	3,425,200	342	4,085,500	+59	+660,300
Office of Personnel	179	1,872,400	194	2,133,100	+15	+260,700
Office of Information	61	681,700	61	696,000		+14,300
Total obligation	665	7,722,000	775	9,087,000	+110	+1,365,000
Unobligated balance, Reserve		33,000				−33,000
Total, obligations and balance	665	7,755,000	775	9,087,000	+110	+1,332,000

Obligations by object

		1967 estimate	1968 estimate	Increase or decrease
	Total number of permanent positions	665	775	+110
	Full-time equivalent of all other positions	7	7	
	Average number of all employees	585	677	+92
11	Personnel compensation:			
	Permanent positions	$6,090,500	$7,146,900	+$1,056,400
	Positions other than permanent	45,900	49,400	+3,500
	Other personnel compensation	4,200	4,200	
	Total personnel compensation	6,140,600	7,200,500	+1,059,900
12	Personnel benefits	538,500	599,700	+61,200
21	Travel and transportation of persons	232,400	260,800	+28,400
22	Transportation of things	19,300	26,800	+7,500
23	Rent, communications, and utilities	206,000	239,200	+33,200
24	Printing and reproduction	200,500	242,400	+41,900
25	Other services	35,100	35,600	+500
	Services of other agencies	241,900	349,900	+108,000
26	Supplies and materials	63,200	68,600	+5,400
31	Equipment	44,500	63,500	+19,000
	Total obligations by object	7,722,000	9,087,000	+1,365,000

Summary of changes

1967 enacted appropriation	$7,858,000
Transferred to "Hospitals and medical care"	−60,000
Comparative transfer from "Communicable disease activities"	135,000
Comparative transfers to:	
"Health manpower education and utilization"	−53,000
"National Library of Medicine"	−62,000
"Comprehensive health planning and services"	−26,000
"Office of the General Counsel, salaries and expenses"	−37,000
Unobligated balance—reserve	−33,000
1967 total estimated obligations	7,722,000
1968 estimated obligations	9,087,000
Total change	+1,365,000

	Base		Changes from base	
	Positions	Amount	Positions	Amount
Increases:				
A. Built in:				
1. Annualization of 34 new positions authorized in 1967				$35,100
2. Payments to Civil Service Board of Examiners				93,000
B. Program:				
1. International health activities	25	$266,000	4	51,000
2. Immediate Office of the Surgeon General	41	618,800	8	96,000
3. Office of Program Planning and Evaluation	50	536,200	16	191,700
4. Office of Legislative Affairs	8	78,300	6	56,100
5. Office of Extramural Programs	18	243,400	2	34,000
6. Office of Administrative Management	283	3,425,200	59	656,600
7. Office of Personnel	179	1,872,400	15	169,700
8. Office of Information	61	681,700		16,300
Total program increases			110	1,271,400
Decreases:				
A. Nonrecurring items:				
1. 1 less day of pay (261 days in 1967; 266 in 1968)				−16,500
2. Rental of office space				−11,000
3. Equipment purchases				−7,000
Total, decreases				−34,500
Total, net changes requested			+110	+1,365,000

EXPLANATION OF CHANGES

International Health Activities.—An increase of four positions and $51,000 is requested to augment the multilateral program staff in the area of surveillance auditing and evaluation of world health programs from documents received from International Organizations. The additional positions are needed as a result of workload generated by the increased involvement and participation of the Department of Health, Education, and Welfare and Public Health Service in International Programs and Activities.

Immediate Office of the Surgeon General.—An increase of 8 positions and $96,000 is requested to provide the Surgeon General with high-level advisory staff with broad capabilities in such areas as issues and questions of National Policy on total health problems; application of modern communications and computer technology to delivery of health service, health problems related to children, and coordination of health programs at Federal, State and Local levels.

Office of Program Planning and Evaluation.—An increase of 16 positions and $191,700 is requested for the development and operation of a service-wide Planning-Programing-Budgeting System. Specifically, this staff will be engaged in the development of in-depth system analysis-operations research studies designed to begin developing cost benefit criteria, such as in the areas of cost of quality medical care and the application of computer techniques to health activi-

ties, and to evaluate operations of special interest for performance and conformity with approved program plans.

Office of Legislative Affairs.—An increase of 6 positions and $56,100 is requested to augment the present staff and provide additional legislative competence to the Surgeon General in order to keep abreast of Congressional developments and the growing governmental interest in health affairs.

Office of Extramural Programs.—An increase of 2 positions and $34,000 is requested to provide assistance in development of overall policies and operating guidelines in the expanding extramural support programs.

Office of Administrative Management.—An increase of 59 positions and $656,600 is requested to provide the service-wide management competence envisioned under the reorganization of the Public Health Service in the following areas:

Division of Buildings and Facilities—7 positions; $70,000.
Division of Finance—22 positions; $236,500.
Division of Grants and Contracts—17 positions; $187,600.
Division of Internal Audit—$31,700.
Data Systems Development—11 positions; $101,200.
Management Policy Staff—2 positions; $29,600.

Office of Personnel.—An increase of 15 positions and $169,700 is requested to augment the current staff in the areas of (1) recruitment; (2) career development; (3) policy development; and (4) systems development.

Office of Information.—An increase of $16,300 is requested for printing and reproduction resulting from the increased requests from the health professions and the public for information materials prepared within the Public Health Service.

Explanation of transfers

	1967 estimate	Purpose
Transfer to "Hospitals and medical care".	$60,000	Transfer of safety function from Division of Procurement and Materiel Management to the Bureau of Health Services.
Comparative transfer from "Communicable disease activities".	135,000	Transfer of grants management activity from Bureau of Disease Prevention and Environmental Control to the Office of the Surgeon General under the Public Health Service reorganization.
Comparative transfers to: "Health manpower education and utilization".	53,000	Transfer of health resources requirements activity from the Office of Program Planning and Evaluation to the Bureau of Health Manpower under the Public Health Service reorganization.
"National Library of Medicine".	62,000	Transfer of the science information function from the Office of the Surgeon General to the National Library of Medicine under the Public Health Service reorganization.
"Comprehensive health planning and services".	26,000	Transfer of regional liaison activities to consolidate funding of basic regional office staff. This results from the Public Health Service reorganization.
Comparative transfers to "Office of the General Counsel, salaries and expenses".	37,000	Transfer of patent policy function from the Office of the Surgeon General to the Office of the General Counsel, Department of Health, Education, and Welfare.

Office of the Surgeon General, Salaries and Expenses

INTRODUCTION

This appropriation provides essential resources for the Surgeon General to carry out effectively his management and program direction responsibilities. His office is responsible for providing over-all administration, management and direction of programs and projects of the Service. It is organized for three principal purposes: (1) To prescribe policies for the conduct of the affairs of the Public Health Service and to interpret for application within the Service policies of the Office of the Secretary of Health, Education, and Welfare, the General Accounting Office, the Bureau of the Budget, the General Services Administration, the Civil Service Commission, and other government agencies having policy making powers; (2) To furnish staff services as bases for decisions; and (3) To furnish services to the headquarters and field offices. The budget is presented under two activities, "International Health Activities," and "Management and Central Services."

International health activities

	1967 estimate		1968 estimate		Increase or decrease	
	Positions	Amount	Positions	Amount	Positions	Amount
Personnel compensation and benefits	25	$248,500	29	$295,400	+4	+$46,900
Other expenses		17,500		23,600		+6,100
Total, international health activities	25	266,000	29	319,000	+4	+53,000

The Office of International Health serves as principal advisor to the Surgeon General on international health matters, and is responsible for overseeing all phases of PHS activities in the international field. These responsibilities include development of policies covering all PHS relationships in international matters; direct staff assistance to the Surgeon General and to the heads of PHS Bureaus; developing and recommending United States and Service policy positions for health and related fields; and providing current information on health needs and conditions in foreign countries. The Office is also responsible for maintaining PHS relationships with multilateral and bilateral health agencies and serves as the liaison for the PHS with these health agencies and international organizations.

The United States contributes over $30,000,000 yearly to health programs of international organizations. In 1967 the U.S. contribution to the World Health Organization will be approximately $15,000,000 and to the Pan American Health Organization approximately $5,750,000.

With the large amount of U.S. dollars being spent on international health activities, it is imperative that constant supervision be maintained in order to assure that the United States investment is used to the best advantage.

The U.S. members on the Executive Board of World Health Organization and the Pan American Health Organization Executive Committee are officials of the Office of International Health. It is the responsibility of the Multilaterial Program Staff to provide the information on which U.S. positions and decisions on projects are made.

Much of the information needed to arrive at these decisions is available through review and analysis of documents received from international organizations. It is proposed that a Program analyst and a Director grade medical officer be added to the staff of the Office of International Health for surveillance auditing and evaluation of health programs for use of the U.S. members of the Board and Committee as well as the delegation to the World Health Assembly.

The President in his International Education and Health message charged the Department of Health, Education, and Welfare with a broad authority to help strengthen our country's capacity to rid mankind of the slavery of ignorance and the scourge of disease, and directed government agencies to improve and enlarge programs already authorized by Congress.

Staff assistance required by the Surgeon General in relation to expanding DHEW and Public Health Service participation in international health programs and activities will be provided by the Office of International Health. The increasing involvement of the United States in these programs and activities requires the development of a competent staff to: (1) obtain adequate knowledge of health and manpower needs in the world; (2) advise on the development of plans and programs to meet these needs; (3) procure personnel; and (4) apply newer management technology, including cost-analysis of international health programs, to evaluate productivity of U.S. participation. The addition of one Director grade officer and a Public health advisor is requested to carry out these functions.

The requested increase is summarized as follows:

Title	Grade	Number	Per annum salary
Communication specialist	GS-13	1	$12,873
Public health adviser	GS-12	1	10,927
Director grade	CO	2	28,010
Total		4	51,810
Deduct lapses			−7,610
Total, personnel compensation for new positions			44,200
Personnel benefits			700
Annualization of positions new in 1967			2,000
Contractual services			500
Other increases relating to new positions:			
Travel			500
Transportation of things			1,500
Rental of office space			1,500
Printing and reproduction			600
Supplies and materials			500
Equipment			1,000
Total			53,000

Management and central services—Summary of program

	1967 estimate		1968 estimate		Increase or decrease	
	Positions	Amount	Positions	Amount	Positions	Amount
Personnel compensation and benefits:						
Immediate Office of the Surgeon General	41	$528,500	49	$627,100	+8	+$98,600
Office of Program Planning and Evaluation	50	464,700	66	628,100	+16	+163,400
Office of Legislative Affairs	8	75,600	14	131,700	+6	+56,100
Office of Extramural Programs	18	208,000	20	242,000	+2	+34,000
Office of Administrative Management	283	2,958,600	342	3,550,000	+59	+591,400
Office of Personnel	179	1,658,000	194	1,790,700	+15	+132,700
Office of Information	61	537,200	61	535,200		−2,000
Total personnel compensation and benefits	640	6,430,600	746	7,504,800	+106	+1,074,200
Other expenses		1,025,400		1,263,200		+237,800
Total, management and central services	640	7,456,000	746	8,768,000	+106	+1,312,000

Immediate Office of the Surgeon General

	1967 estimate		1968 estimate		Increase or decrease	
	Positions	Amount	Positions	Amount	Positions	Amount
Personnel compensation and benefits	41	$528,500	49	$627,100	+8	+$98,600
Other expenses		90,300		91,700		+1,400
Total	41	618,800	49	718,800	+8	+100,000

The Surgeon General and his immediate staff give direction, leadership and coordination to the activities of the Public Health Service and are responsible for the effective guidance and management of the Service.

The President has designated the Surgeon General as the National Health Officer and has charged him with the overall responsibility for the Nation's health.

The recent study of the organization of the Office of the Surgeon General recommended, as one of the most pressing needs, additional advisory support to the Surgeon General.

An increase of eight positions (four GS–15's and four GS–7's) is requested to provide the Surgeon General with new high-level advisory resources as well as a new problem solving resource in such areas as issues and questions of national policy on total health problems, applications of modern communications and computer technology to delivery of health service, health problems related to children, and coordination of health programs at Federal, State, and local levels. The incumbents will act as general staff advisors to the Surgeon General in the solution of daily problems, the evaluation of Bureau proposals and requests. They will also provide advice to the Surgeon General on his responsibilities in overall facets of the national health efforts.

A summary of the requested increase follows:

Title	Grade	Number	Per annum salary
Administrative staff assistant	GS–15	4	$70,200
Secretary	GS–7	4	25,804
Total		8	96,004
Lapses			−9,004
Total personnel compensation; new position			87,000
Annualization of positions new in 1967			8,200
Personnel benefits			4,000
Equipment related to new positions			1,400
Nonrecurring items of expense: 1 less day of pay (261 days in 1967; 260 in 1968)			−600
Net increase requested			100,000

Office of Program Planning and Evaluation

	1967 estimate		1968 estimate		Increase or decrease	
	Positions	Amount	Positions	Amount	Positions	Amount
Personnel compensation and benefits	50	$464,700	66	$628,100	+16	+$163,400
Other expenses		71,500		94,700		+23,200
Total	50	536,200	66	722,800	+16	+186,600

In performing its mission of providing the Surgeon General and his principal assistants with program staff services relative to long range planning, evaluation, and health policy formulation within the framework of a changed and strengthened Office of the Surgeon General, the Office of Program Planning and Evaluation faces important new and expanded responsibilities during the next year, including the development and operation of a Service-wide Planning-Programming-Budgeting System and the development of in-depth system anlaysis-operations research studies. If these responsibilities are effectively and expeditiously met, the Surgeon General should be able to better manage the large and complex programs of the Public Health Service and maximize their impact on the health needs and conditions of the Nation.

One of the most immediate and important challenges confronting the Surgeon General is to set up and operate a comprehensive Planning-Programming-Budgeting System which will meet the needs and requirements of the Department and the Budget Bureau, as well as the Public Health Service. The Office of Program Planning and Evaluation, working closely with the Division of Finance will have the responsibility for coordinating the total PPB effort for the Service. This responsibiilty will mean developing and communicating planning policies, procedures, and assumptions to the Bureaus and reviewing program plans submitted by the Bureaus for consistency with planning guidelines and practicality. The Office will undertake and direct studies leading to program memoranda covering possible alternative methods of appoarch in order to recommend to the Surgeon General long range plans which will result in the most effective allocation of the Service's resources to meet the Nation's health needs.

The conduct of in-depth system analysis-operations research studies to facilitate and enchance planning and programming will be a necessary in-put and follow up to the consideration of program plans. These studies will be designed to begin developing cost benefit criteria, such as in the areas of cost of quality medical care and the application of computer techniques to health activities, and to evaluate operations of special interest to the Surgeon General for performance and conformity to the approved plans.

To plan and evaluate intelligently, it is crucial to know what activities are taking place in health or health related programs in other Federal, State and local agencies. In 1968 it is proposed to step up efforts to develop more effective policy and planning liaison and coordination with other Federal agencies particularly with those of the Department of Health, Education, and Welfare, Office of Economic Opportunity, and Department of Housing and Urban Development that are increasingly moving into the health field.

It is also necessary to expand the Surgeon General's capability to establish Service-wide and national health policies, particularly to formulate long range goals and objectives and develop position papers and program memoranda, on such controversial subjects as infant mortality, alternative uses of health facilities, human experimentation, and artificial organs. This effort will be closely related to and dependent upon the information developed through PPB, Systems Analysis-Operation Research, and liaison with health or health related agencies.

A summary of the requested increase follows:

Title	Grade	Number	Per annum salary
Public health specialist	GS-15	2	$35,100
Program analysis officer	GS-14	1	15,106
Program systems analyst	GS-14	1	15,106
Public health analyst	GS-14	2	30,212
Mathematician	GS-13	1	12,873
Operations research analyst	GS-12	1	10,927
Economist	GS-11	1	9,221
Operations research analyst	GS-9	1	7,696
Public health analyst	GS-7	1	6,451
Secretary	GS-5	1	5,331
Clerk-typist	GS-5	1	5,331
Do	GS-4	1	4,776
Clerk-stenographer	GS-4	2	9,552
Total		16	167,682
Lapse			−16,882
Personnel compensation for new positions			150,800
Annualization of positions new in 1967			5,500
1 less day of pay (261 days in 1967; 260 in 1968)			−1,100
Personnel benefits			8,200
Total personnel compensation and benefits			163,400
Other objects related to new positions:			
Travel			5,000
Rental of office space and communications			5,500
Printing and reproduction			3,000
Services of other agencies			12,000
Supplies and materials			1,000
Equipment			6,200
Subtotal			32,700
Less nonrecurring costs:			
Rental of office space			−5,500
Equipment			−4,000
Total, other objects			23,200
Net increase requested			186,600

Office of Legislative Affairs

	1967 estimate		1968 estimate		Increase or decrease	
	Positions	Amount	Positions	Amount	Positions	Amount
Personnel compensation and benefits	8	$75,600	14	$131,700	+6	+$56,100
Other expenses		2,700		2,700		
Total	8	78,300	14	134,400	+6	+56,100

The Office of Legislative Affairs is responsible for:

1. Legislative analysis and development through reports on pending bills, development of legislative program, and technical assistance to Members of Congress on bills; legislative program support through preparation of testimony, back-up material for hearings, assistance on preparation of Congressional committee reports; Congressional services and liaison through preparation of general or special program information; Congressional inquiry service, including significant Congressional mail; legislative reference center; and making selected analyses of State health legislative developments.

2. Review of Service regulations to be published in the Federal Register.

The area of handling legislative affairs is one of vital concern. It is of special importance to the Public Health Service because of the Federal Government's growing interest and involvement in health affairs—and as the National Health Officer the Surgeon General must have a comprehensive picture of all health legislation throughout the Nation.

We are requesting 6 additional positions and $56,100 to supplement the present staff of 8 positions. This additional staff would provide a single repository of legislative competence and would perform comprehensive reviews of nondepartmental legislative proposals.

A summary of the requested increase follows:

Title	Grade	Number	Per annum salary
Legislative liaison officer	GS-15	1	$17,550
Legislative analyst	GS-13	1	12,873
Reports review officer	GS-12	1	10,927
Legislative analyst	GS-11	1	9,221
Legislative analyst	GS-9	1	7,696
Secretary	GS-5	1	5,331
Total		6	63,598
Less lapses			−11,498
Total personnel compensation			52,100
Personnel benefits			4,000
Total increase requested			56,100

Office of Extramural Programs

	1967 estimate		1968 estimate		Increase or decrease	
	Positions	Amount	Positions	Amount	Positions	Amount
Personnel compensation and benefits	18	$208,000	20	$242,000	+2	+$34,000
Other expenses		35,400		35,400		
Total	18	243,400	20	277,400	+2	+34,000

The distribution of authority within the Public Health Service for extramural grant awards to five Bureaus and the National Library of Medicine with the consequent need for strengthened continuing leadership in the development of overall policies and operating guidelines, requires the establishment of a focus of responsibility in the Office of the Surgeon General, i.e., in the Office of Extramural Programs.

The Office will provide centralized guidance for Extramural Program policy and for referral and review of all proposals for support, determining the manner in which, and the standards by which, such proposals are evaluated. Staff for this Division must be sufficient in number to handle the large variety of types of programs and highly trained and experienced to cover the breadth of the subject matter. This staff must establish review parameters and physically audit an ongoing review mechanism of approximately 250 committees.

In order to carry out the added responsibilities of this office, we are requesting 2 additional positions and $18,000 and an additional $16,000 to more fully utilize positions already available. A summary of the requested increase follows:

Title	Grade	Number	Per annum salary
Grants specialist	GS-15	1	$17,550
Secretary	GS-7	1	6,451
Total		2	24,001
Less lapses			7,601
Personnel compensation, new positions			16,400
Personnel benefits			1,600
Increased employment in positions authorized for 1967			16,000
Total increase requested			34,000

Office of Administrative Management

	1967 estimate		1968 estimate		Increase of decrease	
	Positions	Amount	Positions	Amount	Positions	Amount
Personnel compensation and benefits	283	$2,958,600	342	$3,550,000	+59	+$591,400
Other expenses		466,600		535,500		+68,900
Total	283	3,425,200	342	4,085,500	+59	+660,300

The Office of Administrative Management organization concept was established under the reorganization of the Public Health Service. This office brings together the following Servicewide management support groups:

Office of the Executive Officer
Division of Buildings and Facilities
Division of Finance
Division of Grants and Contracts
Division of Internal Audit
Division of Procurement and Material Management
Data Systems Development Staff
Management Policy Staff

A discussion of each of the division's functional responsibilities and funding requirements for 1968 follows:

Office of the Executive Officer

	1967 estimate		1968 estimate		Increase of decrease	
	Positions	Amount	Positions	Amount	Positions	Amount
Total	17	$218,300	17	$217,600		−$700

The Executive Officer serves as the principal advisor on management at the Service level; exercising technical guidance, leadership and review of activities throughout the Service in these functional areas.

No increases are requested for this Office.

Division of Buildings and Facilities

	1967 estimate		1968 estimate		Increase or decrease	
	Positions	Amount	Positions	Amount	Positions	Amount
Total	51	$642,000	58	$712,000	+7	+$70,000

The Division of Buildings and Facilities is responsible for: (1) Developing long-range plans for acquisition of facilities, and appraising needs and recommending priorities for construction; (2) Reviewing proposals and coordinating activities with the Office of the Secretary, General Services Administration, Bureau of the Budget, and the Bureau of Indian Affairs; (3) Assisting program officials, except for NIH, in determining requirements for proposed construction, developing construction proposals, providing guidance to architects and engineers in all phases of the design work, and generally supervising, expediting, and inspecting new construction and major modifications of existing facilities; and (4) Establishing Service-wide real property construction, leasing, repair, and management policies and procedures.

Seven additional positions (5 professionals and 2 secretaries) have been requested to keep pace with expanding activities of the Service. One professional position is needed to provide additional support in each of: (1) planning of design and construction; (2) developing written guides and procedures for maintenance and repair; (3) acquisition of unimproved real estate for new facilities and leasing of space; and (4) two professional positions are required in the area of design and layout of research laboratories and hospitals in order to meet the requirements of constant advances in health and medicare fields. Two secretaries will be required for additional staff report.

Division of Finance

	1967 estimate		1968 estimate		Increase of decrease	
	Positions	Amount	Positions	Amount	Positions	Amount
Total	88	$1,044,100	110	$1,290,600	+22	+$246,500

The Division of Finance provides leadership for the improvement of Service programming and financial management activities. To this end, it develops policies and instructions for budget preparation and presentation; participates actively in programming activities of the Office of Planning and Evaluation associated with the planning- programming- budgeting system; directs allocation of funds and manages a system of budgetary controls; directs planning and implementation of fiscal systems and procedures and provides accounting services; develops policies and procedures concerning the financial aspects of negotiated research and development contracts and furnishes financial advice to contracting officers.

The Division of Finance has made extensive efforts over the past five years to eliminate or reduce low priority work through increased automation and improved procedures. It has sought to broaden the scope of professional financial services to levels adequate to meet the financial problems involved in maintaining efficient management of public funds authorized for national and international health programs growing in both size and number. In the period during which these improvements have been sought, the Service has more than doubled in size, with half of this increase occurring over the past two years.

While substantial progress has been made in strengthening overall financial management it has been impossible with available manpower resources to deal with the problems of rapid program growth and at the same time implement fully the recommendations of the Joint Financial Management Improvement Committee concerning implementation of planning-programming-budgeting and increased automation of financial reports providing cost data on a functional basis. The increases proposed for 1968 would be used primarily to intensify efforts in support of these goals and to achieve the financial objectives outlined in the President's memorandum to heads of departments and agencies on May 24, 1966, on the use of cost-based budgets, and improvement of accounting systems in conformance with the principles and standards prescribed by the Comptroller General. The specific purposes for which additional personnel would be used are outlined below:

1. Twelve positions are needed to handle increased workload in budget administration, reporting, and planning-programming-budgeting.

Budget Formulation and Administration.—Four professional staff (2 GS–14, 13, 11) and a secretary (GS–5) are needed to provide adequate staff for Service budget formulation activities. These include development and interpretation of budget instructions as they apply to varying program circumstances, correlation of justifications and hearing materials, analysis of plans and data, analysis of policy implications of proposals, evaluation of the reasonableness of resources requested and of compliance with stated policies of the Surgeon General. The growth of Service activities to meet national health needs, coupled with the broad scope of analyst responsibilities has culminated in workload levels far beyond the capacity of the present budget formulation staff. Overload is compounded by the increasing year-around nature of budgetary planning arising from continual detailed adjustments planned and executed during the year as progress is made toward broad program goals. These activities have for some time exceeded the capacities of existing formulation staff, particularly as calls for special data analysis have increased, and implementation of planning-programming-budgeting proceeded. The requested increase will provide for additional leadership in planning and executing budget formulation and related activities.

Budget Reports.—Three analysts (GS–14, 13, 11) and a secretary (GS–5) are needed to handle full-time workload which has developed for the production of special reports. These originate from the White House, the Congress, Bureau of the Budget, other agencies and executive staff of HEW and PHS. Material requested covers planned agency operations in selected geographic and program areas, measures of progress in specified activities and accumulation and analysis of comparative program data within agency programs and on an intergency basis. This staff will receive requests, identify data sources and data accumulating procedures, and analyze information produced for completeness and responsiveness. It will provide the coordinating point between the Bureau of the Budget and the HEW Comptroller and the budget formulation staff for the compilation of materials for Congressional hearings, will provide independent review of consolidated budget justifications and will review and annotate transcripts of hearings. As the central point through which Service budget information flows, it establishes and maintains official budget files of PHS.

Planning-programming-budgeting.—Two analysts (GS–14, 12), and a secretary (GS–5) are needed to carry out new duties associated with the program planning and budgeting system. This staff will monitor and assist development and analysis of all financial data used in the system. It will evaluate the impact of long range plans on cost and resource requirements, and consult with Service management on the feasibility of five-year projections. It will incorporate into the five-year plan financial and resource changes resulting from Presidential, Congressional and Bureau of the Budget decisions.

2. Four positions (Three accountants 1 GS–13, 1 GS–12, 1 GS–11 and a Secretary GS–5) are needed to handle the increasing workload related to providing contracting offices with information on the fiscal and accounting adequacy of negotiated research and development contracts and to provide uniform cost principals and cost advisory services to managers. The number of PHS negotiated research and development contracts is increasing by more than 20 percent annually, with about 975 cost type research and development contracts expected to be in force in 1968. Each additional contract multiples workload, as a number of proposals are reviewed for each contract let. The number of contractor accounting surveys increases, additional audit reports must be reviewed, and

more problems arise requiring financial review and decision during contract performance. In addition to meeting these contingencies, additional staff is needed to develop uniform Service cost principles assuring that equal financial treatment and interpretations are provided contractors by PHS contracting offices.

3. Three positions are needed in connection with PHS central accounting and financial reporting. Three accountants (GS–12, 2 GS–11) are urgently needed to provide additional PHS accounting services required by the expansion of activities funded in foreign currencies generated under P.L. 480, and related to deposits of Commissioned Officers savings under P.L. 89–538. The positions are needed not only because of workload increases in these specific areas, but because overall growth of accounting and reporting activities have more than absorbed existing staff resources in review and reconciliation of PHS accounts, compilation of reporting data to BOB, GAO and Treasury Department and coordination of fiscal data and reports of the 34 PHS accounting points.

4. Three positions are needed to provide urgent improvements in the PHS accounting system. Two systems accountants (2 GS–12), and a secretary (GS–5) are needed to direct wholesale updating and revision of accounting and related instructions for Service administrative and financial staffs, and to begin overall recoding of PHS accounts to conform to the HEW uniform coding system. The development of automated accounting over the past several years has required the full time of the Division's accounting systems personnel in systems design and revisions, training of Service financial personnel in procedures for operation of the automated system and review of actions for compliance with these procedures. Additionally, present staff are engaged in a full-scale study of PHS overall accounting toward development of increased responsiveness in the provision of data for management as Service programs accelerate in growth and numbers. As a result, financial directives have become largely outdated and require early updating in both current procedures to be followed, as well as in connection with systems redesign as the results of the current survey emerge.

Division of Grants and Contracts

	1967 estimate		1968 estimate		Increase or decrease	
	Positions	Amount	Positions	Amount	Positions	Amount
Total	7	$107,000	24	$294,600	+17	+$187,600

The Division of Grants and Contracts provides management advice on, and conducts internal studies of grants and research and development contract activities throughout the Service to improve the effectiveness and efficiency of their administration. It also develops procedures governing the use of negotiated contracts for research and development activity and provides assistance to grantees and contractors needed to assure implementation of adequate administrative procedures in the execution of Public Health Service grants and contracts.

The Division is new and is designed to play a vital role in establishing an improved system for resolving questions on audits in the area of grants and contracts and reviewing institutional cost sharing arrangements. Ten positions are being requested for this purpose.

The proposed budget also provides for a staff of seven positions in the area of Compliance Review. The staff will include a Chief, two Staff Assistants, two Compliance Review Officers, and two Secretaries. The staff will conduct complaint investigations and special reviews of contractors' facilities to insure compliance with the objectives of Executive Orders 10925 and 11114 and the rules and regulations of the President's Committee on Equal Employment Opportunity.

Routine compliance reviews will be made of those organizations in which it is determined that the Public Health Service is the "Primary Interest Agency." It is estimated that this category will consist of approximately 250 contractors and 1800 construction grantees. By confining review efforts to those contractors and sub-contractors obligated to file compliance reports, SF–40 and SF–41, it is estimated that complete coverage will be on a biennial basis.

Division of Internal Audit

	1967 estimate		1968 estimate		Increase or decrease	
	Positions	Amount	Positions	Amount	Positions	Amount
Total	28	$359,700	28	$390,400	----------	+$30,700

This Division is responsible for the conduct of internal audit reviews of Service operations. It must ascertain the degree of compliance with laws, regulations and directives, including adequacy of efforts to meet established PHS objectives, examine and evaluate management operations and Service accounting, financial and statistical data systems, and ascertain whether assets are properly safeguarded and accounted for. Other assigned responsibilities include direction of the investigative and security activities of the Service and related staff services and review of Service activities in connection with allegations of misconduct and possible violations of Federal statutes by Service personnel.

Additional funds are requested to more fully utilize positions already authorized.

Division of Procurement and Materiel Management

	1967 estimate		1968 estimate		Increase or decrease	
	Positions	Amount	Positions	Amount	Positions	Amount
Total	83	$929,000	83	$925,000	----------	−$4,000

This Division provides leadership for the procurement and materiel management programs of the Service in the areas of procurement, supply, forms, records and printing management and issuances, and provides technical assistance in these areas to all components of the Service. It is responsible for the issuance of all policies required to implement Federal and HEW Procurement and Property Management Regulations. A further responsibility requires formulation of Service-wide plans and policies applicable to the acquisition and utilization of automatic data processing equipment. Staff in 1968 will be maintained at 1967 level.

Data systems development

	1967 estimate		1968 estimate		Increase or decrease	
	Positions	Amount	Positions	Amount	Positions	Amount
Total	----------	----------	11	$101,200	+11	+$101,200

The Data System Development Staff is a new organizational entity established to develop, operate, and maintain a management and program information system to serve the needs of the Office of the Surgeon General. At the present time the answer to a simple question as to what the Public Health Service is doing in a particular field can be obtained only by means of a direct inquiry to each program involved. This system of data collection is time consuming and costly. The most important consideration, however, is the fact that data gathered in this manner cannot meet the total needs of the Office of the Surgeon General. Additionally, such data is difficult to manipulate for further analytical purposes.

In order to achieve the necessary timeliness and accuracy of communication and interchange of information, the Office of the Surgeon General must develop a coordinated information system. The development and management of such a system is a function which requires central planning and direction. This staff office will provide leadership, planning and direction for implementation of the system. Existing systems in functional areas such as personnel, fiscal, supply, and grants management will be analyzed and modifications made to ensure that they are compatible within the total coordinated Public Health Service system. Implementation of an information system should enable the Service to achieve greater efficiency and economy of operations in data management.

11 positions are recommended to support these new activites.

Management policy staff

	1967 estimate		1968 estimate		Increase or decrease	
	Positions	Amount	Positions	Amount	Positions	Amount
Total	9	$125,100	11	$154,100	+2	+$29,000

The Management Policy Staff provides management analyses needed to improve the Service's organization and management policies: conducts organizational studies and surveys; prepares and reviews proposals and issuances affecting organizational structure or function that require the approval of the Surgeon General or higher authority; initiates or reviews proposals for establishing or modifying PHS management policies or regulations; prepares staff papers on current management problems; negotiates solutions to inter-agency, inter-bureau, and inter-office problems of organization, function, policy, procedure, or coordination; and advises and assists Service staff and operating offices and provides general staff support for major study groups and task forces established by the Surgeon General.

One additional GS–15 and 1 secretarial position is requested to provide more staff resources to cope with the constantly growing work load in the area of organizational analysis brought about by new and expanding programs.

A summary of the increase requested for the Office of Administrative Management follows:

New positions requested, fiscal year 1968

Title	Grade	Number	Per annum salary
Chief of Branch	GS-15	2	$35,100
Chief of division	GS-15	1	17,550
Management analysis officer	GS-15	1	17,550
Administrative officer	GS-14	1	15,106
Administrative staff assistant	GS-14	2	30,212
Engineer	GS-14	1	15,106
Financial operations officer	GS-14	3	45,318
Management appraisal officer	GS-14	2	30,212
Systems analyst	GS-14	4	60,424
Accountant	GS-13	1	12,873
Architect	GS-13	1	12,873
Budget analyst	GS-13	2	25,746
Compliance review officer	GS-13	2	25,746
Computer analyst	GS-13	2	25,746
Systems analyst	GS-13	2	25,746
Accountant	GS-12	4	43,708
Budget analyst	GS-12	1	10,927
Engineer	GS-12	1	10,927
Management analyst	GS-12	1	10,927
Accountant	GS-11	3	27,663
Budget analyst	GS-11	2	18,442
Engineer	GS-11	1	9,221
Do	GS-9	1	7,696
Secretary	GS-7	2	12,902
Secretary (stenography)	GS-7	1	6,451
Secretary	GS-6	3	17,601
Clerk-stenographer	GS-5	1	5,331
Secretary	GS-5	5	26,655
Secretary (stenography)	GS-5	4	21,324
Secretary (typist)	GS-5	1	5,331
Clerk-typist	GS-4	1	4,776
Total		59	635,190
Deduct lapses			−132,190
Net personnel compensation, new positions			503,000
Personnel benefits for new positions			39,600
Annualization of positions new in 1967			20,000
Increased employment in positions authorized in 1967			36,600
1 less day of pay (261 days in 1967; 260 in 1968)			−7,800
Net increase requested for personnel compensation and benefits			591,400
Other objects of expense:			
Travel and transportation of persons			21,700
Rental of office space and communications for new positions			26,700
Printing and reproduction			11,500
Services of other agencies			1,500
Supplies and materials for new positions			3,100
Office equipment for new positions			12,900
Nonrecurring items of expense:			
Rental of office space, 1967			−5,500
Equipment purchases			−3,000
Net increase requested for "Other objects of expense"			68,900
Total increase requested			660,300

Office of Personnel

	1967 estimate		1968 estimate		Increase or decrease	
	Positions	Amount	Positions	Amount	Positions	Amount
Personnel compensation and benefits	179	$1,658,000	194	$1,790,700	+15	+$132,700
Other expenses		214,400		342,400		+128,000
Total	179	1,872,400	194	2,133,100	+15	+260,700

The need for improvement in personnel staff services has been expressed constantly in recent years. The personnel function has been subjected to a series of studies by groups inside and outside the Service. Various forms of leadership and organization have been tried and retried. These efforts have resulted in increased support for personnel services in Bureaus and some field

activities. They have resulted in improvement of functioning within the Office of Personnel and Office of the Surgeon General but not to an adequate degree.

The positions requested for 1968 are restricted to the areas of activity where the needs are most pressing. A summary of the present staffing pattern in these areas and the requested increases for 1968 are as follows:

Function	Present staff	Increases	Total
A. Recruitment	57	7	64
B. Career development	27	2	29
C. Policy development	13	2	15
D. Systems development	5	4	9
Total	102	15	117

A. Recruitment

The scope of recruitment requirements is illustrated by the forecast based on experience with separation rates and on budget increases provided for 1967. For example—annual recruitment will run in the range of 1,000 medical officers; 700 nurses; 700 scientists, engineers, mathematicians, and statisticians; 800 sub-professional aides; 700 artisans; 700 administrative specialists; and 1200 clerical employees; with smaller numbers in other specialties. Directly or indirectly, the Office of Personnel must support recruitment in all of these fields through the following kinds of work:

(1) Manpower planning: Effective recruitment requires advance information on future manpower needs and available personnel. Such information may affect program planning by showing that a proposed plan requires, for example more medical specialists or more pharmacologists than the Nation is turning out. At a minimum it enables a recruiting office to make plans to look in the right places for the people who are most needed. At present, part of the time of one person can be devoted to this work. Crude forecasts like those above can be provided, but more precise indications of needs are unavailable. In 1968, more data will be available, both from the ADP system in the Office of Personnel and from PPB materials. A staff, discussed under the "Manpower planning" heading for "Career Development" below with improved data resources should be able to assist both the Recruitment function and Career Development efforts.

(2) Recruiting operations (2 new positions): Total Service recruitment is carried on through—(1) local programs at every organizational level to meet recruitment needs of that unit; and (2) national and service-wide programs for critical shortage occupations and those which are used throughout the Service and are not adequately obtained through local recruiting efforts. The Office of Personnel supports local programs by providing recruitment aids and advice, and it directs and performs service wide recruiting.

(3) Selection, appointment, placement (5 new positions): Recruitment efforts produce volumes of applications for employment in both Commissioned Corps and Civil Service, but the effectiveness of the effort depends on rapid processing of the applications, judicious selection among them, and a workable process for getting the chosen persons cleared, appointed and on the job. The function now occupies 43 people in Office of Personnel and is our largest single element of work. In the current year the volume of applications outgrew our capacity for processing. Our capacity must be increased and improved by making it possible to evaluate applicant potential and suitability for assignment with greater care than we can exercise at present.

To make it possible to carry out these functions and to ascertain that we get the best possible people, an additional 5 positions are required.

B. Career Development

The objectives of Career Development are to improve the performance of employees working on health missions of the Public Health Service and to provide the employees with the satisfactions derived from developing their capabilities and obtaining advancement. Most intensive efforts need to be devoted to the primary professional categories and programs of the Service through the operation of Career Development Committees. A programmed approach to Service requirements is needed.

(1) Manpower planning (2 new positions): Manpower planning is required to determine the outlook for Service needs and the availability of employees who are either qualified for immediate assignment or for development to meet the needs. It is evident that the number of internal placements required each year exceeds even the number required for recruitment. However, here again data on needs and resources are inadequate. For example, it appears that the Service now has over 2,000 employees in leadership positions at Commissioned Officer grades O–6 or GS–14 and above and that turnover at these levels is low. It can be inferred that a demand will develop for the training of health program managers to replace these senior people as they approach retirement in the future. However, more precise definition of needs in this field and in other specialized fields is not available. The improvement in data resources and in staffing for Manpower Planning, as proposed in the section on Recruitment, applies equally to the provision of information required for career development efforts. Two positions—a manpower analyst and a statistical clerk are needed.

C. Policy Development (2 new positions)

Under existing directive of the Surgeon General a primary responsibility of the Office of Personnel is the development of policy and procedures to guide the entire Service in the management of personnel. This is a function of a rather technical nature, based partly on laws and regulations and partly on behavioral sciences. In scope, it covers the full range of Public Health Service personnel. The Office of Personnel serves as a Civil Service Commission for the Commissioned Corps and for personnel employed under the various special authorities of PHS for employment of such groups as CO–OP's, Fellow's and Consultants. In addition, the Office of Personnel develops PHS policies respecting all other personnel: their employment, compensation, training, etc.

Two additional positions are requested to cover the workload of policy Development.

D. Systems Development (4 new positions)

The application of automation to the Personnel area has two primary goals. The first is the simplification of many routine processing operations, reducing routine clerical tasks while improving service and ameliorating the paralyzing effects of wide fluctuations in workload. The second is the assembly of a comprehensive data base of significant information about the employees and the work that they perform. Some specific examples illustrate the importance of an automated information system to the Service.

(1) Career development: The intelligent conduct of a program of Career Development requires the availability of a considerable volume of data: previous work experience, formal training, evaluations of performance, career aspirations of the individual employee, and Service plans which provide in a logical progression avenues for employees' advancement.

(2) Policy and procedures: The availability of employees data is critical to intelligent policy formation for personnel administration. The Central maintenance of employee information obviates the need for polling other offices for information and eliminates the specific mechanism for their collection.

Four positions are requested to augment the systems development staff.

A summary of 15 new positions requested and the net increase of $260,700 follows:

Title	Grade	Number	Per annum salary
Digital computer systems analyst	GS-13	1	$12,873
Digital computer systems programmer	GS-12	1	10,927
Manpower analyst	GS-12	1	10,927
Digital computer systems analyst	GS-7	1	6,451
Statistical clerk	GS-5	1	5,331
Clerk-typist	GS-5	2	10,662
Personnel clerk	GS-4	1	4,776
Clerk-typist	GS-4	1	4,776
Do	GS-3	3	12,807
Senior grade	C.O.	3	52,150
Total		15	131,680
Less lapse			−34,680
Total compensation (new positions)			97,000
Personnel benefits (new positions)			9,700
Temporary employment			3,000
Annualization of positions new in 1967			3,000
Increased employment in positions authorized in 1967			25,000
One less day of pay (261 days in 1967; 260 in 1968)			−5,000
Total net increase, personnel compensation and benefits			132,700

Other objects	Estimate, 1967	Estimate, 1968	Increase or decrease
Travel	$14,000	$15,200	$1,200
Transportation of things	6,000	12,000	6,000
Rent, communications, and utilities	40,000	50,500	10,500
Printing and reproduction	35,200	45,700	10,500
Other services	17,300	17,800	500
Services of other agencies	74,100	168,100	94,000
Supplies and materials	19,000	19,800	800
Equipment	8,800	13,300	4,500
Total	214,400	342,400	128,000

Office of Information

	1967 estimate		1968 estimate		Increase or decrease	
	Positions	Amount	Positions	Amount	Positions	Amount
Personnel compensation and benefits	61	$537,200	61	$535,200	.....	−$2,000
Other expenses	.....	144,500	.....	160,800	.....	+16,300
Total	61	681,700	61	696,000	.....	+14,300

The Office of Information functions in two ways: (1) as the principal line of communications between the Service and the health professions; and (2) as coordinator of the public information and publications output of the Service. It provides leadership and direction to this effort, counsels the Surgeon General on his statutory responsibilities for the dissemination of information to the health professions and the public, prepares and distributes pamphlets, radio and television scripts, press releases, and other materials; responds to thousands of mail, telephone and personal inquiries from the professions annually, supervises the production of Public Health Reports, the official journal of the Service, and the news magazine of public health activities distributed to PHS employees and other members of the public health profession. The Office uses all forms of media to communicate Service aims, policies and accomplishments to the health professions and the public.

The continuing expansion of the Service and Department programs in recent years and the growing awareness among members of the Congress, the professions, and the public of the need for greatly improved communication of scientific

and technical knowledge is reflected by the more than 180,000 communications from professional groups, voluntary health agencies, members of the Congress, and the public that were received by this Office during 1966.

Public Health Reports, the official professional journal of the Service, has shared in the developing interest in improving the communication of research knowledge to the health professions.

As a result of the continued growth of the Service and in order to serve the increasing demands for health knowledge from the health professions and the public, we are requesting an increase of $16,300 for printing and reproduction partially offset by non-recurring costs in the amount of $2,000 for one less day of pay in 1968.

New positions requested, fiscal year 1968

	Grade	Annual salary
International health activities:		
Communication specialist	GS–13	$12,873
Public health advisor	GS–12	10,927
Director grade (2)	C.O.	28,010
Total (4)		51,810
Immediate Office of the Surgeon General:		
Administrative staff assistant (4)	GS–15	70,200
Secretary (4)	GS–7	25,804
Total (8)		96,004
Office of program planning and evaluation:		
Public health specialist (2)	GS–15	35,100
Program analysis officer	GS–14	15,106
Program systems analyst	GS–14	15,106
Public health analyst (2)	GS–14	30,212
Mathematician	GS–13	12,873
Operations research analyst	GS–12	10,927
Economist	GS–11	9,221
Operations research analyst	GS–9	7,696
Public health analyst	GS–7	6,451
Clerk-typist	GS–5	5,331
Secretary	GS–5	5,331
Clerk-stenography (2)	GS–4	9,552
Clerk-typist	GS–4	4,776
Total (16)		167,682
Office of legislative affairs:		
Legislative liaison officer	GS–15	17,550
Legislative analyst	GS–13	12,873
Reports review officer	GS–12	10,927
Legislative analyst	GS–11	9,221
Do	GS–9	7,696
Secretary	GS–5	5,331
Total (6)		63,598
Office of extramural programs:		
Grants specialist	GS–15	17,550
Secretary	GS–7	6,451
Total (2)		24,001

New positions requested, fiscal year 1968—Continued

	Grade	Annual salary
Office of administrative management:		
Chief of branch (2)	GS-15	$35,100
Chief of division	GS-15	17,550
Management analysis officer	GS-15	17,550
Administrative officer	GS-14	15,106
Administrative staff assistant (2)	GS-14	30,212
Engineer	GS-14	15,106
Financial operations officer (3)	GS-14	45,318
Management appraisal officer (2)	GS-14	30,212
Systems analyst (4)	GS-14	60,424
Accountant	GS-13	12,873
Architect	GS-13	12,873
Budget analyst (2)	GS-13	25,746
Compliance review officer (2)	GS-13	25,746
Computer analyst (2)	GS-13	25,746
Systems analyst (2)	GS-13	25,746
Accountant (4)	GS-12	43,708
Budget analyst	GS-12	10,927
Engineer	GS-12	10,927
Management analyst	GS-12	10,927
Accountant (3)	GS-11	27,663
Budget analyst (2)	GS-11	18,442
Engineer	GS-11	9,221
Do	GS-9	7,696
Secretary (2)	GS-7	12,902
Secretary (stenography)	GS-7	6,451
Secretary (3)	GS-6	17,601
Clerk-stenographer	GS-5	5,331
Secretary (5)	GS-5	26,655
Secretary (stenography) (4)	GS-5	21,324
Secretary (typist)	GS-5	5,331
Clerk typist	GS-4	4,776
Total (59)		635,190
Office of personnel:		
Digital computer systems analyst	GS-13	12,873
Digital computer systems programer	GS-12	10,927
Manpower analyst	GS-12	10,927
Digital computer systems analyst	GS-7	6,451
Clerk-typist (2)	GS-5	10,662
Statistical clerk	GS-5	5,331
Clerk-typist	GS-4	4,776
Personnel clerk	GS-4	4,776
Clerk-typist (3)	GS-3	12,807
Senior grade (3)	C.O.	52,150
Total (15)		131,680
Total new positions, all activities (110)		1,169,965

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