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RESEARCH ON AGING ACT, 1973

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GOVERNMENT

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HEARING

BEFORE THE

SUBCOMMITTEE ON AGING

OF THE

COMMITTEE ON

LABOR AND PUBLIC WELFARE

UNITED STATES SENATE

NINETY-THIRD CONGRESS

FIRST SESSION

ON

S. 775

TO AMEND THE PUBLIC HEALTH SERVICE ACT TO PROVIDE FOR
THE ESTABLISHMENT OF A NATIONAL INSTITUTE ON AGING

MARCH 27, 1973



Printed for the use of the Committee on Labor and Public Welfare

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RESEARCH ON AGING ACT, 1973

TUESDAY, MARCH 27, 1973

U.S. SENATE,
SUBCOMMITTEE ON AGING OF THE COMMITTEE
ON LABOR AND PUBLIC WELFARE,
Washington, D.C.

The subcommittee met pursuant to notice at 10 a.m., room 6226, New Senate Office Building, Hon. Thomas F. Eagleton, presiding.

Present: Senators Eagleton, Pell, and Beall.

Committee staff members present: James J. Murphy, counsel; and Michael Gordon, minority counsel.

Senator EAGLETON. Good morning, ladies and gentlemen.

The Senate Subcommittee on Aging of the Committee on Labor and Public Welfare is now in session to conduct hearings on S. 775.

As originally scheduled, the Under Secretary of HEW, Mr. Carlucci, and several of his associates were to have been our first witnesses but because of a very important and necessary meeting in the Department of HEW, they will be postponed until about 11:00.

This hearing is a continuation of the effort begun more than 2 years ago to enact the Research in Aging Act, which would establish a National Institute on Aging as part of the National Institutes of Health.

To recapitulate, Congress passed a bill to create such an institute in October of last year, shortly before the adjournment of the 92d Congress.

Following the adjournment, President Nixon pocket vetoed the bill. S. 775, which is before the subcommittee today, is nearly identical to the vetoed bill except that certain provisions amending the Community Mental Health Centers Act have not been included in this year's bill.

I deeply regret the President's action in vetoing the Research on Aging Act last year. I can sympathize with the desires of the administration to avoid a proliferation of categorical institutes within the National Institutes of Health.

However, it has become apparent that research in the area of gerontology will not be expanded unless it is given the identity and focus that accompanies a separate institute.

Today there are nearly 21 million Americans aged 65 and older—nearly seven times as many as at the beginning of this century—and the rate of increase in this group is substantially higher than that of the rest of the population.

In the decade of the 1960's, the over-65 population showed a rise of 21 percent while the under-65 population grew only 12.5 percent.

Between now and the end of the century, we can expect nearly 45 million persons to reach their 65th birthday.

Not only will the United States have an older population in years to come, but so will most of the other nations of the world. Regardless of birth rates in other countries, the expansion of medical knowledge and treatment, along with systematic eradication of many infectious diseases in parts of the world where they have flourished in the past, points toward an extension of life around the globe.

Given these demographic circumstances, I am convinced that it would be shortsighted and unwise to continue the present Federal policy of placing a relatively low priority on research in aging.

Over the past 2 years, our Subcommittee has received testimony from widely respected scientific authorities to the effect that scientific knowledge regarding aging and degenerative diseases has reached a point where major breakthroughs are possible.

Critical, but still unanswered, questions about growing old present persuasive arguments for developing an expanded, coordinated research program in aging.

It will be recalled that the 1961 White House Conference on Aging recommended the establishment of a research institute to conduct research and training in aging.

Thereafter, responsibility for research and training in aging was assigned to the National Institute of Child Health and Human Development (NICHD).

Significantly, the most recent White House Conference on Aging, held in 1971, found it necessary to reiterate the earlier recommendation for a separate institute on aging.

It is clear that the White House Conference on Aging delegates did not feel that the work conducted under the auspices of the National Institute of Child Health and Human Development fully meets the need for research in aging.

We will hear today from representatives of the Administration and from scientists who are active in the field of gerontology.

Senator Cranston had hoped to be here with us this morning, but, unfortunately, he has ongoing concurrent hearings in the Banking and Housing Committee.

He has asked me to extend his apologies for this unavoidable absence, and is submitting a detailed statement for inclusion in the record.

Senator Williams, the Chairman of the full Labor and Public Welfare Committee, is an active member of this Subcommittee with a particular interest in the subject of research on aging.

He has asked me to indicate his regrets at being unable to be present today because he is out of the country on official Senate business.

Senator Williams' bill in the 92d Congress, S. 1925, which dealt with this subject, was ultimately incorporated as a part of S. 887, which was passed by the Senate and the House but pocket vetoed by the President.

I order a copy of S. 775 be printed in the record at this point, as well as a statement by Senator Cranston.

93D CONGRESS
1ST SESSION

S. 775

IN THE SENATE OF THE UNITED STATES

FEBRUARY 6, 1973

Mr. EAGLETON (for himself, Mr. BEALL, Mr. CANNON, Mr. CRANSTON, and Mr. MOSS) introduced the following bill; which was read twice and referred to the Committee on Labor and Public Welfare

A BILL

To amend the Public Health Service Act to provide for the establishment of a National Institute on Aging.

1 *Be it enacted by the Senate and House of Representa-*
2 *tives of the United States of America in Congress assembled,*

3

SHORT TITLE

4 SECTION 1. This Act may be cited as the "Research on
5 Aging Act of 1972".

6

FINDINGS AND DECLARATION OF PURPOSES

7

SEC. 2. The Congress hereby finds and declares—

8

(1) that the study of the aging process, the one bio-

9

logical condition common to all, has not received research

10

support commensurate with its effects on the lives of

11

every individual;

II

1 (2) that, in addition to the physical infirmities re-
2 sulting from advanced age, the economic, social, and psy-
3 chological factors associated with aging operate to ex-
4 clude millions of older Americans from the full life and
5 the place in our society to which their years of service
6 and experience entitle them;

7 (3) that recent research efforts point the way to-
8 ward alleviation of the problems of old age by extend-
9 ing the healthy middle years of life;

10 (4) that there is no American institution that has
11 undertaken, or is now capable of undertaking, compre-
12 hensive systematic and intensive studies of the bio-
13 medical and behavioral aspects of aging and the related
14 training of necessary personnel;

15 (5) that the establishment of a National Institute
16 on Aging within the National Institutes of Health will
17 meet the need for such an institution.

18 SEC. 3. Title IV of the Public Health Service Act is
19 amended by adding at the end thereof the following new
20 part:

21 "PART G—NATIONAL INSTITUTE ON AGING

22 "ESTABLISHMENT OF NATIONAL INSTITUTE ON AGING

23 "SEC. 461. The Secretary shall establish in the Public
24 Health Service an institute to be known as the National
25 Institute on Aging (hereinafter in this part referred to as

1 the 'Institute') for the conduct and support of biomedical,
2 social, and behavioral research and training relating to the
3 aging process and the diseases and other special problems
4 and needs of the aged.

5 "NATIONAL ADVISORY COUNCIL ON AGING

6 "SEC. 462. (a) The Secretary shall establish a National
7 Advisory Council on Aging to advise, consult with, and make
8 recommendations to him on programs relating to the aged
9 which are administered by him and on those matters which
10 relate to the Institute.

11 "(b) The provisions relating to the composition, terms
12 of office of members, and reappointment of members of ad-
13 visory councils under section 432 (a) shall be applicable to
14 the Advisory Council established under this section, except
15 that the Secretary may include on such Advisory Council
16 such additional ex officio members as he deems necessary.
17 The Secretary shall appoint to the Council leading medical
18 or scientific authorities skilled in aspects of the biological and
19 the behavioral sciences related to aging.

20 "(c) Upon appointment of such Advisory Council, it
21 shall assume all, or such part as the Secretary may specify,
22 of the duties, functions, and powers of the National Advisory
23 Health Council relating to programs for the aged with which
24 the Advisory Council established under this part is concerned

1 and such portion as the Secretary may specify of the duties,
2 functions, and powers of any other advisory council estab-
3 lished under this Act relating to programs for the aged.

4 "FUNCTIONS

5 "SEC. 463. (a) The Secretary shall, through the Insti-
6 tute, carry out the purposes of section 301 with respect to
7 research, investigations, experiments, demonstrations, and
8 studies related to the aging process and the diseases and
9 other special problems and needs of the aged, except that
10 the Director of the National Institutes of Health shall deter-
11 mine the area in which and the extent to which he will
12 carry out such activities in furtherance of the purposes of
13 section 301 through the Institute or another institute estab-
14 lished by or under other provisions of this Act, or both of
15 them, when both such institutes have functions with respect
16 to the same subject matter, and shall be responsible for co-
17 ordinating such activities so as to avoid unproductive and
18 unnecessary overlap and duplication of such functions. The
19 Secretary may also provide training and instruction and
20 establish traineeships and fellowships, in the Institute and
21 elsewhere, in matters relating to study and investigation of
22 the aging process and the diseases and other special problems
23 and needs of the aged. The Secretary may provide trainees
24 and fellows participating in such training and instruction or
25 in such traineeships and fellowships with such stipends and

1 allowances (including travel and subsistence expenses) as he
2 deems necessary, and, in addition, provide for such training,
3 instruction, and traineeships and for such fellowships through
4 grants to public or other nonprofit institutions. In carrying
5 out his health manpower training responsibilities under the
6 Public Health Service Act or any other Act, the Secretary
7 shall take appropriate steps to insure the education and train-
8 ing of adequate numbers of allied health, nursing, and para-
9 medical personnel in the field of health care for the aged.

10 “(b) The Secretary shall, through the Institute, con-
11 duct scientific studies to measure the impact on the biologi-
12 cal, medical, and psychological aspects of aging of all pro-
13 grams and activities assisted or conducted by him.

14 “(c) The Secretary, through the Institute, shall carry
15 out public information and education programs designed to
16 disseminate as widely as possible the findings of Institute
17 sponsored and other relevant aging research and studies,
18 and other information about the process of aging which may
19 assist elderly and near-elderly persons in dealing with, and
20 all Americans in understanding, the problems and processes
21 associated with growing older.

22 “SEC. 464. (a) The Secretary, in consultation with the
23 Institute (acting through the Council) and such other ap-
24 propriate advisory bodies as he may establish, shall within
25 one year after the effective date of this section develop a

1 plan for an aging research program designed to coordinate
2 and promote research into the biological, medical, psycho-
3 logical, social, educational, and economic aspects of aging.
4 Such program shall be carried out, as to research involving
5 the functions of the Institute, primarily through the Insti-
6 tute, and as to other research shall be carried out through
7 any other institute established by or under other provisions
8 of this Act or through any appropriate agency or other orga-
9 nization unit within the Department of Health, Education,
10 and Welfare.

11 “(b) The plan required by subsection (a) of this
12 section shall be transmitted to the Congress and the Presi-
13 dent and shall set forth the staffing and funding requirements
14 to carry out the program contained therein.”

STATEMENT OF SENATOR ALAN CRANSTON ON S. 775, RESEARCH ON
AGING ACT OF 1972

It is a pleasure to be here this morning with Senator Eagleton, the distinguished chairman of the Senate Subcommittee on Aging. I would like to take this opportunity to express my appreciation to the chairman for the fine job he has already done this Congress in responding so swiftly and effectively to the President's pocket vetoes—not only of the legislation we are considering today, but of the Comprehensive Older Americans Services Amendments Act of 1972.

Due to Senator Eagleton's leadership and expeditious management, we expect to be placing S. 50, the Older Americans Act legislation of this year, back on the President's desk within the next several days. It is my hope that the significant efforts made by the Congress to be responsive to the President's veto message on the Older Americans Act—while maintaining the essential thrust of the legislation—will preclude another Presidential veto. If not, the long and detailed negotiations led by Senator Eagleton on the older Americans amendments should result in the necessary votes for an override of a second veto.

Turning to the legislation before us this morning, as a cosponsor during the last Congress of S. 887—the Senate version of H.R. 14424, the vetoed Research on Aging Act—I am in complete agreement with the effort to move ahead on this important legislation, and have joined with Senator Eagleton again this year as an original sponsor of S. 775.

I am particularly pleased that three amendments which I offered in subcommittee last year were retained in the legislation before us this morning. These are the provisions: (1) charging the Secretary with the responsibility of ensuring the education and training of an adequate number of allied health, nursing, and paramedical personnel in the field of health care for the aged; (2) mandating that the Institute conduct scientific studies to determine and measure the impact of the psychological, physiological, and sociological aspects of the process of aging of all programs and activities assisted or conducted by HEW designed to meet the needs of the aging; and (3) charging the Institute, with the responsibility of carrying out public information and education programs and disseminating the findings of relevant aging research and studies and other information about the process of aging which may assist all Americans in dealing with and understanding the problems and processes associated with growing older. These provisions are designed to broaden the scope and focus of activities to be carried out by the new Institute.

On March 3 and 4 of last year, I was privileged to chair hearings of the Subcommittee on the Research on Aging Act in San Francisco and Los Angeles. During these hearings I was very much impressed by the strong support of many, many knowledgeable witnesses for the new Institute. I strongly believe that the Federal Government's effort in the area of research into the process of aging must be greatly improved and expanded and that the present efforts are hampered by the limited visibility and allocation of resources within the National Institute of Child Health and Human Development (NICHD).

There is presently a very low level of Federal financing support for research into the aging process. The total FY 1973 NICHD budget was over \$109 million—of which only \$12.3 million was earmarked for aging research. The fiscal 1974 budget request for NICHD is \$106.7 million—of which \$11.8 million is earmarked for aging research. This represents only a bit more than 10-percent of the NICHD budget; and less than one-tenth of one-percent of the Federal expenditures in health programs for the elderly. Experience has clearly indicated that the focus on aging research within NICHD is not nearly what it should, and must, be.

The White House Conference on Aging recommendations on research and demonstration called for the "immediate" establishment of a National Institute "to support and conduct research and training in the bio-medical and social-behavioral aspects of aging." I would like to point out that this recommendation was made in December of 1971.

Senior citizens are the fastest growing segment of our population—the total population of the United States has tripled in size since 1900, while the older population has increased more than twice as fast, multiplying by seven times. We must focus more of our attention, and our institutions and resources on our older citizens' needs—be they health, income maintenance, education, employment, housing, transportation, nutrition, or recreation. The Congress has done

its utmost to respond to these needs as well as the specific recommendations of the White House Conference on Aging. I wish I could say the same for the White House.

We must do much more to enable older Americans, to enable all our people, to make the most of their later years. I believe that this legislation will aid us significantly in developing the expertise to meet this goal.

The testimony presented last year in California pointed to the marvelous potential for enriching and lengthening the human life span, for enabling each of us to live more creative, productive and healthful lives. I am sure that testimony will be confirmed here this morning. It is long past time for us to begin to realize this potential, and I am pleased as the ranking majority member of the Subcommittee on Aging, to be able to participate in the development of legislation in what I consider a very vital and exciting field.

Senator EAGLETON. Our first group of witnesses this morning will be a panel of distinguished citizens and doctors, and I will ask them all to come forward, Dr. Stanley J. Brody, Associate Professor, Department of Community Medicine, University of Pennsylvania School of Medicine; Professor Walter M. Beattie Jr., Director of All-University Gerontology Center, Syracuse University; Robert H. Binstock, Professor of Politics and Social Welfare, Brandeis University; F. Marrot Sinex, Chairman, Department of Biochemistry, Boston University School of Medicine; and Dr. Raymond Harris, Assistant Clinical Professor of Medicine, Albany Medical School.

STATEMENT OF STANLEY J. BRODY, M.S.W., J.D. ASSOCIATE PROFESSOR, DEPARTMENT OF COMMUNITY MEDICINE, UNIVERSITY OF PENNSYLVANIA SCHOOL OF MEDICINE; PROF. WALTER M. BEATTIE, JR., DIRECTOR OF ALL-UNIVERSITY GERONTOLOGY CENTER, SYRACUSE UNIVERSITY; ROBERT H. BINSTOCK, PH. D., PROFESSOR OF POLITICS AND SOCIAL WELFARE, BRANDEIS UNIVERSITY; F. MARROT SINEX, PH. D., CHAIRMAN, DEPARTMENT OF BIOCHEMISTRY, BOSTON UNIVERSITY SCHOOL OF MEDICINE; RAYMOND HARRIS, M.D., ASSISTANT CLINICAL PROFESSOR OF MEDICINE, ALBANY MEDICAL SCHOOL

Senator EAGLETON. Good morning, Gentlemen.

I don't know who was planned as your headoff hitter, but Dr. Brody, it is you.

Start right in, and let me say at this time, I will have to recess the hearing at 10:30. We have a series of votes that has already been scheduled back to back.

We have to do a lot of voting, and then I will be back.

Dr. BRODY. Thank you very much, Senator Eagleton, for this opportunity for myself and my colleagues to appear before you on behalf of the Gerontological Society.

I think that the nature of our interdisciplinary representation this morning is a reflection of our commitment to the approach embraced in the Senate bill S. 775.

We will shortly submit in written testimony a summary of the official Gerontological Society position, and we have this as a basis of contribution from the four sections of the Society which involve biological sciences, clinical medicine, psychology, Social Science, and Social Research planning and practice.

Generally speaking, we are in agreement with some of the positions

taken by Secretary Carlucci in his testimony both in the House and his written testimony which is now before us in the Senate. We agree in sharing a concern about the structure which is currently available for research in aging.

We are similarly concerned about the parallel legislative authority provided not only in a sense in S. 775, but in the scattering of research throughout the Government.

We disagree in that there is a need for a statutory requirement for an aging research plan.

We feel strongly that this is something that should be stated by Congress as a matter of policy, establishing a priority of concern for the citizens of this country in terms of the needs for aging research.

With your permission, Mr. Chairman, we would like to have a series of short statements by each of these gentlemen who represent the four different sections of the society. If you will permit, I would like to ask Dr. Sinex to start off.

STATEMENT OF F. MARROT SINEX, PH. D., CHAIRMAN, DEPARTMENT OF BIOCHEMISTRY, BOSTON UNIVERSITY SCHOOL OF MEDICINE

Dr. SINEX. Thank you, Dr. Brody.

I believe, Senator, you have the written material I am placing in the record. The first page shows that in the year following the White House Conference the budget for "Research on Aging," had been reduced. The numbers are before you.

We now move to the question of management focus.

Now, the administration has made the point that good research management—

Senator EAGLETON. Let me break in, Doctor. The total figure at the bottom of the first page of your prepared statement for fiscal year 1973, the current fiscal year, is that appropriated, or is that what was requested by the President?

Dr. SINEX. These are the revised requests for 1973, the column to the right is the 1974 request.

Senator EAGLETON. So it is the intention of HEW for the remainder of fiscal 1973 to spend at a rate of 12.3 annually?

Dr. SINEX. Yes, sir.

You have the numbers there.

The administration says that good research management should provide intellectual stimulation, free exchange of information, and the integration of research activity with a minimum of bureaucracy. These are fine goals, I submit that none of these are being achieved under the current management of research on aging.

Research on aging is neither well organized, nor accountable.

The intramural program as you know is not in Bethesda but in Baltimore. The coordination of the aging program is the responsibility of the able director of the Institute, Dr. La Veck. Since about 12 percent of the budget is devoted to aging, we may assume that about 12 percent of Dr. La Veck's time is devoted to what is an extremely difficult problem in coordinating intramural and extramural activities, and working with AoA, Mental Health, and the categorical disease institute.

It is not possible for Dr. Duncan who really heads the aging program at NIH to do this. He is merely an extramural branch chief. Dr. Duncan does not even report directly to Dr. La Veck. The aging program is buried in the third tier. Dr. Duncan cannot coordinate extramural and intramural programing. Intramural branch chiefs report directly to Dr. Lowe, the Scientific Director of the Institute, not to anyone responsible for aging research.

The total aging program is very small. It might be interesting, if you would pursue with Mr. Carlucci, how the size of a program is determined at NIH. Is it the size of the constituency? Is it the promise of the program in terms of what can be achieved by the spending of so many dollars?

How can you justify 12 percent of the program of one of the smaller institutes when the elderly constitute something like 10 percent of the population?

Senator EAGLETON. Doctor, is that a consistent rule of thumb that you advocate as the allocation of moneys, spending on the size of the number of people affected?

Dr. SINEX. I think that some attention has to be given to public need in programing at NIH.

Now the elderly have problems not only in the area of health but they have social and economic problems.

There needs to be research on their problems and communication between biologists and people interested in the pathology of disease, political science, social science, economics, the delivery of health care and the delivery of social services under the sponsorship of NIH.

The NIH has developed an approach, which if they only had the will to do it, and the desire to do it, could be brought to bear very effectively on the problem of aging.

In the written testimony which I have submitted, you will find a plan for research in the biological sciences. The technology of biology has developed immensely over the last few decades.

The execution of such a plan is really at the heart of what I have to say. The material is somewhat technical, but please read it and think about it. Unless you have questions I am not going to give a lecture on the biochemistry of aging and how it can be applied to medicine.

Now, it is frustrating that we are blocked in applying this technology by this concept of a life development institute. A life development institute might be fine for a study of personality development but it does not provide a way for transmitting current research findings to the interface with categorical disease, and this just has to be done. Senility is not development.

We know a lot about what is happening the brain. It is now time to do something about it.

The forces that now bear on the aging program tend to isolate it and to keep it from effectively dealing with the problems of the aged. It is swept in to a corner and its budget is reduced.

You might ask about the White House Conference. Was there adequate representation of the elderly at the White House Conference? What did the elderly recommend? What are the expectations of the elderly arising out of the White House Conference? Why is there such a difference between the recommendations of a body created with considerable effort by the Administration and what happens?

The quality and quantity of research on the elderly is now dependent on the passage of this legislation. I think we have the momentum. Now is the time to do it.

I will rest there.

Senator EAGLETON. Doctor, maybe some other member of the panel will respond to this question, but it is the recommendation, is it, of the Gerontological Society that the research conducted at this institute be medical and behavioral as well?

Dr. SINEX. Yes, sir.

Senator EAGLETON. Are there any other institutes wherein behavioral research is the component?

Dr. SINEX. When the Institute of Mental Health was split off, NIH lost its principal showpiece for behavioral research. The development of a good and strong behavioral research program in the institute of aging is something that is attractive to NIH on those days in which they feel a little better disposed toward the idea of an institute.

You might ask, why not do such research at AoA. The answer is that AoA has yet to develop a tradition of quality research and of peer review. Their programs are service directed. If Marvin Taves and others were given the support they could develop quality behavioral science programs.

Senator EAGLETON. In terms of the existing research being done at NIH under this funding level of \$12 million, is it your understanding that some of that research currently being done is of the behavioral type?

Dr. SINEX. Yes, sir. About one third. Now unfunded grants are piling up. You have less than \$6 million in the extramural research program. The Council is able to fund less than half of its approved grants, grants which have received excellent merit reviews and Council approval.

These involve biology, some medical application and behavioral science.

This is a major source of support for high quality behavioral research.

NIH is where the people can come with behavioral research which is fully competitive with biological research. For this to work successfully, there has to be enough money to support both.

The system begins to fail when you keep cutting research funding back without thinking out goals or developing a national plan.

Dr. BRODY. About 20 per cent of the budget for extramural research is for behavioral science.

Senator EAGLETON. About 20 per cent. Doctor, you said something about 6 million out of the 12 million. I did not quite get your figures.

Dr. SINEX. The actual amount of money going into extramural research grants is about half the budget of the total program.

This may increase since the training grants are being cut out or remain the same with the training grant money being replaced by contracts. In addition, new funds must be found for the Gerontology Research Center in Baltimore.

You will find that 57 new positions have been approved. What is being done to provide programing, money to both pay these people and to support their programs?

This will represent a measurable expansion of the Baltimore program.

However, not all 57 slots have actually been filled.

You should ask Dr. LaVeck for assurances that all 57 slots will eventually be filled.

The additional personnel in Baltimore is not in any way reflected in the budget. The money may have to come out of extramural.

Senator EAGLETON. What are the 57 slots you are talking about, Doctor?

Dr. SINEX. The Gerontology Research Center was never staffed after the move to the new building. In fact, GRC until the last few months was smaller than it was at the time it left the basement of the Baltimore City Hospital.

There has been very little staff expansion in Baltimore. We have come to Congress and given testimony, saying staff Baltimore, fill it up.

Baltimore can hold 300 people. The 57 slots brings it up above 200.

You have a \$7 million building which is not being fully utilized. Approved slots, are being added to a rolled-back base.

There is a theoretical commitment to add 57 people.

You have reduced the budget. Where are the dollars going to come from to increase the Baltimore program 40 percent?

Senator EAGLETON. The 57 slots would represent a 40 percent increase in staffing.

Dr. SINEX. Roughly. Adding 57 people to 108 people is around 40 percent.

Senator EAGLETON. We have a letter from Dr. LaVeck which verifies the figures that you have submitted to us in your prepared statement as being accurate, and we will put that here in the record at the appropriate time.

Do you have any quarrel, Doctor, with the rough breakdown as is currently being done with half of the money, \$5.9 million going to research grants, for the outside, and apparently half of the other expenses being retained as intramural?

Dr. SINEX. No. There will be expansion in the contract program. I am not an enthusiast for the contract method of conducting research. Contract programing does not favor creative thinking and innovation. It places a burden on staff leadership, they may or may not be able to fulfill. However, it does allow better control of program development.

If that is the trend, if there is going to be a contract program, I want a good contract program. Moderation and balance are virtues, as long as we are moving ahead, not backwards.

I think the intramural branch chief should be brought into the planning of the contract programs as is done at the Cancer Institute.

The aging program is a small program. Now that the training grant money is going to disappear I am interested in where that money is going to go. I am more concerned about the total funding in aging than I am in the breakdown of the budget. This is a reasonable breakdown.

Since the budget is heavy in training grants it is vulnerable to the phase out training grants.

The relative size of intramural program compared to other institutes is large. That merely means that the extramural program is small.

The budget is a little atypical, but it reflects the history of the institute, and I would not quarrel too much with the distribution.

[The prepared statement of Dr. Sinex and the letter from Dr. LaVeck follows:]

Testimony on a Bill to Create an Institute of Aging at NIH
By F. Marott Sinex, Ph.D., Boston University School of Medicine
March, 1973 before the Senate Subcommittee on Aging

Senator Eagleton, I am F. Marott Sinex, Chairman of the Department of Biochemistry at Boston University School of Medicine. From 1969-1970 I was President of the Gerontological Society. I have been a member of the Board of Scientific Counselors for the Intramural Program of the National Institute of Child Health and Human Development and a former member of the Training grant and Program Project Subcommittee of the same Institute. I began research on the causes of aging in 1954 when I was Executive Officer of the Biochemistry Division of the Medicine Department of Brookhaven National Laboratory.

I support your Bill to create an Institute of Aging at the National Institutes of Health as an important step to improve the health of the elderly of this country.

I would first like to review with you what the Administration has accomplished in the year since the last hearings before this Committee. You recall at that time the Administration testified that there was no need to create a National Institute of Aging, and that all the problems could be met through the existing structure of the National Institute of Child Health. What is the record? Nothing has been done to change the existing organization. The number of approved unfunded grants has grown larger. The priority orders on these grants are in no way inferior to that of the average grant application at the NIH. The unfunded grants for aging research are now equal in dollar value the total amount of funded grants. During this period when the Administration was supposed to be responding to the recommendations of the White House Conference on Aging that an Institute of Aging be created not only was nothing done to bring aging to center status at the Institute of Child Health but the budget was actually reduced. This is shown in the following table.

	Fiscal 1973 Revised Request (Estimated) (Dollars in thousands)	Fiscal 1974 Request (Estimated) (Dollars in thousands)
Research Grants	57	51
(Dollars)	\$5,972	\$5,771
Fellowships	8	7
(Dollars)	\$155	\$125
Training Grants	12	10
(Dollars)	\$1,410	\$1,165
Contracts (Dollars)	\$700	\$600
Labs and Clinics (Dollars)	\$3,389	\$3,452
Biometry (Dollars)	\$94	\$95
Management and Program		
Directions Costs (Dollars)	\$616	\$630
	<u>\$12,336</u>	<u>\$11,838</u>

One of the issues with which we are dealing is that of management focus on behalf of the elderly. The Administration has made the point that good research management should provide intellectual stimulation, free exchange of information, and the integration of research activity with a minimum of bureaucracy. I submit that none of these are being achieved by the current management of research on aging at the National Institutes of Health. It is neither well organized or accountable. The intramural aging program is housed on the grounds of the Baltimore City Hospital rather removed from the exciting environment of the N.I.H. The branch chiefs report directly to Dr. Charles Lowe, the Scientific Director of the Institute in Bethesda. They do not participate in the design of contract programs as is the case in the Cancer Institute and have almost no contact with the extramural programs. Indeed, there is very little coordination of intramural and extramural programs. The leadership of the extramural aging program is under Dr. Duncan who is essentially a branch chief with a total extramural staff of eight persons reporting to Dr. Woodside head of extramural. He does not report directly to Dr. LaVeck the Institute Director and as a branch chief is, for practical purposes, unable to coordinate his program with the program of the other Institutes of NIH, with Mental Health, or AoA. This difficult and important job is the responsibility of Dr. LaVeck, the Director of the Institute. With the best of intentions Dr. LaVeck can hardly devote more than 12 per cent of his time to the affairs of the gerontology since he is also responsible for Population, Child Health, Mental Retardation and the Perinatal Program. It is no wonder that the aging program escapes the notice of most of the powerful Institutes.

The aged deserve more representation within the National Institutes of Health. After all they constitute nearly 10 per cent of the population. They are a numerically larger group than many others which have been targeted for specific help. The representation of the aged on the Council of the Institute of Child Health and Human Development has been limited.

Not only have the funds been reduced but no moves have been made to develop a national plan of aging research, no efforts have been made to create priorities and no adequate study has been made of the integration of the limited activities of the Institute of Child Health in aging research with the efforts of the categorical disease Institutes and the programs of AoA and Mental Health. No meetings of the Technical Advisory Committee on Aging Research were held until January of this year and none of these have dealt in a substantive manner with the question of research on the causes of aging. The record of the Administration is not one to inspire confidence in its ability to respond to the concerns expressed by Congress in last years NIA legislation. Why should we expect anything different in the future?

The young investigators willing to pursue aging research at this time must surely be discouraged. It is no longer possible for a beginning graduate student or postdoctorate to receive support from a training grant. The trainees being phased out of our training grants face an uncertain future. We need these young people. We need their fresh ideas. We need their ability to look on the gray face of aging not with fear but with a sense of challenge. The current generation of investigators have framed the technology. What is done with that technology depends on our young investigators. They deserve a chance.

The concept of a life span Institute for CH & HD without doubt has been a valuable concept in the social sciences, particularly those that deal with the development of the personality. It is not nearly as useful in biology. Indeed, the concept that aging is an extension of embryological development is a theory. It may not be true. Personally I do not believe it is true. I don't believe that the average layman believes that the changes that occur in a child are similar to those that are occurring in an old man and he is probably right. In any event it is not a decision that should be forced on biologists by Administrative decree. History shows that this type of dogma does not lead to productive science.

We believe the request that the Council of the new Institute deal with at least certain aspects of a national plan in gerontology to be reasonable. There is at the present time no biologists and no physician on TACAR, the Technical Advisory Committee on Aging Research, Paul Dudley White, M.D. having resigned because of ill health. There are plenty of problems for TACAR to deal with, however, considering the incapacity of any Federal agency to come up with a viable national plan for aging research in the past, it is not unreasonable to ask the Council of the new Institute to try. This is hardly a reason for the Administration not to support this legislation.

To the credit of the Administration, the 75 slots for Baltimore promised since the gerontology research center moved into its new building have been freed, although part of the 75 now must go to cover lost positions. Where is the money going to come from to fill them - at the expense of extramural research grants? The 75 slots represent a 70 per cent increase in program. This might cost another 1.5 million dollars. Where is this 1.5 million dollars to be found in the budget? In actual fact only a portion of these slots have been filled and there is no real assurance they ever will be filled without appropriation of the required funds for personnel and program.

The goal of any national plan for research on aging is to improve the quality of life for the elderly. Research toward this goal has four major objectives.

- I. Improving the health of the elderly.
- II. Learning more about the psychological and social factors which affect the lives of the elderly and improving their self image and the attitude of society.
- III. Improving the economic status of the elderly.
- IV. Improving the environment of the elderly.

There are several approaches to each of these objectives. We may improve the health of the elderly in essentially four ways.

- By studying as much as we can about the basic biology of the aging process and applying what we learn.
- By learning how aging and disease are related and seeking to eliminate some of the major complications of aging.
- By improving the health care delivery system for the elderly.
- By improving their environment, nutrition and economic status and reducing their anxieties.

Specific areas for further investigation concerning the biology of the aging process include:

1. Studies of the integrity of DNA in aging animals in respect to mutations, broken strands and cross-links.
2. Studies of the accuracy, efficiency and effectiveness of the transcription and translation of the genetic code.
3. Studies of the state of chromatin in aging animals, its ease of dissociation composition, and nativeness of structure, including degree of phosphorylation, and acetylation of histone and the species of RNA and nonhistone protein present.
4. Studies of the activities of cell organelles and enzymes, including mitochondria and lysosomes.
5. Studies of the loss of function in differentiated non-dividing cells such as brain, kidney and the eye; and the failure of skeletal, cardiac and smooth muscle.
6. Studies of the loss of function in cycling cell populations, the reasons that G₁ and G₂ blocks develop and the limitations on the generational expectancy of stable cell lines.
7. Studies of changes occurring in extracellular connective tissue and its components with age.
8. Studies on the failure of homeostasis in the intact animal, in hormonal regulation and electrolyte balance.
9. Studies of modification of the rate of aging through nutrition, food additives and drugs. This includes evaluating such factors as injury from free radicals, lysosomal stability and the influence of central nervous system activity.

Specific areas for further investigation of the relationship between aging and disease include:

1. Studies of the effect of aging on immunity, both humoral and cellular, of the effect of aging on the production and activities of B and T lymphocytes and macrophages, and primary and secondary response. A related area is autoimmunity, the incidence of which appears to increase with age.
2. Studies of the effect of aging on the incidence of cancer. Factors to be evaluated include immune surveillance, production of interferon, and the susceptibility of older cells to transformation by oncogenic virus.

3. Studies of the role of aging in predisposing large blood vessels to atherosclerotic disease, and small vessels to arteriolar injury.
4. Studies of the effect of aging on the heart, its contractile force, and the generation and propagation of the beat.
5. Studies of the failure of smooth muscle systems such as the gut, the uterus, the bladder and sphincters.
6. Studies of the cause of osteoporosis.
7. Studies of the role of aging in renal disease and loss of renal function. Longitudinal studies of the development of renal impairment in humans would be helpful.
8. Studies of the digestive system, a cause of frequent complaints by the elderly.
9. Studies of the prevention of stroke and rehabilitation of the stroke victim.
10. Studies of the role of aging in perceptual defects, particularly in vision and hearing.

Specific areas for further investigation relating to the changes in behavior and performance produced by aging in the nervous system include the following. These are the problems which put people in nursing homes.

1. Studies of the causes of senile dementia, the significance of senile plaques and neurofibrillary tangles.
2. Studies of the causes of depression in the elderly. Both psychological and physiological aspects must be considered.
3. Studies of the normal aging brain. How do the changes occurring in all aging cells express themselves in neurons and glia and in overall organization. What is the significance of lipofuscin.
4. Studies of arousal, attention and sleep patterns in the elderly.
5. Studies of cognitive processes. How can the elderly best adapt to their decrements?
6. Studies of the effects of drugs on arousal, attention, intellect and the overall process of aging as it is affected by the central nervous system.
7. Studies of the effects of innervation on the aging of striated, cardiac and smooth muscle.

The possibility that there might be an Institute of Aging has made the program a lame duck. There has been a decrease in its budget not an increase. The sensitivities of other institutes are very inhibitory to the development of programs with potential application. The limited positive reaction to the new Institute of the Institutes of Health is as much from fear that AoA or Mental Health will put something over on them than that an Institute of Aging should have strong programs in behavioral and life sciences, or from any feeling that it is in the interest of the public.

The creation of a new Institute will not lead to a duplication of effort. Aging research is essentially non-existent in the Cancer Institute. Aging research is inadequate in Heart as well as in Neurological Disease, although Neurological Disease has certainly been more supportive than Cancer or Heart. The most effort has been made in two of the smallest Institutes, Eye and Dentistry. You must duplicate almost nothing a good many times before it amounts to something.

The quality, quantity and impact of research on aging is dependent on the passage of this legislation. We may have to bide our time for money and effective Administration implementation. However, now is the time to pass the only legislation which can do the job of providing better health for the elderly in their later years.



DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE
PUBLIC HEALTH SERVICE
NATIONAL INSTITUTES OF HEALTH
BETHESDA, MARYLAND 20014

March 22, 1973

Honorable Thomas F. Eagleton
Chairman
Subcommittee on Aging
United States Senate
Washington, D.C. 20510

Dear Senator Eagleton:

This letter is in response to your letter of March 19, 1973, concerning Dr. Sinex's statement made to the House Subcommittee on Public Health with respect to H.R. 65. The statements made by Dr. Sinex in the last paragraph of the first page are correct with the exception of the statement that unfunded research grants now equal funded research grants. For 1973, funded research grants total \$6.0 million compared to \$4.5 million for unfunded research grants. The figures as shown in the comparative table for aging research for 1973 and 1974 are correct. While the statement that the aging research budget has been reduced is true, the total Institute's budget has been reduced from \$109,551,000 in 1973 to \$106,679,000 in 1974.

Thank you for your continued interest in the aging research program of the National Institute of Child Health and Human Development.

Sincerely yours,

Gerald D. LaVeck, M.D.
Director
National Institute of Child Health
and Human Development

Senator EAGLETON. Thank you, Doctor.

Dr. BRODY. Dr. Harris will now speak on behalf of the Clinical Medicine Group.

STATEMENT OF RAYMOND HARRIS, M.D., CLINICAL PROFESSOR OF GERONTOLOGY, ALBANY MEDICAL SCHOOL

Dr. HARRIS. I represent the Clinical Medicine Section of the Gerontological Society and appear in favor of Senate Bill S. 775.

I am a clinical gerontologist, certified cardiologist engaged in research and the practice of cardiovascular diseases, geriatrics, and gerontology, and am the author of, "The Management of Geriatric Cardiovascular Disease".

The enclosed curriculum vitae and medical bibliography include additional information concerning my other qualifications and status as an authority.

(The bibliography and additional information of Dr. Harris follows:)

BIOGRAPHICAL DATA

Pre-Medical Training: Cornell University, A.B. degree, 1940; Phi Beta Kappa.

Medical Training: Albany Medical College, M.D., 1943; Internship: Metropolitan Hospital, New York City, 1944; Resident in Internal Medicine and Research, Metropolitan Hospital, New York City, 1944-46; Fellow in Cardiovascular Diseases, Michael Reese Hospital, Chicago, Illinois, 1948-49; Courses in Internal Medicine and Spatial Vectorcardiography, Massachusetts Memorial and Mt. Sinai Hospitals.

Military: Captain, U.S. Army Medical Corps, 1946-48; Chief of Vascular Section, Walter Reed General Hospital.

Hospital Affiliations: St. Peter's Hospital: Attending Cardiologist and Physician; Chief of Subdepartment of Cardiovascular Medicine; Albany Medical Center Hospital: Clinical Assistant in Medicine and Assistant Attending Cardiologist, July 1969-July 1970; Associate Dispensary Physician, Clinics, July 1969-July 1970; Consultant in Cardiology, Regional Medical Program Consultant Panel, 1969; Ann Lee Home and Hospital: Assistant Medical Director and Attending Cardiologist; Memorial Hospital of Greene County: Consultant in Cardiology and Peripheral Vascular Diseases; Brady Maternity Hospital: Attending Cardiologist to 1969; Lake Placid Hospital; Consultant in Internal Medicine and Cardiology, 1966-; Consultant in Heart Clinic; Sunmount State School, Department of Mental Hygiene, State of New York: Consulting Physician, 1969-;

Teaching Appointments: Albany Medical College: Instructor in Medicine, 1949-65; Former Associate in Biochemistry; Assistant Clinical Professor of Medicine, 1965-; University of Oregon Gerontology Center; Visiting Professor in Residence, October, 1968; National Graduate University: Visiting Professor, Center for Research and Training in Gerontology, Bethesda, Md.; 1969-; Faculty Consultant, Human Service College, 1973;

MEDICAL ORGANIZATIONS

Fellow: American College of Cardiology: College Governor for Upstate New York, 1970-73; Assistant Secretary and Board of Trustees, 1973; American Geriatrics Society; American Heart Association; Gerontological Society (see below); New York Academy of Sciences; Institute for Man and Science;

Member: Albany County Medical Society: Chairman, Legislative Committee, 1960-62; Program Committee, 1963-65; Board of Censors, 1964-67; Chairman, Mediation Committee, 1966-67; American Association for the Advancement of Science; American Geriatrics Society, Inc.; American Medical Association; American Rheumatism Association; American Society for the Study of Arteriosclerosis; American Society of Internal Medicine Publications Committee, 1972-; Heart Association of Eastern New York, Inc.; Board of Directors and Executive Committee, 1969-70; National Council on Aging; Member, Board of Directors, 1972-;

New York State Medical Society; New York State Society of Internal Medicine: Chairman, Public Relations Committee, 1968-70; Board of Directors, 1969-70; Chairman, Editorial Committee, Feb. 1971-72; 1972-73; Northeastern New York Society of Internal Medicine; Gerontological Society: Clinical Medicine Representative to Council, 1960-66; Chairman, Finance and Development Committee; Member, Publications Committee, 1962-68; Member, Documentation Committee, 1960-63; Annual meeting Program Co-Chairman, Minneapolis, 1964; American Committee for 7th International Gerontological Congress, Vienna, Austria, 1966; Chairman-elect, Clinical Medicine Section, 1966-67; Program Chairman, 1967, for St. Petersburg meeting; Vice President, 1967-68; Council Member, 1967-69; Chairman, Clinical Medicine Section, 1967-68; Liaison Committee with American Geriatrics Society, Inc., 1969-; Representative: Consultant to Inter-Society Commission for Heart Disease Resources, 1969-; Gerontological Society, continued—American Committee for 8th International Gerontological Congress, Washington, D.C., 1969; American Committee for 9th International Gerontological Congress, Kiev, 1972; Place of Meeting Chairman, 1972; Public Policy Committee, 1973;

HEALTH ORGANIZATIONS

President, Center for the Study of Aging, Inc.; Member, New York State Committee of One Hundred for 1961 White House Conference on Aging; New York State Heart Assembly: Delegate-at-Large; Former Chairman, Professional and Lay Education Committee; Work Evaluation Unit; Chairman, Rehabilitation Committee, 1965-68; Delegate to American Heart Association, 1968-70; Member, New York State Advisory Committee for Statewide Planning for Vocational Rehabilitation, 1968; International Society for Rehabilitation of the Disabled, United States Committee, 1969;

CIVIC ACTIVITIES

Albany County Christmas Seal Campaign: Chairman, 1967; Albany Council of Churches Housing Development Corporation: Vice President, 1966; 1972; Director, 1974; Albany Council of Community Services; Board of Directors, Chairman, Committee on Aging; Albany Junior Chamber of Commerce, 1949-54; Community Chest Research Fund, 1967; Community Foundation of Albany, New York, Inc.; Member, Board of Incorporators, 1968; Jewish Community Center Board of Directors: Vice Pres., 1970-; Chairman, Senior Citizens Committee, 1966-; Jewish Welfare Council: Chairman, Subcommittee on Non-Institutional Services, Oct. 24, 1968; National Jewish Welfare Board: Physical Education Committee, 1970-; Senior Citizen Housing Project, Board of Directors, 1972-;

PUBLICATIONS

Fellow, American Medical Writers Association; Assistant Editor, *The American Journal of Cardiology*, 1958-; Columnist, *Physicians Management*, 1961-1962; *Community Activities Clinic*, 1961-1963; Author of numerous medical research articles; Lecturer in Aging and Cardiovascular Diseases; Editorial Board, *THE GERONTOLOGIST*, 1969-1971; Geriatric Curriculum Project, Gerontological Society, Cardiology Section, Consultant on Cardiovascular Diseases, 1964; Editor, *American Lecture Series in Geriatrics and Gerontology*, Charles C. Thomas, Publisher, Springfield, Ill., 1971-.

AWARDS

Honors Achievement Award by Angiology Research Foundation, Inc. of New York City, August 15, 1968.

Dr. HARRIS. My experience as a practicing physician, medical educator, researcher, and community leader confirms the necessity for urgency in establishing a National Institute on Aging as proposed in Senate Bill S. 775.

The establishment of this Institute is essential for the reasons already summarized under, "Findings and Declaration of Purposes" of the bill.

There is a great need for more basic scientific data and information in order to control the primary aging processes and to retard and cure disorders and diseases associated with aging.

Great gaps permeate our knowledge of the fundamental biological and genetic processes involved in aging. In order to improve the health of the American people, the two-level attack which not only generates fundamental biomedical information but also coordinates and promotes the delivery of such information to institutions and people, as proposed in this bill, is a most sensible approach, well worth investing moneys for the expected rewards and benefits.

As a clinician, I recognize the importance of research data on which to base my medical treatment and care of elderly people.

As a medical school professor and educator interested in aging, I have received numerous communications from premedical students, medical students, and others which confirm the lack of adequate training and concern with the care of the aged.

Such a letter came to me recently from a fourth year pre-medical student at the University of Colorado, who cogently pinpoints the necessity for more geriatric medical facilities and training. He writes:

"I am a premedical student who made a shocking discovery about the most critically neglected fulcrum in medical education—the training of physicians for the field of geriatrics.

"I became interested in the problems of aging while I was still in my teens through a close association with my grandparents. Later, when I worked at nursing homes, the medical aspects of growing old interested me. I observed the small number of doctors dealing primarily with the elderly and the lack of concern they seemed to share towards their patients. The doctors to whom I talked were despondent about improving medical education in the area of aging and in increasing the number of medical students who would eventually practice medicine on the aged.

"I applied to medical schools with the goal of practicing geriatrics and hopefully encouraging other students to enter this field. After I applied, I sent a brief letter to the medical school asking them to supply the name of the person I could contact for information concerning geriatrics. In most instances I was given the address of the head of the department of family medicine.

"The typical response I received was discouraging. In short, I was told that aging has recently come into focus in the medical community but the training in this field was included under the umbrella of family medicine.

"Upon further inquiry I found that, at best, only a dozen medical schools in our country even have electives in geriatrics for their medical students, most of these dealing with geriatric psychiatry.

"It is well known that the elderly as a whole require the most medical care of any other group except young children. Clearly, medical schools are not meeting up to their responsibility of providing a curriculum which would give equal weight to all aspects of medicine from birth to senescence.

"Medical school officials feel that the establishment of a geriatrics department within the university would be too risky an enterprise for several reasons. First of all such a program must be administered by dedicated and competent personnel who must effectively present the spectrum of the treatment and recognition of the disorders which result from aging.

"Those who are active in this field usually have very little time to spend teaching, let alone being involved with putting forth the initial effort and persuasive will in setting up a geriatrics curriculum.

"Physicians actively practicing medicine on the elderly in general have been removed from the university medical school for many years because of outmoded training and the fact that most research is done outside the medical school since there is a lack of facilities for patient care on campus."

The letter goes on and closes with :

" . . . The only recourse to the medical demands of our aged population is through action. As an interested student I am very willing to help make this a reality."

The enclosed paper, "Model for a Graduate Geriatric Program at a University Medical School," which I presented at the last meeting of the Gerontological Society in Puerto Rico, confirms the dangerous lack of medical training in geriatrics and gerontology which this bill would remedy.

[The information referred to follows:]

MODEL FOR A GRADUATE GERIATRIC PROGRAM AT A UNIVERSITY MEDICAL SCHOOL

by
 Raymond Harris, M. D.,
 Assistant Clinical Professor of Medicine
 Albany Medical College
 Chief, Subdepartment of
 Cardiovascular Medicine
 St. Peter's Hospital
 President, Center for the Study of Aging, Inc.
 Albany, New York

The decade between the first White House Conference on Aging in 1961 and the second in 1971 saw the coming of age for gerontological programs in university undergraduate and graduate departments, particularly in human development, social science, and health sections. Contributing to this growth were the powerful pressures built up by the expanding challenges of aging, the belated recognition by politicians of the political importance of aging voters, and the advocacy measures exerted by senior citizens and their organizations to make more money available for such programs.

During this same period a similar growth was not experienced in medical schools and other educational facilities concerned with the medical training and education of doctors, nurses, and other members of the paramedical professions concerned with care of the aged. Available studies document the lack of such training and educational facilities in medical schools in this country. We lag behind other countries who have recognized the need and urgency for such training in geriatric and allied fields. This lack was recognized by the Clinical Medicine Section of the Gerontological Society and led to the appointment of a Postgraduate Geriatric Medical Education Committee when I was chairman. This Committee was charged with trying to expand geriatric education facilities in

For presentation at Education Symposium, Gerontological Society meetings, Puerto Rico, December 17 - 21, 1972.

universities and medical schools. An excellent geriatric curriculum model for a short-term training program was recently developed by Dr. Rodstein and this committee.

Need for programs in clinical gerontology and geriatrics is beginning to be more widely recognized, as shown by these examples:

A senior premedical student at the University of Colorado recently wrote: "As a senior pre-medical student at the University of Colorado, I am very much interested in exploring the field of gerontology...In the attempt to establish gerontology as a separate subspecialty, I realize the difficulties involved, primarily from the educational standpoint, mainly that very little is understood about the process of aging and that to train physicians in this area would mean concentration in the areas of general medicine and psychiatry. The unappealing aspect of gerontology is that the patients are seemingly unproductive members of society and often have a bitter outlook on today's events. The aged seem to have in common a useless role in a world whose scientific achievements result in the prolongation of life. While older people are continually forming a larger segment of the American population, they must be supplied adequate rehabilitation and medical care. I feel that there will be a great demand for geriatricians in the near future, and I would like to devote much time working in this field if I enter medical school next year. I would be very much interested if you could throw any

further insights on the subject of gerontology as well as any existing programs at ___ Medical College, especially at the undergraduate level, as I am not yet in medical school."

A senior medical student at Georgetown University School of Medicine expressed similar interest -- "I have decided to do my internship and one or two years of medical residency before pursuing any further training in geriatrics per se. By that time I am hoping that fellowships in geriatrics will be available in this country. If not, then I may pursue my training abroad, e.g. at the University of Glasgow. However, the possibility of receiving early training and guidance in this field, as for example at the ___ Medical Center, still appeals to me considerably. In any event, please keep me informed of any progress you make or are informed of about formal training programs in clinical geriatrics in this country and abroad."

This same doctor wrote more recently, "Now I am a first year resident in Internal Medicine at the Rhode Island Hospital, one of the Brown University affiliated hospitals in Providence, Rhode Island. I am very interested in doing a fellowship in geriatric cardiology if such will be available at the ___ Hospital in July, 1974. My career interests include the practice of general internal medicine and geriatrics, with an emphasis on geriatric cardiology."

Because of lack of time and space, I will not include other correspondence received from interested premedical and medical students, just as many of you have, concerning the lack of programs in geriatrics and clinical gerontology in this country.

Thus, there is a need for geriatric consultants thoroughly versed in the diseases of aging patients, and the age-related changes which occur in the absence of disease. Such specialists are necessary to identify the

gaps in our knowledge about aging, to obtain the clinical and research information concerning the age-related changes in disease and normal old age, and to promote and activate modern preventive and therapeutic measures that keep old people healthy and improve their health when disease intervenes. They are essential to develop the concepts of wellness in old age which can come only from determined efforts by a well-organized, well-informed group of doctors who are intimately and vitally concerned with all the aspects of aging and disease in people who are growing old.

What steps must be considered in planning graduate geriatric training programs?

1. Identification of subject matter. Courses in geriatric medicine must systematically identify, organize, integrate, and make available all appropriate information on the aging processes, aging-related disease processes, and other data concerned with the clinical, social, preventive, and remedial aspects of illness and health maintenance in the elderly.

2. Profile of the Geriatrician. The specialist in geriatric medicine should have specialized training in diseases of old age and in the care of the elderly. Other practitioners and specialists can and must help care for the aged. Hopefully, they will become more knowledgeable and wise about the problems in their elderly patients. Very likely, they, too, will have to seek the assistance of the geriatric specialist when problems arise, just as the geriatric specialist will require their services for the care of the aged people with special heart, gastrointestinal problems and so on. The geriatric specialist is expected to know much more about aging and the diseases of the aged than his medical confreres. The 1964 report of the Royal College of Physicians recommended "after three to four years of general hospital training, four more years should be devoted to medicine or geriatrics

before a doctor can be considered a specialist in geriatrics." Is this lengthy period still necessary? With the current shortage of physicians, this period of training may be shortened by "lifetime learning." (1 & 2)

3. Graduate Geriatric Education Models. Models for graduate geriatric education may be modified according to the situation and strategies that must be employed.

In May, 1970 I had occasion to draw up one such model program in clinical gerontology at a university medical school and associated Veterans Administration Hospital in the Southwest. (Fig. 1) I want to present this model for your information and discussion. The geographical situation of this medical school made it a central focal point for state and regional programs in aging. The university medical school had an interesting variety of scholarly and community resources including the V. A. health facilities, the university hospital, community hospitals, nursing homes, other institutions for the aged, and the State University itself, which also included a school of social work. It also had other essential components for an innovative successful gerontological teaching division, including (besides the excellent geographic location) sufficient patients and facilities for treatment, education, and research in aging, undergraduate and graduate students, and, most importantly, a devoted faculty interested in the possibilities of geriatrics and clinical gerontology.

Discussions with the Chief of Staff of the V. A. Hospital, the dean, and the other professors and administrators at both the university medical school and the V. A. readily showed that a program in clinical gerontology, strengthening the teaching faculty by the addition of highly qualified clinical and research-oriented gerontologists and providing additional teaching, research, and patient care facilities at the University Hospital, the V. A. Hospital facilities, and the community institutions, would

improve the exposure and education of medical students, house staff, and postgraduate students and area physicians, and allied health personnel and nurses, to comprehensive programs in aging and chronic disease. As Mumford noted, "The years of house-staff training often provide a physician's first personal encounter, his initiation rites, in medicine. For some, these years are also the last chance the medical profession has to exert direct, sometimes round-the-clock and near-exclusive influence or control." If doctors are to become more interested and proficient in caring for the aged, it is important that interns and residents during their training be exposed to the management and treatment of normal and sick elderly patients.

Development of outpatient clinics in the downtown section of the city and other types of comprehensive health centers, including halfway houses and a projected neighborhood health center and the introduction and extension of home care programs, would offer a variety of new therapeutic and preventive care techniques for the delivery of health services in the community.

The functions of the Division of Gerontology would be the encouragement and support of fundamental research into the processes of

aging, the development of new scientific knowledge in the field of aging, and the introduction of courses in gerontology throughout the University. The Medical School and its affiliated institutions. On the undergraduate level it would be responsible for the introduction of instruction in gerontology into the basic medical science course for medical students during their pre-clinical years and into the regular courses of instruction during the clinical years. On the

graduate level it would be involved in the gerontological training of house staff and postgraduate physicians. Such a center would also implement and develop geriatrics and clinical gerontology as a future subspecialty.

Such a clinical gerontology center can be organized into clinical and basic science branches (See Fig. 1), both conducting research, teaching, and education. The clinical branch would, in addition, be concerned with the development and delivery of health services to aging patients, including patient care, supervision, research, and administration. The clinical branch in conjunction with other services at the University Medical School could also initiate and direct in-service gerontologic training for social service, nurses, volunteers, rehabilitation, and other paramedical personnel involved in aging.

The Division would also develop affiliations with extended care facilities, chronic disease hospitals, research centers, nursing homes, and other institutions for the aged where in-service training and practice in geriatrics and clinical gerontology can be developed and taught. A special gerontological-social work committee could be established to supervise and conduct improved community programs such as home care, halfway house, preventive services and the other community measures so essential for the delivery of health care for the elderly. Such community programs would involve physicians in the county medical society and other professionals and volunteers in the county health and social services departments, senior citizen centers, United Fund, Red Cross, and other voluntary agencies.

The basic science branch would be primarily concerned with basic

investigations in aging and would cooperate with the clinical branch in research with humans. Its focus would be the physiologic, nutritional, metabolic, and central nervous system changes with aging, depending upon the interest of the investigators and the other members of the faculty at the medical school. Animal facilities at the University Medical School and the V. A. installation should be available for such basic and clinical research.

PERSONNEL

The development of a Division of Clinical Gerontology (Center, Institute, or Department) at the university medical school should initially require a chief and two associates. The chief should be a properly qualified physician and a recognized authority in gerontological education, training, teaching, and research. He would, in turn, work with the other clinical and basic science associates who would be responsible for the supervision and implementation of the appropriate programs within their branches. These associates should also be supported and assisted by appropriate faculty, secretarial, and research assistants to enable them to conduct and implement the programs in aging.

CONCLUSION

The development of a Division of Gerontology within the Department of Medicine at the University Medical School would provide the University Medical

School and the entire Southwest with a much needed new treatment, education and research center for aging. Such Division of Clinical Gerontology (Center, Institute or Department), emphasizing the medical, scientific and social needs of elderly people, will help the medical students and house staff at the University and the practicing physician in the community to learn more about normal growth processes and human development from birth through senescence. ~~It~~ ^{it} ~~will~~ ^{would} also improve the delivery of health care to the old people of the Southwest, conserve their financial and other resources, and promote better understanding among the medical and paramedical professions of the impact of an aging population on health, medicine, social structure, problems of work, retirement, leisure, income and other socioeconomic problems.

PROPOSED

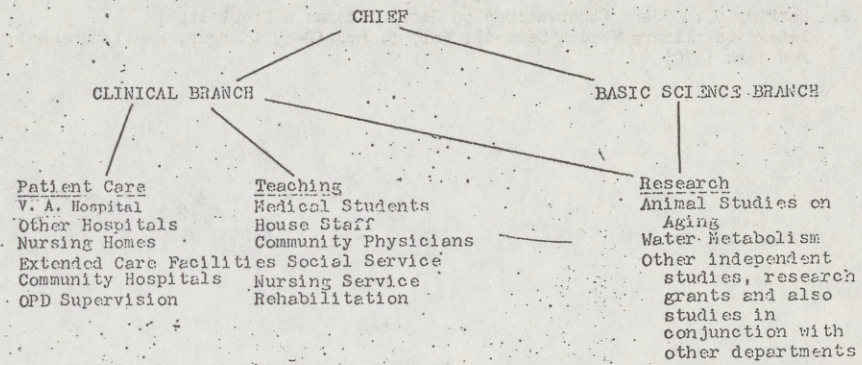
DIVISION OF CLINICAL GERONTOLOGY
(Center, Institute or Department)

FIGURE 1

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1. Harris, R.: "Geriatrics as a Specialty", Geriatric Times 4:2 No. 8), Aug. 1970
2. Harris, R.: "Some Observations on Geriatrics as a Specialty", Interdisciplinary Topics Geront., Vol. 5, pp. 50-53 (Karger, Basel/Munchen/New York 1970)

*Insert in
Dr. Harman's
testimony*

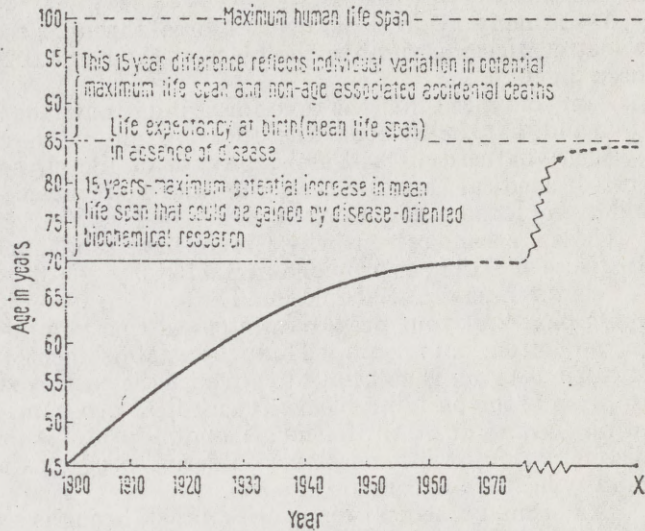


FIGURE 1.—Average life expectancy at birth in the United States since 1900.

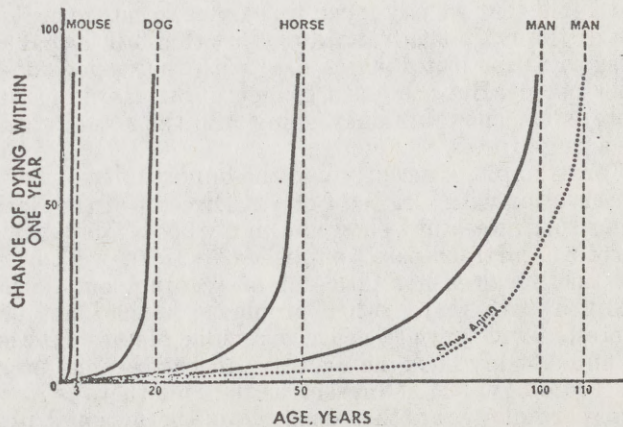


FIGURE 2

Dr. HARRIS. Thus, the establishment of a National Institute on Aging is necessary to advance the basic research so essential to provide the building blocks for medical programs for the training of physicians, allied professionals and para-professionals, and for the dissemination of information and action programs to improve community health and care of the aged.

As in many medical discoveries, breakthroughs seem to be mainly a matter of being right in the place at the right time with the right ingredients.

I am convinced that the time for aging is now, that this is the right time and that the National Institute on Aging is the right ingredient.

Such an Institute will assist physicians like myself to reduce the cost of medical care for the aging and help make middle-aged and older people too fit to get sick or to die.

These are some reasons why I favor the establishment of a National Institute on Aging as provided in S. 775.

Senator EAGLETON. Thank you, Doctor.

On page 2 of your prepared statement that you just read, you state in the bottom paragraph, "Thus, the establishment of a National Institute on Aging is necessary to advance the basic research so essential to provide the building blocks for medical programs for the training of physicians, allied professionals, and para-professionals, and for the dissemination of information and active programs to improve community health and care of the aged."

"As in many medical discoveries, breakthroughs seem to be mainly a matter of being in the right place at the right time with the right ingredients."

Is it your thought that if there is a separate Institute on Aging it would receive greater budgetary consideration than it now receives as a minor component of the Child Health Institute?

Dr. HARRIS. Yes, sir.

I dealt with the problem of older people for at least twenty years, and I find that we pay much lip service to categorical institutions, and one of the reasons advanced against this bill is that we already have categorical institutes which deal with the various diseases that afflict older people. But there is a fallacy in this thinking, and the fallacy is there is not enough money going into the actual study of aging, and the aging process.

For example, I recently had the opportunity of having a delightful conversation with Dr. Ted Cooper, Director of the National Heart and Lung Institute, and I showed him my book "Management of Geriatric Cardiovascular Disease" published in 1970; well, he had not read it, not that he does not do a lot of reading, but he has been so pre-occupied with many other problems, he had not been particularly interested with geriatric cardiovascular disease. However since he met me and saw my book, he read it, and has become interested in geriatric cardiology, but at present he tells me there is no money for geriatric cardiology, another example is the national program to detect and treat people with hypertension but there is one fallacy with the whole project, although it relieves people over 65 who may be hypertense. There are no real sound research data on what really constitute hypertension in the aged.

The focus of these categorical institutes, is there for research on heart diseases and on cancer, but most scientists focusing on categorical diseases, cannot or do not expand their conceptual thinking to include the effect of aging, and the aging process. This is why most of the money has gone for the support of heart disease, rather than for the support of aging, and research in aging.

Furthermore, there are any number of diseases such as cardiac amyloidosis and other conditions which mainly afflict people over the age of 65, and are not found in younger people. The ordinary researcher, trained in other types of research is unfamiliar with the diseases that occur in older people, because they are old. They may be familiar with age-associated diseases, but not with diseases that occur in old age with which they have not worked.

Senator EAGLETON. You are familiar, I take it, with Dr. Sinex's breakdown of the budgetary figures he mentioned in his testimony?

Dr. HARRIS. Yes, sir.

Senator EAGLETON. Where do you think the emphasis ought to be in terms of building these blocks, as you call, for medical progress for the training of physicians, allied professionals and paraprofessionals.

Would this come about by research grants, training grants, or what?

Dr. HARRIS. I happen to be very much interested in how people in organizations do effective work. The best way to accomplish what we are trying to do in aging is to develop enough building blocks for aging research to attain a critical mass. If sufficient money for research is made available, these moneys can be used to employ researchers in aging who will build up a critical mass in different areas of aging in medical schools and universities. Their status will influence other professors and students and change the traditional approach to medicine so jealously guarded by professors of medicine and other people.

The emphasis has to be on research, but I hope there would be a sufficient overflow to utilize this research material by providing moneys also for education and training programs to train doctors to take better care of older people, and to learn the art of geriatric medicine.

Senator EAGLETON. Well, I think we will try to get in one other witness before I have to depart temporarily.

Dr. BRODY. Dr. Binstock is a professor in political science at Brandeis University.

STATEMENT OF ROBERT H. BINSTOCK, PH. D., PROFESSOR OF POLITICS AND SOCIAL WELFARE, BRANDEIS UNIVERSITY

Dr. BINSTOCK. It is a privilege to testify here again, Senator.

I want to draw especially on my previous experiences as Chairman of the Adult Development and Aging Review Committee at the National Institute of Child Health and Human Development and Executive Director of the White House Task Force on Older Americans of 1967-68.

Senator EAGLETON. Doctor, I probably must cut you short just in the middle of the subject.

It is only a ten minute vote, and there will be a succession of them, and I will take you up when I come back.

What is your time frame? How crowded are you in time.

Dr. BRODY. We are available to you for as long as you wish.

Senator EAGLETON. Thank you.

I will be back as quickly as I can.

[Whereupon a recess was taken.]

AFTER RECESS

Senator EAGLETON. The Subcommittee will once again be in session.

I understand Mr. Carlucci is here, but he would prefer to wait until we complete the Gerontological Society testimony.

We were at the point of calling on Dr. Binstock when the voting started.

Dr. BINSTOCK. Senator, none of us here this morning debates the desirability of research on aging and why it is needed.

It seems to me the major issue can be stated very, very simply, and that is: Can the job be done better in NICHD, or can it be done better with the new National Institute on Aging?

The issue can be stated simply, but I do not think it can be answered quite as simply.

It is easy to toss about terms like "duplication," and "categorical" in criticizing the bill, but such terms can be tossed around pretty loosely.

We know that what is properly termed categorical is pretty much a matter of semantics, and determined by the fashions of the time. When virtually anything was first introduced, it was categorical. In the Soviet Union they have decided aging is not categorical, and have established a National Institute on Aging with a very strong program and priority.

Duplication is certainly not the issue here. If what we are talking about is duplicating what now goes on in NICHD, I do not think we would be wasting our time or your time here this morning.

I think the issue here is really whether or not an NIA can do the job more effectively than NICHD. The scenario that is presented in various representations by the Administration is a very appealing one in an ivory tower sense. It is the notion of an integrated life-span institute with coordination of child studies, and population studies, and adult studies, and aging studies; but that scenario does not work out in practice. As Dr. Sinex has pointed out earlier, it may not even be appropriate theoretically in some respects.

More to the point NICHD cannot carry out in practice this integration and coordination. The reason, of course, is not personality. Indeed the Director and other staff there are very dedicated and able. They do meet their responsibilities. But their responsibilities are fractionated on a percentage basis, on a multiple mission basis, and the coordination does not really get brought about.

Coordination does not take place between the intramural aging program and the extramural aging program. There is no connection at all to speak of.

There is no coordination between the intramural aging program and the other intramural research programs, although they are under one Director or Chief. There is a once-a-month seminar which is about all one can identify as an attempt at integration. Perhaps that is an overstatement, but I believe it is fairly accurate.

There is no coordination between the extramural research in aging in adult development and the extramural research in child development and population. And there is no coordination between aging in NICHD and in the other institutes, let alone outside the Institute. So what I am trying to suggest is that there is a fine academic concept here of a life-span integrated approach, but because of the necessities and the pressures of management, these integrative ideals are not realized in any sense whatsoever.

Now, the results of this, are several serious losses.

Without an effort to really strengthen your aging program through coordination, to put together the pieces, you do not really get the kind of critical mass that can attack a problem effectively.

A second loss is that you do not build bridges to the other institutes. The aging program is one fraction of a larger institute, and it is not a well-coordinated Institute. The aging program is in no position to reach outside, and to do some very important things. To illustrate just briefly, one of the methodological contributions of aging research is cohort analysis, that is, what do we know about people who were growing up in 1915, and what is peculiar about people of that era as opposed to people growing up in 1935. If somebody were taking leadership or were able to take leadership for aging within the structure at NICHD, the cohort analysis concept could be applied over to the Dental Institute and to a number of other institutes, in such a way that existing data could be refined, clarified, and help us make progress on a lot of diseases. We have a lot of misleading conceptions about the progress of dental decay, periodontal problems, and so on, simply because of the failure to apply cohort analysis to a number of diseases.

And finally, I think the critical point to make is that a new institute would not duplicate, it would replicate and improve. The existing program at NICHD would be eliminated.

The new Institute does not have to result in the building of a new domain within NIH, and within the Government at large. What we are talking about is the building of cohesion in programs, with a critical mass; and we are talking about the building of bridges between the aging programs and the other programs of NIH.

The social and behavioral components described in this bill are something that are really missing in the current program. While there is a 20-percent figure for the behavioral budget, if it is analyzed closely by someone who knows what behavioral research is, it is really not even approaching that. And the program managers at NICHD and the extramural branch would certainly agree to that if they had to discuss it bit by bit.

What is also missing in the way of mission under the current setup is something totally within the mission of NIH overall. To state it very simply, here is no one developing a program that looks at the impact of biomedical findings upon the nature of society and life for older persons, now and in the future. And there is no one looking at the impact of social trends upon biomedical developments for adults and the aged, which is perfectly within the mission of NIH.

The administrative structure which we have now at NICHD leads directors of branches and divisions to make certain they have certain areas of investigation represented minimally in their portfolios, but

does not lead them to build an intellectually cohesive program. This is what leads us to come here and support an NIA.

Senator EAGLETON. Does that complete your testimony, Doctor?

Dr. BINSTOCK. Yes, sir.

Senator EAGLETON. Thank you very much.

In your statement you referred on more than one occasion to the lack of coordination that now exists either in NICHD, or NICHD vis-a-vis the other Institutes of Health, with respect to research on aging.

Why are you confident that the establishment of a separate institute would take care of this problem of noncoordination?

Dr. BINSTOCK. I am more confident with a change than with the status quo for the following reasons. First, in the present setup, there is no real incentive to reach out and coordinate. There is one branch manager in there for extramural and one for intramural, who must make sure they fit in well to the NICHD framework administratively if not intellectually.

There is no incentive for these people, buried down in the structure, to reach out for coordination. Moreover, it is difficult for them in terms of politics, both in terms of pressure from above and in terms of their lack of status for reaching out.

A new institute would have to do this if it were going to survive, because the immediate question asked at NIH, would be, are you folks going to try to take over some of our programs. And no new Director could be effective unless he immediately started allaying those fears by showing how he could contribute to their programs rather than trying, as a small program, to pose the vision of being a threat. So it would be very much in the interest of a new Director to coordinate if he is going to survive.

Senator EAGLETON. Do you, Doctor, or any other member of this panel, have any ball park figures as to the reasonable funding level for this new Institute?

Dr. BINSTOCK. I certainly think a reasonable level for getting it off the ground would be no more than about \$20 million.

I do not know how my colleagues would feel about that, but I think that the Institute would be in trouble if too much money would be thrown in right away, because then there would be a great rush to spend before the fiscal year was up. In the short run, that would not be very healthy for the Institute. So I would like to see a light increment beyond what was available about a year ago, and to build out from there.

Senator EAGLETON. Would you have any tentative breakdown in that \$20 million figure as to how much would be overhead and how much would be actually research or training grants?

Dr. BINSTOCK. I have not studied that. Perhaps Dr. Sinex could speak to that.

Dr. SINEX. I would say the experience would show the takeoff level of budget is probably closer to \$30 million, when an institute begins to develop a really strong program. The major role probably should be in the research grants.

There should be aging research in Bethesda, if you are really going to have interaction, you are going to have to have some in-house aging research in Bethesda.

Senator EAGLETON. Is there anything being done there now under NICHD?

Dr. SINEX. No, primarily because of the space problem.

The construction is frozen at Bethesda. Child Health is in a tight bind. They have to get their building up. Then there would be an opportunity to put a wing on their building which would house some aging research. Expansion of intramural programming on the Bethesda campus would be difficult until there is construction.

I would say that the change in balance as the budget moves upward from \$12 to \$30 million would primarily be in research grants and contracts to the extent the contracts would replace research grants.

You will need money to fund the extramural centers that you have. Jim Birren raised \$4 million for that building out in Los Angeles.

The time has come now that private schools, private institutions and the private sector have made their contribution. A number of first rate institutions have already sought to establish their versions of what constitutes interdisciplinary research in aging.

Also the small scientists are hurting. You have two problems, the problem of what can be accomplished in large centers. And you have the problem of what can you do with young people thinking hard and independently who are not in such centers. The people associated with the larger programs, with their program projects, somehow or other, are making out. But young people who must make it on their own and want to get research grants that are being badly buffeted. The program projects will be cut fifteen per cent, so there are no new jobs, and they do not have the reputations and bibliographies to get grants.

A young person with only a single application in NIH has a one in six chance of being funded and only a 50-50 chance of being funded if it is approved by study section and council. This is a type of gambling that is very hard to ask young people to do and still be creative.

Dr. BRODY. Professor Beattie is the Director of the Institute in Syracuse, which is an all university institute, which we think reflects the spirit of this bill.

Senator EAGLETON. Let me ask at the outset, what is meant by All University Gerontology Center?

Dr. BEATTIE. Syracuse is related to the discussion of a separate Institute on Aging. They made the decision last year to create an All Gerontology Center, in which the Director reports directly to the Chancellor, and can call upon all academic disciplines and professional schools based on a priority for research in aging as well as in training programs.

I identify this because the critical issue here, which several others have identified, is this question of a need for mission-oriented leadership in aging. Those of us who have worked for well over twenty years in the area of gerontology have become aware of the changes, not only in the aged structure of the population, but of the critical policies that must be predicated on research, not only in bio-medical, but also in the behavioral sciences. We have become convinced of the need for the professional schools that must apply to such findings and also evaluate outcomes.

We are critically concerned about the lack of relationship between professions and the basic disciplines. The Center in Syracuse points in this direction.

We have 17 academic disciplines and professional schools involved, and part of the issue that has come up over a time in aging is this issue that Dr. Binstock pointed to, the lifespan view, can we get better payoff in studying children.

It is not that we should not be studying the issue of aging, and the early part of the lifespan, but that we have created no priority allocation in a mission to mount a program to begin to attract doctors in the fields of aging and gerontology.

If one were to look across the country at various disciplines and behavioral sciences, we would almost count on our two hands the number of leadership persons in this area.

Psychology; although it has had a longer history, we can see clinical psychology has not developed very much in the field of aging except for a few notable exceptions.

If we go into professions such as law, where the next two days at Syracuse we will have a symposium on law and aging, what are the bases for development of legal procedures, legislative reform in the field of aging. What should the lawyer know, and what becomes the core knowledge that cuts across disciplines, these are all to be studied.

I do think we need a multi-disciplinary framework.

We need to have interdisciplinary linkages, and I think an Institute can point to this direction rather than a fragmented piecemeal approach.

I would also like to speak out as to the perspective when I served on the research committee of the 1961 White House Conference on Aging, where the request for an Institute was identified.

I was president of the Gerontological Society in 1963, when the National Institute of Child Health and Human Development was being established. Aging has been placed within the Institute, but has almost no visibility beyond this, not only by title, but again because of the question of mission orientation and its glaring defect in terms of the kind of leadership that is necessary.

Also serving on the technical committee for research for the White House Conference in 1971, the same issue came up, although we had established NICHD.

I would also like to suggest the need for the kind of critical mass that can only be developed when you bring the disciplines together and begin to develop a program strategy and research.

Now, I do not mean the individual investigator should not be supported out of his own interest and his own pursuit of knowledge, but I have sensed a lack of identity and mission to relate research findings to some of the basic critical social issues of our aging population, and by social, I include health. But if we look at the kind of tragedies of today's older citizens and do not relate these to the oncoming generations by putting greater emphasis on basic research and relating this research to application, I think part of our national policy mission is lost.

Lastly, I would like to express my concern and pleasure to see it in Senate bill 775, but am concerned with the administration's expansion on one component, and that is training.

We right now at Syracuse do have NICHD funds in psychology, and also Administration on Aging funds for training.

We have 31 trainees in our program, but whenever we get a special program on aging, we get anywhere from 125 to 150 students, and this building emphasis of students and faculty, we are ready to make commitments on aging, in this point of time when traineeship support is being eradicated.

The whole revenue sharing approach is rather ludicrous.

As was pointed out last week, when our educator had a letter from a township director in New York State, they had \$870 earmarked for aging, what should they do with the \$870.

If that is national policy of breaking down to bits and pieces where we have real questions, how do you mount training out of revenue sharing in these directions, even with specialized revenue sharing I think we have great problems with aging competing for such funds.

I think the issue is very critical to the issue of the application of aging in the United States and with knowledge building.

Senator EAGLETON. Doctor, in terms of the issue of mission orientation, do you have a preference between research grants or contracts, or are they interchangeable as far as mission orientation is concerned?

Dr. BRODY. I think the mission should relate to both. There is certainly a distinction between the two. I think we do need to have a great emphasis on a grants approach that can help the investigator to mount a program and not to be tied to a contract producing only specific information. I think, however, in a mission approach, there should be funding for contracts as well as to make sure that there are certain set policy directions that are going to be accomplished.

I think there is a need for the investigator to be supported in his own inquiry.

Senator EAGLETON. I ask this general question of the entire panel, and anybody is free to comment on it, or all of you can comment on it.

Assuming we had a separate Institute on Aging, and that it was funded at the level that Dr. Binstock mentioned, say \$20 million the first year, \$30 million the second year, what breakthroughs might we anticipate in terms of research with respect to aging?

I know it is strictly crystal ball gazing, but I am curious.

Dr. SINEX. We now have an idea of what an aging brain looks like. Now is the time to find out how to modify that process, through nutrition or drugs.

The second major area is immunochemistry. How do we maintain immune competence into later life?

This would be a great help to resistance to infectious disease, and provide some help to the body in the control of cancer.

I would say we need to know why aging is the principal factor in the etiology of cancer. Why does the incidence of cancer increase with age? It is not something that the Cancer Institute has to date shown a great deal of interest in.

Fourth, I would say is the question of the function of muscle as a tissue, smooth muscle, cardiac muscle, and skeletal muscle. Why do we have a loss of skeletal muscle mass? Why do the aged get feeble? Why do we have trouble with the bladder and other parts of our smooth muscle system? This is a metabolic problem that is approachable by conventional biochemistry. It is high time we get to work. We could get some payoffs rather rapidly.

Returning to the general approach, particularly research on the effects of drugs and nutrition. There are things that can be done without knowing all of the reasons. At the same time, you are doing basic research, there is empirical research that can be done. If it is well done, it can have some fairly immediate payoffs. There should be an active program, in pharmacology, and an active program in nutrition, directed at the question of how you can support the older person better.

It is time to get started.

Dr. HARRIS. I would like to follow up on the muscle aspect, and I feel one of the real payoffs would be the empirical payoff.

In particular, I am talking about the effective physical activity on aging which presently is an overly neglected area.

There has developed a false stereotype of an aged person, as a person who has to be in bed, who cannot be active, and who cannot be independent, mobile and vigorous. This entirely erroneous concept must be and can be dispelled by research on the effect of physical activity on older people. At the same time this is a therapeutic type of research which can demonstrate that old people can be more active.

I had the pleasure of participating recently in a program in Charleston, West Virginia, on physical activity and aging. It was quite interesting to note how one private small foundation was able to activate old people in nursing homes and other senior citizen centers by spending time with them and teaching them to exercise. In one demonstration at least 75 people aged 65 to 93 exercised for at least half hour with obvious benefit. In conversation with me, they told how they were enjoying life, felt better they were happier and their medical expenses were less.

There is much to do in this particular area. Leadership is very important. This why I feel the critical mass concept should be applied in the field of aging as it has been in the field of atomic energy.

We have a lot of bits in aging, and unless these bits are put together, we will never achieve anything. A National Institute on Aging will provide the leadership and money for this type of activity and help to achieve an effective critical mass in aging research.

Senator EAGLETON. Doctor, I take it that in terms of the things you have mentioned, there might be conceivable breakthroughs in the future, and that you think those could be accomplished by contract or by research grants.

It seems to me you consider the end results as being more susceptible to a contract.

Dr. HARRIS. I am interested in achieving results. The influence of physical activity on aging could be done through contract grants, specifically to determine the effects of exercise on old people, on their muscles, their bones and their joints.

Applied research on specific objectives like the effect of physical activity on aging could be done by contract, but I would not like to overlook the value of general research grants to create and innovate new approaches to the problems.

Senator EAGLETON. Senator Pell.

Senator PELL. No questions.

Senator EAGLETON. Senator Beall.

Senator BEALL. No questions.

Senator EAGLETON. Thank you very much for an interesting presentation.

Our next witnesses are from the Administration and they are Frank C. Carlucci, Under Secretary of Health, Education, and Welfare, accompanied by John S. Zapp, D.D.S., Deputy Assistant Secretary for Legislation (Health), DHEW; John F. Sherman, Ph.D., Acting Director, National Institutes of Health, DHEW; Gerald D. LaVeck, M.D., Director, National Institute of Child Health and Human Development, National Institutes of Health, DHEW; and Marvin Taves, Ph.D., Chief, Division on Aging, Office of Research and Demonstration, Social and Rehabilitation Service, HEW.

STATEMENT OF FRANK C. CARLUCCI, UNDER SECRETARY OF HEALTH, EDUCATION, AND WELFARE, ACCOMPANIED BY JOHN S. ZAPP, D.D.S., DEPUTY ASSISTANT SECRETARY FOR LEGISLATION (HEALTH), DHEW; JOHN F. SHERMAN, PH. D., ACTING DIRECTOR, NATIONAL INSTITUTES OF HEALTH, DHEW; GERALD D. LA VECK, M.D., DIRECTOR, NATIONAL INSTITUTE OF CHILD HEALTH AND HUMAN DEVELOPMENT, NATIONAL INSTITUTES OF HEALTH, DHEW; MARVIN TAVES, PH. D., CHIEF, DIVISION ON AGING, OFFICE OF RESEARCH AND DEMONSTRATION, SOCIAL AND REHABILITATION SERVICE, DHEW

Mr. CARLUCCI. Thank you, Mr. Chairman.

I appreciate the opportunity to appear before the Committee to express our views on S. 775.

Senator EAGLETON. Please proceed, Mr. Carlucci.

Mr. CARLUCCI. Mr. Chairman and members of the Subcommittee, it is a pleasure for me to be here today to present the views of the Department on S. 775, which proposes to amend the Public Health Service Act to provide for the establishment of a National Institute on Aging.

I believe I should state initially, Mr. Chairman, that we oppose the enactment of legislation to create a new Institute.

We believe the enactment of unnecessary legislation will not in and of itself foster aging research.

We have previously testified against H.R. 65, an identical bill introduced in the House of Representatives.

As you know, the President did not sign a similar bill, H.R. 14424, in the 92d Congress because it would have needlessly created another institute and would have unnecessarily duplicated authorities for activities already being carried on by the National Institute of Child Health and Human Development (NICHD).

In short, it would not enhance and could inhibit Federal efforts to respond to the needs of the elderly.

Although one objectionable section of last year's bill—the grant program for mental health facilities for the aged—has been removed from S. 775, we believe that the establishment of a separate research institute on aging is a step in the wrong direction.

S. 775 would establish a new National Institute on Aging to conduct and support biomedical, social and behavioral research related to the aging process, as well as the diseases and other special problems and needs of the elderly.

In addition, S. 775 would :

Establish a National Advisory Council on Aging to advise, consult with, and make recommendations to the Secretary on programs relating to the aged which are administered by the Secretary and on those matters which relate to the Institute.

Require the Secretary, through the new Institute, to carry out public information and education programs, "designed to disseminate as widely as possible the findings of Institute-sponsored and other relevant aging research and studies, and other information about the process of aging which may assist elderly and near-elderly persons in dealing with, and all Americans in understanding, the problems and processes associated with growing older".

Require the Secretary, again through the new Institute, to conduct scientific studies to measure the impact on the biological, medical, and psychological aspects of aging of all programs and activities assisted or conducted by the Department of Health, Education and Welfare.

And require the Secretary, "in consultation with" the new Institute to develop a plan within one year for "an aging research program designed to coordinate and promote research into the biological, medical, psychological, social, education, and economic aspects of aging."

In addition, a number of existing training authorities would be duplicated by S. 775.

I would like to review briefly the principal reasons for our opposition to S. 775 and the creation of a narrowly focused National Institute on Aging.

We are concerned about both the organizational structure and the duplication of legislative authorities provided for in S. 775.

We also believe the statutory requirement for an aging research plan is unnecessary.

We do not believe that the organizational structure proposed by S. 775 is the best way to assure a strengthened research effort.

We recognize that creating a new National Institute on Aging may have great appeal as a desirable way of focusing national attention and resources on the health problems of the elderly.

At the same time, we believe the compartmentalization of such research would weaken rather than strengthen efforts in the aging field.

If there were no Federal support for aging research, or if all the research activities in this field are susceptible of being located neatly in a single institute, one conceivably could argue for the S. 775 approach.

However, this is not the case. Aging research requires close coordination and intellectual exchange among many disciplines of science and its isolation in a separate institute will hamper such exchanges as well as divert needed funds from current research activities to unnecessary overhead costs.

Less than ten years ago Congress created a new National Institute on Child Health and Human Development, the result in part of a recommendation of the 1961 White House Conference on Aging for the establishment of an institute similar to that authorized in S. 775.

At that time, there was great interest in the establishment of institutes that would deal with the problems of the biological, medical

and social aspects of child development, mental retardation and fetal life.

The question that was faced then was whether the study of lifespan processes should be conducted by one institute or whether there should be a separate institute for each segment of the lifespan.

Recognizing that the physiological and psychological events of childhood may have profound effects on health, disease and longevity in adulthood, Congress chose to create one institute covering the problems of development from the process of fertilization through senescence.

Such an institute, it was felt, would be able to serve each of these areas better than a series of separate institutes, each concerned with a segment of human development.

A significant part of the work of the National Institute of Child Health and Human Development is its support of research on the biological, medical, and behavioral aspects of aging.

This research covers the entire period of the adult years, since aging processes occur throughout the entire period, gradually transforming the young person into an elderly one.

The NICHD does not stress studies of disease processes. This is because such studies are more properly supported by the disease-oriented institutes of the National Institutes of Health.

With respect to research into diseases of the aged, there is little basis for separating this activity from research on the same disease when it afflicts the young or the middle aged.

To do so would cause the almost inevitable result of duplicative work at two or more institutes, merely because a disease, such as cancer, can affect persons at many age levels.

The activities proposed to be conducted by S. 775 are already being carried out by the National Institute of Child Health and Human Development and by the disease-oriented institutes at NIH.

The NICHD bears primary responsibility for research in gerontology and thereby serves as the Federal Government's principal research institute on problems of the aging.

The Department is conducting an aggressive total program under the existing authorities that address biomedical problems of the aged.

Funds for aging research per se have increased from approximately \$3 million for 1964, when the Institute was created, to over \$12 million for the current fiscal year.

Among the aging activities sponsored by NICHD is the Gerontology Research Center in Baltimore, Maryland, where a staff of 216 scientists, and 79 visiting scientists and guest workers, technicians and administrators including 137 permanent full-time employees collaborate to study the biochemical, physiological, and behavioral changes that take place with aging.

Furthermore, NIH alone will be spending more than \$1.5 billion on disease-related research in 1974.

It is here that the biomedical maladies that most afflict the aging are properly being studied.

We believe, therefore, that the authorities contained in S. 775 are unnecessary.

They duplicate existing legislative authorities and would only add to the proliferation of legislative enactments which have led to the

cumbersome and complex maze of categorical programs within our Department.

As noted earlier, S. 775 would require the Secretary of HEW to develop a plan for the coordination and promotion of an aging research program.

We believe this provision is unnecessary and would serve no useful purpose in light of the appointment last year by the Secretary of a Technical Advisory Committee for Aging Research.

The Committee has been charged with the responsibility for developing a plan for bringing together all the activities and resources of the Federal Government in the aging research field and is actively working toward that end.

S. 775 is similar to other legislative proposals which have been introduced in an effort to focus attention on specific diseases or health problems.

In the 92d Congress, more than 100 bills were introduced that would have added unnecessary authorities for particular diseases or illnesses; a number of those bills would also have created separate national institutes.

For example, in addition to the institute to be created by this bill, new institutes were proposed for marine medicine, for digestive disease, for kidney disease and for sickle cell anemia.

We all share in the desire to improve the lot of the elderly through biomedical research and other activities of the Federal Government.

Nevertheless, we are in fundamental disagreement with the approach that unnecessary and duplicative legislation or separate research institutes are the way to improve the conduct of biomedical research.

Organizational changes, of and by themselves, do not necessarily cause research areas to flourish.

Such changes, in fact, often are counterproductive, particularly where research teams are split up and where the opportunity for scientists to freely exchange research results is removed.

Legislation such as S. 775 tends to foster the creation of barriers between scientific disciplines and the development of bureaucracies in sharply circumscribed areas of medicine.

In summary, we do not believe S. 775 would improve the quality of or progress of aging research. It would simply create a new administrative structure with attendant overhead costs and administrative jobs to do what is already being done by NICHD and the disease-oriented institutes at NIH.

It would mean diverting scarce medical research dollars simply to add more personnel to the Federal payroll.

Moreover, it would adversely affect ongoing research by fragmenting existing, well-integrated research efforts.

For the reasons discussed above, we recommend against enactment of S. 775.

My colleagues and I would be pleased to try to answer any questions you or any members of the subcommittee may have.

Senator EAGLETON. Thank you, Mr. Carlucci.

In your statement, you lay great emphasis on the question of duplicating or overlap of research, perhaps being conducted in other insti-

tutes, as being duplicative of that to be conducted by a National Institute on Aging.

Don't you run the same risk, even under the present structure, where aging is a facet or a small part of the National Institute on Child Health and Human Development?

Mr. CARLUCCI. Mr. Chairman, there is always a risk of duplication, but I look upon the prevention of duplication as a function of management, and the organizational structures need to be set up in such a way that we can manage in a manner that avoids duplication.

We now have the coordination, at NICHD, at a low level, where the actual action is taking place.

If you create a separate institute, you will escalate the coordinating responsibility to the Director of NIH who has a number of other institutes to worry about.

You will be adding one more burden to his already heavy schedule in terms of coordinating two separate institutions that might approach a given disease, say cancer, from different directions with the same goal, and I think the coordination problem would be compounded if we had a separate institute.

Senator EAGLETON. Is duplication always wasteful, or can it be argued in certain instances, approaching a problem from two different viewpoints might be helpful.

Mr. CARLUCCI. Duplication is not always wasteful, but organizational duplication, it seems to me, is something that we have to try to avoid.

For us to build duplication into the organizational structure at a time when we already, as you are well aware, have severe problems with the Federal budget, seems to me to be undesirable.

We think that we can have the interaction that is necessary between the various expert jobs at NIH, within the context of the existing organizational structure.

Senator EAGLETON. On page 5 of your statement, you said a significant part of the work of the National Institute of Child Health and Human Development is its support of research on the biological, medical, and behavioral aspects of aging.

The way we compute the budget figures for that Institute, about 12 per cent of it is applied to research on aging.

Mr. CARLUCCI. That is correct. In absolute numbers the figure has gone up from \$3 million at the time the Institute was established to \$12 million.

Now, however, of course, when you look at that, we have to ask ourselves when the process of aging begins, and what kind of studies impact the elderly, and we would find there are contributions being made in terms of specific diseases by many of the other institutes.

We find from the study of life processes in early childhood that these impact and affect longevity, so I do not think that just simply taking a percentage of funds allocated to that particularly research area necessarily tells the whole story, but maybe Dr. Sherman can help you on that.

Senator EAGLETON. In terms of the segment of the population we would be dealing with, which would be a significant percentage of the population of this country, 12 per cent of the budget of one

institute, and one of the smaller institutes at that, does not seem to me to be a stupendous amount of financial effort.

Mr. CARLUCCI. I think the \$12 million plus the other research efforts that are going on, within the NIH, is a very significant effort, and we think the quality of the grants and contracts that have been made by NICHD have gone up, and that we are having an impact on the study of the life processes that affect the aged.

Senator EAGLETON. Let me ask Dr. Sherman, if I can, were not some of these same objections with respect to overlap, duplication, administrative costs and so forth, raised at the time we created the Eye Institute?

Dr. SHERMAN. Yes, sir. That is absolutely correct, and if you recall, at that time, we opposed the creation of the National Institute for those reasons.

Senator EAGLETON. And that institute was created, some four or five years ago.

Dr. SHERMAN. Yes.

Senator EAGLETON. How do you feel it is progressing today insofar as the quality of the work being done in that separate institute?

Dr. SHERMAN. I have no hesitation on saying the quality of that work is first rate.

Our responsibility is, once given an Act passed by the Congress and a bill signed by the President, to do the best job we can in the way of resources.

Senator EAGLETON. Of the 75 slots awarded the Gerontology Research Center, how many have you actually filled?

Dr. LAVECK. There was a freeze on employment from December 11 until about March 2, so we were unable to recruit during that period. We have 137 people on board out of 182 slots, and we anticipate having 160 by the end of this fiscal year.

We think we can recruit that many by that time.

Dr. SHERMAN. Mr. Chairman, for the record, I think it is fair to show, in terms of additional positions, that a time when positions become ever more precious in an agency like NIH, on which both the Congress and the Administration have laid the NIH has given a larger increment both in proportional and in absolute terms to the aging program than to any other program in NIH, the greatest stress.

Now, I would not want to be held to the supposition that 75 will be the ultimate number, but nonetheless, I contend our efforts have been substantial as evidenced by our recruitment goals.

Senator EAGLETON. Where is the money coming from for this increase for 75 additional slots?

You have 45 yet to go, is that correct?

Mr. CARLUCCI. It is part of the overall budget for NICHD.

Mr. Chairman, as you are well aware, in the Federal Government, we have two types of controls and operating programs.

We have monetary controls, and we also have ceiling controls, and sometimes the latter becomes more significant than the former, and it has been my experience that it is more precious to operating managers. The point Dr. Sherman was making, in the allocation of slots and of the ceiling, to the efforts in Gerontology, they represent a real change in priorities.

Senator EAGLETON. But the budget figures for this fiscal year 1973, are \$12 million plus, the requested budget for fiscal year 1974 is \$11,800,000, which is a reduction of a half million.

Now, will we be able to add 45 additional slots with a budget that is decreased?

Mr. CARLUCCI. The funds for management, and program servicing is up from \$621,000 to \$630,000—

Senator EAGLETON. I am sorry. \$621,000 to \$630,000? That is \$10,000.

Mr. CARLUCCI. There is also the possibility of funds within NICHD budget.

Senator EAGLETON. But these slots are filled, and I am hoping they they will be filled, the slack then will have to be picked up somewhere else. It will have to come out of research grants, training grants, or out of contracts, or somewhere.

Mr. CARLUCCI. We may get funds out of the laboratory and clinical research part of the budget.

Senator EAGLETON. That does not give you a lot of money there either. That is \$60,000 there. We are talking about 45 slots. I am not trying to nitpick. I hope the slots are filled, but my conclusion is that it is going to be taken out of either the research grants, or the training grants, and I would hate to see those suffer.

Mr. CARLUCCI. Well, they will be filled within the context of the overall budget allocated to NICHD for aging, and we will try to take them from areas of lesser priority than the function for which they will be assigned.

Senator EAGLETON. All right.

What is the role of the Technical Advisory Committee for Aging Research in the Office of the Secretary?

Mr. CARLUCCI. That Committee has as its basic responsibility pulling together all of the activities in the area of aging research. It has had three meetings since its establishment, and at the first meeting, Secretary Richardson presented to the Committee the questions and problems on which he would be soliciting their advice. The second meeting was devoted almost entirely to discussions of the role or the functioning of the Committee by the members.

Among the functions outlined were the identification of priorities and preparation of recommendations concerning administration of research and the role of the Federal Government in the building and supporting of the Nation's research capacity. The third meeting was devoted to additional discussion of the future role of the Committee and its methodology, and they agreed at that time to set up three temporary committees, health and nutrition, income maintenance, and retirement roles in housing. These committees will outline the research needs in these areas. The Committee has spelled out for itself a very active role in trying to define the research areas in which we should be engaged and trying to coordinate the various research programs in HEW, so they can have maximum impact on the process of aging.

The next meeting of the committee is scheduled for April 4.

Senator EAGLETON. Is the staff of that committee represented here today?

Mr. CARLUCCI. No, there is nobody here.

Senator EAGLETON. There is a great deal of public interest in the field of drugs and nutrition on the aging process.

Are there any programs now conducted or being planned in these areas within the existing aging program of the Institute of Child Health?

Let me ask Dr. LaVeck to respond to that.

Dr. LAVECK. Yes, we have a project within the program that is concerned with nutrition.

We have a longitudinal study in Baltimore in which some 600 men have been followed for 12 or 13 years. As part of that study, a nutritional survey is being carried out.

Recent findings indicate that even among educated, upper middle class men there are vitamin deficiencies, particularly of Vitamin B-1, B-2 and B-6.

As far as drugs are concerned, we are currently investigating the use of estrogens which are commonly used in postmenopausal of women.

The purpose of this study is to determine whether estrogens have a beneficial effect on the duration and symptoms of the menopause and prevent fractures of bones that are commonly seen in older women.

Senator EAGLETON. Senator Beall.

Senator BEALL. Thank you, Mr. Chairman.

Mr. Carlucci, if I understand you correctly, while the money has increased from approximately \$3 million to approximately \$12 million since 1962 when NICHD was established, the percentages of the total remain the same, has it not?

Mr. CARLUCCI. That is correct, Senator Beall.

Approximately 12 percent.

Senator BEALL. So there has not been a growing emphasis on the problems of aging through the years, and it has been a level effort relative to the other programs conducted by NICHD.

Mr. CARLUCCI. If you are going to measure the emphasis by the amount of dollars, we think we are getting more impact for a given dollar expenditure, and we think that we are coordinating these activities better with some of the disease-oriented institutes.

Senator BEALL. I had a very informative day not too long ago with Dr. LaVeck and others, during a visit to the G.R.C. in Baltimore observing first hand, the work being done there, and I must say it is very fine work.

I might add that I have considerable parochial pride in Maryland, but I was also sincerely impressed by the dedication of the staff and the job they are doing.

I came away with the impression that there is more that can be done. Perhaps we need additional support so that we can better support the work being done on problems of the aging.

As pointed out by Dr. LaVeck, they have 600 men being studied over a long period of time so as to measure the effects of aging but they are only men. There are no studies being made on women primarily because they do not have enough money.

I think we have heard from earlier testimony that the Cancer Institute, for instance, does not appear to be concentrating on the unique problems that older Americans have with cancer and the Heart

and Lung Institute has not given particular emphasis to the specific cardiovascular problems that are suffered by the aging.

I think we have to be concerned about good management. I think we need coordination and good management in all of our government programs, but one thing good management requires is priority selection and it appears to me that one of the problems we have today in the field of aging is a lack of high priority treatment that I for one think it deserves. One way to get high priority treatment is to create a National Institute on the Aging, and I think this can be done consistent with good management. Thus we can give the problems of the aging, the attention, the intense consideration that they deserve without abrogating good management techniques.

Isn't that possibly true?

Mr. CARLUCCI. Let me ask Dr. Sherman to respond to the problem you posed with regard to the Cancer Institute and cardiovascular disease.

Let me just comment on the overall budget. There is an underlying assumption, Senator, in what you said, that the creation of a new organizational institute automatically means that it will receive more money in the budget.

As one who is familiar with the process of establishing the budget, I would dispute that.

From my experience, we go through the budget on programmatic grounds, and not on organizational grounds, and what we try to do is determine a given set of priorities.

We can make a case for virtually any program out at NIH, or indeed most programs in the Federal Government, that there is a need for more funds.

What the President has said, is that we have to live within the confines of a certain expenditure ceiling. Otherwise, we will be faced with new inflation or a tax increase. Within those limitations, we try to allocate the priorities on a program basis, rather than on the basis of whether a separate organizational entity, which may indeed create additional overhead, exists.

May I ask Dr. Sherman to address himself to the questions of the studies of the Cancer Institute?

Dr. SHERMAN. Both speakers, particularly Drs. Harris and Binstock on the preceding panel made excellent points concerning coordination and problems of coordination in any large and complex activity, such as NIH. I would say, however, in this particular context, the plans which are underway at the present time in both the cancer area and the cardiovascular area, would certainly have to take into consideration the types of concerns which they expressed.

Neither of those plans is sufficiently that far along. I think to pass judgment one way or the other, as to whether or not they are delinquent in this respect, is premature. There is no question that those expanded programs will have a great bearing on problems in those two disease areas with respect to the aged.

I can also assure you that Ted Cooper (Director, NHLI) having talked, as was described a few moments ago, to Dr. Harris would certainly take into consideration the comments which Dr. Harris conveyed about his concerns in the cardiovascular area, I think therefore, we can depend, just as we would in any pattern of the disease-

related activities carried on in those categorical institutes at NIH on the placement of appropriate emphasis on the cardiovascular diseases at both the childhood level and at the level of those in the group over 65.

Senator BEALL. I am happy to hear that. I agree, Mr. Carlucci, with what you said about operating within the restraints imposed by money supply. I am very sympathetic with the President's position on having to pay the total Government bill within the confines of the present tax receipts, but I do think that it is fair to disagree as to priorities. I think when you go through the budget process at NIH, sometimes it is necessary to have an advocate in order to get the high priority treatment that a problem deserves. It would seem to me that the overall problems of the aged, have not had the kind of advocacy they need in the budget-making process, and I do think this is a very large constituency of Americans who deserve the highest level of treatment from their Government. In order to get the kind of treatment they deserve, they need a good advocate who will help them promote their case with the budget people and throughout the hierarchy of the Federal Government. It just seems logical to me that a National Institute on the Aging would be the kind of advocate our citizens need in getting their fair share of Research programs.

Mr. CARLUCCI. Senator, there is no group that has gotten a larger share, and has had a bigger increase in the share of the Federal budget than the aging in general.

The amount of funds being spent on the elderly have gone up from some \$30 billion in 1970 to over \$52 billion projected in 1974.

In Social Security alone, the increase has been in the order of 51 per cent over the past three years. So I think that we can say, and Congress and the Administration can take pride in the fact, that a more significant share is being given to them.

Senator BEALL. That is all I have.

Senator EAGLETON. You cannot take too much pride in the Social Security increases. The Administration fought those. Their increases would have gone to something in the area of 20 per cent the way they wanted it.

It was the Congress that made them 50 per cent over the objections of the Administration.

Mr. CARLUCCI. The Administration came up with the increases, and the Administration also supported the cost of living escalation clause in Social Security.

It is true the Administration did not favor such an enormous increase in Social Security as was being proposed, facing some of the problems we have today in terms of cutting back.

Senator BEALL. Mr. Chairman, let me add, in terms of increases in the cost of living, the action we have taken is probably one of the best things that has happened, to the Social Security System. Now they will get what is rightfully theirs, rather than having their increases delayed by the need for Congressional action, as was the case in Social Security benefits throughout the years.

Mr. CARLUCCI. I think it is important to note that 20 million out of our total population now receive benefits from approximately one-fifth of the Federal budget.

Senator BEALL. I will not dispute the figures.

I think a lot of these are income-related benefits and this is certainly one of the greatest needs confronting our senior citizens. Perhaps we should eliminate the Social Security benefits from the general unified budget. Maybe we should have a budget concept where we lump Social Security benefits into a separate budget for that purpose. I think it would be good to separate these trust funds, and then we would have a better idea of what proportion of the General tax revenues are being diverted to the various responsibilities of the Government.

It does seem to me that, in addition to income, we can help our senior citizens by researching some of the causes of the aging process. I am suggesting that perhaps this deserves a higher priority, and the way to get a higher priority is to provide for a National Institute on Aging.

Do you think the aging people have the kind of advocacy in the budget-making process at N.I.H. that puts them on a par with other groups in our society, in view of the size of this constituency?

Mr. CARLUCCI. I am sure you are acquainted with Dr. Fleming, who I term one of the most effective advocates ever to hit the Federal Government. I think it is fair to say their views, the views of the elderly, have been very well represented in the budget process, and I do not think that they would be more effectively represented by the creation of an extra organizational layer.

What we pay attention to in terms of budgeting is the kind of priorities the President has set. He made it very clear that we are to give priority to the aging, which is one of the reasons why expenditures have gone up in a number of these areas.

Senator BEALL. We have to be concerned about other precedents.

Dr. Arthur Fleming, as splendid an advocate as he might be, will not be here all the time to advance the cause of the aging. I think this should be a continuing process, and it seems logical in light of the size of the constituency, for us to formalize the arrangement, so that the advocacy does not depend on one individual or his effectiveness.

Mr. CARLUCCI. I guess I just differ with the concept of the budget setting by advocacy. I think the budget process is essentially a priority setting process done by the President, and he tries to determine these priorities on the basis of the overall national interest taking into account all of the problems of our society.

Senator EAGLETON. Senator Pell.

Senator PELL. We have no longer a monopoly on the advances against disease, Mr. Carlucci. I have been instructed of the advances made in Romania, the Soviet Union, and in some other countries.

I was just curious what arrangements are there now for our elderly people to derive the fruits of the work that is being done in other countries.

Mr. CARLUCCI. We of course have an exchange agreement with the Soviet Union, which we are in the process of implementing.

Let me ask Dr. LaVeck to comment further on that.

Dr. LAVECK. There are frequently international conferences and members from this country go to those conferences.

There was a meeting in Russia in Kiev last year.

Senator PELL. On the subject of gerontology?

Dr. LAVECK. Yes, that is correct.

Mr. CARLUCCI. I might note the Soviet Deputy Minister of Health is presently visiting the United States.

Senator PELL. Would not the NIH provide a focal point where the activities in America could be centralized and the information exchanged?

As it is now, it is on a broad basis with no particular focal point in this country.

Mr. CARLUCCI. We think there is a focal point, and the Department of HEW, and the Director of NIH, and the Director of NICHD, and as Dr. LaVeck just indicated, he has been active in this kind of international exchange.

I fail to see how a new institute would further promote the exchange of information. We have various experts already at work. The essence of the exchange of information is for them to communicate with experts in other countries, and there is a framework already set up for doing that. We think it is working effectively.

Senator PELL. Thank you.

Senator EAGLETON. Thank you, Mr. Carlucci.

Thank you, gentlemen.

Senator EAGLETON. Our next witness is Dr. Denham Harman, President of the American Aging Association.

STATEMENT OF DR. DENHAM HARMAN, PRESIDENT, AMERICAN AGING ASSOCIATION

Dr. HARMAN. Mr. Chairman and gentlemen, my name is Denham Harman. I am President of the American Aging Association, Professor of Medicine and Professor of Biochemistry at the University of Nebraska College of Medicine, and Chief of the Nebraska Geriatric Service of the Douglas County Hospital, Omaha, Nebraska.

I appreciate having the opportunity to speak again before this Committee on the pressing need to establish a new National Institute of Health, the National Institute of Aging.

Aging is a basic biologic process that goes on continuously in every individual from conception until death.

Aging is a prime example of built-in obsolescence, ensuring individual death to permit species survival.

Interest in this process has been growing with the increasing awareness that life expectancy at birth reached a plateau of about 70 years fifteen to twenty years ago in the developed countries, and has not increased since.

The aging process is now the major factor nullifying efforts to increase the healthy life span. Although we die of a specific event, such as heart attack or cancer, it is the aging process which largely determines when the stage is set for the episode that quickly or slowly terminates our life.

The effect of the aging process on the rate of development of disease can be illustrated by comparing dogs and man.

Both species die of the same spectrum of causes—heart attacks, cancer, etc.—but all dogs are dead by around twenty years and all men by about 100 years.

By slowing the aging process, we will put off in time heart attacks, cancer and other events that kill us.

Through slower aging, a man in the future at age 60 may have the health and vitality of the average 45-50 year old of today.

The conviction that slower aging is a feasible possibility has been growing steadily over the past 15 to 20 years due to the gradual accumulation of knowledge of the effects of age on biological systems and of reasonable hypothesis to account for such changes.

Besides shifting the average life expectancy to higher values, inhibition of the aging process will also increase the natural human maximum life span.

It is a very reasonable possibility that pursuit of the leads we already have regarding the nature of the aging process, not to mention new ones that are likely to be found, will result in significant increases in average life expectancy with concomitant increases in the period of healthy life.

At present we have a ridiculous situation. We spend hundreds of millions on cancer, cardiovascular disease and other specific disorders while we spend essentially nothing, (around \$1 million to \$1.5 million) on the process that has nullified all attempts to increase our healthy life span for the past eighteen years.

The situation is even more ridiculous in light of the fact that conquest of cancer would increase the average life span by only 2.5 years at the most, while the corresponding figure for the elimination of cardiovascular diseases as causes of death is less than 10.5 years.

The time is now long overdue to increase the level of biomedical aging research. The formation of the National Institute of Aging would be a major step to this end.

The problem of finding practical means of slowing the aging process is far too important to permit the new Institute to engage in activities that do not directly relate to this goal.

In particular, the National Institute of Aging should not be allowed to become entangled in the problem of the aged, the end product of the aging process.

The problems of the aged and the problem of finding practical means of slowing the aging process are entirely different.

The medical problems that affect the aged—largely cardiovascular, cancer and neurological—are under active study in the established disease-oriented units of NIH.

The sociological, psychological and economic problems of the aged are an important concern of society but actions relating to that concern should not be a responsibility of the National Institute of Aging, but of an organization such as the Administration on Aging.

It is strongly recommended that the bill to establish the National Institute of Aging, S. 775, be modified so as to limit the concern of the Institute to biomedical research only.

Training programs also should not be a concern of the new Institute. The formation of the National Institute of Aging and the more ready availability of funds for biomedical aging research will attract scientists from other biomedical areas.

Younger scientists will come into this field by being engaged in biomedical aging research projects—by far the best way to train scientists.

In summary, the formation of the National Institute of Aging is long overdue. I strongly urge that S. 775 be modified so as to limit the activities of the new Institute to biomedical aging research.

By concentrating the effects of the Institute on this important basic biological problem, there will be a much better chance of having practical means of slowing the aging process available in the relatively near future and with them prospects for more years of healthy useful life.

Mr. Chairman, I have given my prepared statement (above) to the recorder. I would like to make some additional comments. The maximum life span is a species characteristic; for man it is about 100 years, while the maximum life span of dogs is about 20 years.

Horses live to about 50, and——

Senator EAGLETON. Who is 50?

Dr. HARMAN. Horses.

Now, with increasing age, the chance of dying increases progressively.

In humans, at age 90, the chances of living to 91 are about three to one. At age 100, the chances of living to 101 are essentially zero.

Since we die of something, such as cancer or cardiovascular disease, the chances of dying from such causes increase also with increasing age.

If you look at the death rates for cardiovascular diseases and cancer you will find that they increase in the same way as the overall death rate.

The death rate of the various degenerative diseases increase rapidly in the latter part of the life span so that by the time you reach 80 it is almost a matter of chance whether you will die of a heart attack today or from cancer tomorrow, or be hit by a car as you cross the street—the aging process having reduced your ability to see, hear and to react quickly.

Now, in some manner, which is not really understood, the aging process determines the rate at which disease processes, like cardiovascular diseases and cancer, develop and run their courses until the final event causing death.

Thus, to make a comparison between dogs and men, dogs die at about one-fifth the age of man, and of the same spectrum of causes, so that the aging process increases the rate at which these disease processes develop by a factor of around 5 in comparison to man.

Now, consider the average life expectancy; over the centuries this has been gradually increasing.

By 1900, it was about 45 years in our Country, and it rose to a figure of 70 years by 1955. It was quite obvious though by the mid-1940's that the rate of increase in average life expectancy was slowing up; it reached a plateau in 1955.

Our life expectancy today is still 70 years.

As our life expectancy has increased, there have been changes in the causes of death; around the turn of the century, we were dying mainly of infectious diseases such as pneumonia.

Today about 20 percent of us die from cancer and about 60 percent of cardiovascular disease, disease entities that cause death mainly in the older age groups.

If we eliminate all causes of death, such as cancer and cardiovascular disease, we would live an average of about 15 years longer than we do now—our average life expectancy would rise to about 80 or 85 years.

Consider cancer, elimination of cancer completely as a cause of death would increase the average life expectancy somewhat less than $2\frac{1}{2}$ years while elimination of death from heart attacks and strokes and other forms of cardiovascular disease would increase it by no more than $10\frac{1}{2}$ years.

The figures I have just mentioned are from calculations made in 1958 and are probably high, actually we should expect an increase of somewhere between 10 and 15 years in average life expectancy if we could eliminate everything we now put on death certificates.

It is instructive to consider what would happen if we do not die of an event such as a heart attack or cancer.

If we do not die from a heart attack, etc., we will live on and the aging process will reduce us to caricatures of our former selves. This pathetic transformation can be seen in any nursing home. Visit a nursing home and see some of the old people who have become senile, weak, feeble and incontinent—they are the end products of the aging process.

They are unfortunate to not have died of a heart attack, cancer, pneumonia or some other event before the aging process destroyed them as functional human beings; come what may, the aging process will kill them by about 100 years.

1955 was a milestone, so to speak, in history. In 1955 the aging process for the first time became the major determinant of when we die. Since 1955, when our average life expectancy reached 70 years, the aging process has nullified all attempts to increase our healthy useful life span.

If we could slow up the aging process, we would still die of cancer, heart attacks, etc., but at an older average age—possibly 5, 10 or 15 years greater than now—with concomitant increases in the years of healthy life.

Over the last 15 to 20 years there has been a growing conviction that it would be feasible to slow up the aging process; this conviction has grown because of our increasing knowledge of the effect of age on biological systems and of hypothesis to account for such changes. Today there are a number of research leads which point to practical means of increasing our healthy life span.

For the purpose of illustration I would like to speak briefly about some experiments based on the possibility that more-or-less random free radical reactions contribute to aging. Reactions of this nature are very common, for example, the development of rancidity in butter, the drying of linseed oil paints and the burning of gasoline. Free radical reactions are ubiquitous in living things. These chemical reactions can be slowed by compounds known as antioxidants. Now, if one adds antioxidants to the diet in small amounts they significantly increase the average life expectancy, at least in the mouse.

For example, if you add 0.25 to 1 percent by weight of one of a number of antioxidants to the diet of these animals, you can increase the average life expectancy by 15–45 per cent depending on the strain of mouse, diet, et cetera.

Senator EAGLETON. What are these compounds called?

Dr. HARMAN. Antioxidants. These compounds inhibit free radical reactions. The chemistry of free radical reactions is very well known. Free radical reactions are very common. Such chemical reactions are going on all the time throughout our bodies. Antioxidants have been

very well studied; they are used, for example, extensively in food to prevent breakdown of fats and other constituents by oxygen. Vitamin E, BHT and ethoxyquin are well known antioxidants.

Antioxidants increase the average life expectancy of the mice while in the worm and the fruit fly it has been found that Vitamin E will increase both the average life expectancy as well as the maximum life span.

Another way to modify the level of such free radical reaction in our body is to alter the dietary constituents.

Thus, it has been shown that increasing the amount of dietary fat or the degree of unsaturation (i.e., changing from lard to safflower or corn oil) shortens the life span of C3H mice.

Turning to protein, only one study has been carried out. Simply by alternating the type of protein, and/or adding different amino acids, it was possible to alter the life span of the mice in a predictable manner.

Cancer is one of the major causes of death. C3H mice normally develop breast cancer starting at about age 8½ months due to the virus transmitted to them through their mothers milk.

By altering the type of fat in their diet, it was possible to decrease significantly the breast cancer in these animals. More recently, in rats, adding Vitamin E to the diet also lowered the breast cancer incidence.

There has been a marked decrease in this Country and throughout the world in stomach cancer; this has been attributed to the increase in the use of antioxidants in our diet. Recently there was a paper in which several model cancer systems were studied; it was found that a number of antioxidants had a beneficial effect.

The above studies suggest that free radical reactions are involved in the induction of at least some forms of cancer. In this connection, x-rays which are well known to cause cancer, produce their biological effects largely through the initiation of free radical reactions.

Senility is a major problem in the older age groups; it has been thought in the past that this is a disorder we can do very little about.

Actually, rat studies indicate that relative intelligence can be modified by simply altering the type of fat in the diet.

Recently we have shown that the addition of Vitamin E to a diet containing safflower oil, improved discrimination learning in rats.

In essence, the reaction of fats with oxygen modifies the function of the brain.

Atherosclerosis is not the major event causing death. Here to, there are data to support the possibility that free radical reactions are involved.

Based on the work I have just mentioned in animals, it is very reasonable to expect that we could increase our average life expectancy by 5 or more years.

The formation of the National Institute of Aging would be a big step forward in attacking the aging problem. We have not been able to increase our average life span by conventional biomedical research for the past 18 years. It is now time to try another approach; the only one left is to slow the aging process.

At this point I would like to say a word about aging and the aged. Aging is a basic biological problem. It is a process that goes on in

every one of us from conception until death. It is the process that now determines when we will die. The aging process is now one of our major biological problems, if not the most important one.

The aged are the end products of the aging process. The problems of the aged should be of concern to every one of us. Considering that our life expectancy is now around 70 years, every individual is going to experience to some degree the so-called problems of the aged.

The medical problems of the aged are largely cardiovascular, cancer and neurological—including senility.

These problems are under study in the specific disease institutes at NIH; I think that this is where they belong.

The sociological and psychological aspects of aging are another problem. The Congress has before it, I understand, two matters which would help considerably in reducing the problems of older people—catastrophe health insurance and more adequate pensions.

In terms of the major problem we face today, how to increase our years of healthy productive useful life, it is my judgment that further research in the sociological and psychological aspects of aging would be insignificant in comparison with the biomedical aging research that needs to be done in order to find practical means of slowing up this process. It is for this reason that I urge that this new Institute be limited to biomedical aging research, and not to be allowed to become entangled with problems which are secondary or tertiary to the major problem; slowing the aging process appears now to be the only way by which we can increase significantly our years of healthy life.

Thank you.

Senator EAGLETON. Thank you, Doctor.

Do you know off the top of your head what percentage of the research grants are allocated by NICHD on aging with relation to biomedical problems as opposed to sociological problems?

Dr. HARMAN. Well, the last figure I saw was something like \$6 million allocated to the extramural program of NICHD for this process, and I would guess somewhere around a million and a million and a half of that money went, at the most, to biomedical research directed toward finding a means for keeping you and I around for a longer period of time in a healthy condition. It is a very small amount.

Senator EAGLETON. About one-fourth of the \$6 million of your computation went for biomedical and about three-fourths went for sociological?

Dr. HARMAN. Excuse me. I am looking at it from the standpoint of what work would be helpful in terms of finding practical means of increasing our healthy life span. From this point of view only about 20 per cent of the funds were really helpful.

Senator EAGLETON. You place great emphasis on research to slow down the aging process, is that correct?

Dr. HARMAN. Yes. That is the only way where we will increase our expectancy, and with it our years of healthy life.

Senator EAGLETON. And you perceive that to be the major mission of a new institute on aging, and would define medical research as along those lines?

Dr. HARMAN. Yes. If further research needs to be done on the social and psychological aspects of aging such research should not be a concern of the new Institute.

Slowing up the aging process is a major problem. With the formation of the Institute of Aging we need to say to the scientific community: 1) here is a major biological problem, 2) this is what we know about it, 3) research funds are available for biomedical studies, and 4) let's get to work.

Senator EAGLETON. Senator Beall.

Senator BEALL. What are you saying, although you support the National Institute for Aging, you think we ought to narrowly define its role?

Dr. HARMAN. Yes.

Senator BEALL. Thank you.

Senator EAGLETON. Thank you very much, Doctor.

Would any of the previous witnesses wish to give us a brief response to the major thesis of Dr. Harmon so far as restricting the role of the new Institute of Aging is concerned to biomedical research?

Dr. SINEX. Yes, thank you.

I think it would be dangerous to restrict it, simply because the Administration on Aging does not and likely will not ever undertake the kind of social and psychological research which is needed.

It is not being done now anywhere, and AOA is always subject to organizational pressures, of research strategies which really are outside of research and what we might call programming evaluation.

Let me just illustrate one example of the kind of social research we need in an important practical way in this country.

If we had mounted a critical mass of interest in social research on aging some twenty years ago, we would not have been surprised that the White House Conference on Aging defined the so-called sleeper problem, that older persons do not have transportation service. People did not find that out because they are not giving transportation service, and they have no interest in it. But if someone had been funding research on how would suburbia be developing, and what are its implications for older persons in terms of the quality of life, it would have easily been seen the one integrating feature that makes the automobile accessible to the older people.

Contrarily, at the moment, the service people are all worried about the implications of revenue sharing, in terms of will their organization get a piece of the revenue.

There is an important social issue to be done, not on this type of question, but on the question of what changes will take place in the demographic distribution of older people, and in political systems of our local communities, as a result of revenue sharing.

We are going to have slack pumped into those systems for the first time. We may have development of local political power around that financial base, that gives us something analogous to social and economic mobility patterns.

We have seen where immigrants can take over control of City Hall and build up political machines. There are important implications there in terms of under what conditions will it be viable for older persons to live in the central city where many of them are now. What role they play in the political process, if they play any role? What kind of decisions will be affecting their lives? All of those things are researchable.

The problem is nobody is providing the leadership to interest anyone from a point of view on aging.

Senator EAGLETON. That is all well and good, but the argument, I take it, of Dr. Harman would be this kind of research, and he probably does not oppose that kind of research being done, belongs not in a National Institute on Aging, but under AOA, or under some other governmental program.

Dr. SINEX. That argument is certainly fine in the abstract, and I would only submit the record is clear since I first examined AOA in directing the task force for President Johnson in 1967, and that is that AOA's research money is almost invariably used in response to short term directives from the Secretary's office such as hold everything and put your money in the cities, or hold everything and put your money in nutrition.

Senator EAGLETON. Hold everything?

Dr. SINEX. Yes, it is always used, to put out the pressure, and there is no cohesive program in which intellectual strategy will have a major impact, and I think it is safe to predict that will continue.

It has to be recognized that the quality of life is affected by some things other than health, not that health is not very important, but if we are going to have people living longer, this is going to solve many problems in our society, but it will also create some other problems, and I think it is appropriate there be research to deal with this.

The practical problem is that the new Institute will take on the ongoing problems of child health, and these programs involve some very good socially oriented research.

Before you can take social-behavioral research out of the existing aging program, the National Institutes of Health, there has to be somewhere for it to go, and right now there is no place for it to go, for the reason that Dr. Binstock said. It is true, if Congress early told AOA to get some really good adequate grant management, and to do the job right, he could build up an Institute within AOA that would do good social and behavioral research.

That structure does not exist right now. The will to do it does not exist right now, and you have ongoing programs within the existing program, and National Institutes of Health which must be protected.

There is a loss already in the loss of training grants. The impact on social research and gerontology faced by this training grant program and to add to that a cutting off of their NIH support with no place to go, with their inadequate machinery in research that exists at AOA, it is ideally a good theoretical solution, but it just is not feasible right now.

Dr. HARMAN. I wonder if I could respond.

I was speaking about relative importance.

The problem of finding practical means of slowing up the aging process is far too important to permit the new Institute to become entangled with relatively minor problems.

It should be kept in mind the average life expectancy has increased from 45 years in 1900 to 70 years today, and this has not been accompanied by any overwhelming social and psychological problems.

Changes in life expectancy which are likely to come from biomedical aging research will not come overnight, they will come slowly, permitting, as in the past the gradual adjustments that may be needed.

The importance of biomedical aging research is vastly greater than that of social and psychological aging studies. Aging is the major factor that keeps us from living longer and better. These other problems are relatively minor.

In regards to support for psychological and sociological research in general, and on aging in particular, this could well be done in a new Institute limited to psychological and sociological research. This would be far better than trying to wed two entirely different problems, the biological process of aging and the social and psychological problems of the aged. Not only are the problems entirely different but the need to increase research on the biological problems of aging is tremendously more important than that of further research on the social and psychological problems of the aged.

I was not concerned about which agency supported AOA. That could be a separate institute devoted to psychological and sociological research which could be funded, rather than trying to make two different things together.

Dr. HARRIS. I think Dr. Harman has brought out an interesting point that makes us think a little bit about a philosophy of what we are trying to do.

Basically, I view a National Institute on Aging as a vehicle that we are building to help solve the problems of aging.

Certainly an emphasis upon biomedical research is very important to try and determine what the aging process actually is.

On the other hand, I think at the same time, we have to be aware of other problems that arise, and I think to focus narrowly only on the aging process would perhaps defeat us more than anything else, because this by itself would lead to a loss of additional programs. We would have no real vehicle to meet the particular problems, and this is why I think the approach envisioned in the bill, including not only the biomedical approach, but the behavioral sciences approach is appropriate and a sensible approach that would enable us to handle the problems and understand the problems of the aged, so I do not feel that the bill is incorrect.

I think what it does is emphasize the importance of the other problems as well. It will diffuse the energies that we have to separate these two the way that Dr. Harman has suggested, and as a practitioner and teacher, I think it is important to promote the research, and I think it is also important to consider the problems older people have and will definitely arise as the aging process is concerned.

I might also point out we are doing a lot of basic research in heart and cancer, and I do not think we are doing enough to transmit the effect of the research in heart and cancer, and I would hope that this Institute would not have such a deficiency.

Senator EAGLETON. Thank you very much. It has been a very interesting hearing, and I appreciate the testimony of all groups here, and Dr. Harman, I thank you very much for your presentation.

(Whereupon, the hearing was adjourned at 1:45 p.m.)

