MEDICAL RESEARCH ACT OF 1955

HEARINGS

BEFORE THE

SUBCOMMITTEE ON HEALTH

OF THE

COMMITTEE ON LABOR AND PUBLIC WELFARE

UNITED STATES SENATE

EIGHTY-FOURTH CONGRESS

FIRST SESSION

ON

S. 849

A BILL TO PROVIDE ASSISTANCE TO CERTAIN NON-FEDERAL INSTITUTIONS FOR CONSTRUCTION OF FACILITIES FOR RESEARCH IN CRIPPLING AND KILLING DISEASES SUCH AS CANCER, HEART DISEASE, POLIOMYELITIS, NERVOUS DISORDERS, MENTAL ILLNESS, ARTHRITIS AND RHEUMATISM, BLINDNESS, CEREBRAL PALSY, AND MUSCULAR DYSTROPHY, AND FOR OTHER PURPOSES

MARCH 31, APRIL 1 AND 13, 1955

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

UNITED STATES
GOVERNMENT PRINTING OFFICE
61998 WASHINGTON : 1955

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MEDICAL RESEARCH ACT OF 1955

THURSDAY, MARCH 31, 1955

UNITED STATES SENATE,
SUBCOMMITTEE ON HEALTH OF THE
COMMITTEE ON LABOR AND PUBLIC WELFARE,
Bethesda, Md.

The subcommittee met, pursuant to notice, at 10:20 a. m., in the administration building, National Institutes of Health, Bethesda, Md., Senator Lister Hill (chairman) presiding.

Present: Senators Hill (chairman), Lehman, and McNamara.

Also present: Dr. Robert H. Felix, director, National Institute of Mental Health.

Stewart E. McClure, staff director; Roy E. James, minority staff director; William G. Reidy, and John S. Forsythe, of the professional staff members.

Chairman HILL. The subcommittee will kindly come to order.

Before we proceed with our witnesses and testimony on the bill, S. 849, on behalf of the subcommittee, we want to express our deep appreciation to the Surgeon General, General Scheele, Dr. Sebring, the other members of the staff, and the heads of the different institutes here, for their great kindness and courtesy to us this morning during our tour of the Clinical Center of the National Institutes of Health. We had a most interesting and, I would say, enlightening visit, and we are deeply grateful, General. I certainly appreciate it.

The bill, S. 849, as we know, is a bill to provide assistance to certain non-Federal institutions for construction of facilities for research in crippling and killing diseases such as cancer, heart disease, poliomyelitis, nervous disorders, mental illness, arthritis and rheumatism, blindness, cerebral palsy, and muscular dystrophy, and for other purposes.

(The bill referred to and the reports of the Department of Health, Education and Welfare, and Bureau of the Budget follow:)

[S. 849, 84th Cong., 1st sess.]

A BILL To provide assistance to certain non-Federal institutions for construction of facilities for research in crippling and killing diseases such as cancer, heart disease, poliomyelitis, nervous disorders, mental illness, arthritis and rheumatism, blindness, cerebral palsy, and muscular dystrophy, and for other purposes

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That this Act may be cited as the "Medical Research Act of 1955."

SEC. 2. The Public Health Service Act (consisting of titles I to VI, inclusive, of the Act of July 1, 1944 (58 Stat. 682)), is hereby amended by inserting at the end thereof the following:

"TITLE VII—MEDICAL RESEARCH FACILITIES

"DECLARATION OF POLICY

"SEC. 701. The Congress hereby finds and declares that—

"(a) the ravages of certain devastating diseases causing widespread suffering, crippling, and premature death result in consequent loss of productivity to the Nation; an unnecessary economic loss to business and industry; severe financial impact on the families of the sufferers; an economic burden on local communities; and an impact on the defensive strength of the Nation;

"(b) promising new scientific developments remain unexploited because facilities for research are lacking or sadly deficient in those localities where research skills or patients are located;

"(c) there is a need to attract young scientists into this most important field, which need cannot be met if facilities to carry on research are denied them; and

"(d) it is sound public policy that, in our search for the causes of and cures for these devastating diseases, we encourage that freshness of vision and exploration of new ideas which can best be assured if research can be carried on in every region of the country and under competent local auspices in addition to that carried on directly by the Federal Government.

"PURPOSE

"SEC. 702. It is the purpose of this title to provide for grants-in-aid to accredited and nonprofit universities and schools of medicine, dentistry, and osteopathy, hospitals, laboratories, and other nonprofit institutions, engaged in or competent to engage in research, for the purpose of defraying the cost of construction of facilities, or the installation of equipment, needed for the conduct of research into the causes of and possible cures for crippling and killing diseases, including cancer, heart disease, poliomyelitis, nervous disorders, mental illness, arthritis and rheumatism, blindness, cerebral palsy, and muscular dystrophy.

"APPROPRIATION

"SEC. 703. There is hereby authorized to be appropriated for the fiscal year ending June 30, 1956, and each of the two succeeding fiscal years, not to exceed $30,000,000, for the purpose of making grants-in-aid provided for in this title.

"DEFINITIONS

"SEC. 704. As used in this title—

"(a) The term 'construction' includes construction of new buildings, expansion, remodeling, and alteration of existing buildings, and initial equipment of any such buildings; including architects' fees, but excluding the cost of off-site improvements and the cost of the acquisition of land;

"(b) The term 'nonprofit' means owned and operated by one or more nonprofit corporations or associations no part of the net earnings of which inures, or may lawfully inure, to the benefit of any private shareholder or individual; and

"(c) The term 'accredited' means approved or accredited by a recognized body or bodies approved by the Surgeon General after he has obtained the advice and recommendation of the National Council on Medical Research Facilities (created by section 705).

"NATIONAL COUNCIL ON MEDICAL RESEARCH FACILITIES

"SEC. 705. (a) There is hereby created in the Public Health Service the National Council on Medical Research Facilities (hereinafter referred to as the 'Council'), to consist of the Surgeon General, who shall be Chairman, one representative of each of the national advisory councils attached to the National Institutes of Health, to be designated by the respective councils, and one additional member who shall be experienced in the planning, construction, or administration of a medical research facility, to be appointed by the Surgeon General

with the approval of the Secretary of Health, Education, and Welfare. Vacancies on the Council shall be filled in the same manner as the original appointments. The Council shall cease to exist on June 30, 1958.

"(b) It shall be the function of the Council to act upon applications for grants-in-aid under section 706, and to make recommendations to the Surgeon General in connection therewith.

"(c) For the purposes of this title the continental United States shall be divided into four regions as follows:

"Region I: Maine, New Hampshire, Vermont, Massachusetts, Connecticut, Rhode Island, New York, Pennsylvania, New Jersey, and Delaware.

"Region II: Maryland, District of Columbia, Virginia, West Virginia, North Carolina, South Carolina, Georgia, Florida, Alabama, Mississippi, Arkansas, Tennessee, and Kentucky.

"Region III: Minnesota, Wisconsin, Michigan, Ohio, Indiana, Illinois, Missouri, and Iowa.

"Region IV: North Dakota, South Dakota, Nebraska, Kansas, Oklahoma, Louisiana, Texas, New Mexico, Arizona, California, Oregon, Washington, Idaho, Montana, Wyoming, Colorado, Utah, and Nevada.

"Grants-in-aid under this title shall be made in such manner that the sum obtained by adding (A) the total of such grants-in-aid made to any region, to (B) the total of the grants-in-aid made to such region by the Surgeon General for the same purposes from funds appropriated therefor prior to the date of enactment of this title, shall be approximately equal to the corresponding sum for each of the other regions. With respect to grants-in-aid made from the appropriations for the first two fiscal years for which appropriations are made pursuant to the provisions of this title, the Council and Surgeon General shall be deemed to have complied with the provisions of the immediately preceding sentence if (A) there is utilized 80 per centum of each such appropriation to make grants-in-aid in accordance with the provisions of such sentence, and (B) the total of the grants-in-aid to any region from the remaining 20 per centum of each such appropriation does not exceed one-third of such 20 per centum.

"APPROVAL OF PROJECTS AND PAYMENTS

"SEC. 706. (a) Applicants for Federal assistance under this title shall submit applications to and have such applications approved by the Council. Such application shall be in such form and contain such information and data with respect to the applicant and the proposed facility or equipment, as the Surgeon General may by regulations prescribe, including a detailed plan of the contemplated construction, and a statement as to the purposes to which the proposed facility or equipment will be devoted.

"(b) If the Council approves the application, the Surgeon General shall make a grant-in-aid to the applicant in the amount applied for, or such lesser amount as the Council determines to be appropriate; but no grant-in-aid shall exceed one-half of the cost of construction, including plans and specifications, of the research facilities, or one-half of the cost of installation of the equipment, as the case may be."

TECHNICAL AMENDMENTS TO ACT OF JULY 1, 1944

SEC. 3. The act of July 1, 1944 (58 Stat. 682), as amended, is hereby further amended by changing the number of title VII to title VIII and by changing the numbers of sections 701 to 714, inclusive, and references thereto, to sections 801 to 814, respectively.

EXECUTIVE OFFICE OF THE PRESIDENT,
BUREAU OF THE BUDGET,
Washington 25, D. C., April 11, 1955.

Hon. LISTER HILL,
Chairman, Committee on Labor and Public Welfare,
United States Senate, Washington 25, D. C.

MY DEAR MR. CHAIRMAN: This is in reply to your letter of February 22, 1955, requesting the views of the Bureau of the Budget on S. 849, a bill, "to provide assistance to certain non-Federal institutions for construction of facilities for research in crippling and killing diseases such as cancer, heart disease, poliomyelitis, nervous disorders, mental illness, arthritis and rheumatism, blindness, cerebral palsy, and muscular dystrophy, and for other purposes."

The proposed legislation would amend the Public Health Service Act by adding a new title authorizing a 3-year program of grants to universities and other agencies to aid in the construction, remodeling, or equipping of research facilities. The bill would authorize appropriations of $30 million for each of the 3 years.

The report of the Department of Health, Education, and Welfare contains detailed comments on the provisions of the bill. We also wish to emphasize the importance of determining future needs for medical research facility construction in the context of the then prevailing budget policies and the competing needs not only for other research construction but also for the conduct of research and for the training of scientists in all areas. In this regard the possible implication that $90 million represents the appropriate level of Federal expenditures for construction of medical research facilities in the next 3 years is undesirable.

As the Department of Health, Education, and Welfare report points out, the Surgeon General now has broad authority for construction grants for medical research facilities without a statutory time limitation. In this regard it should be noted that grants totaling $22 million to assist in the construction of cancer and heart research facilities were made under this authority in fiscal years 1948, 1949, and 1950. This proposal, if amended in line with the suggestions of the Department of Health, Education, and Welfare, would substitute general grant authority for the present disease category grant authority and would provide for a statutory matching requirement.

Legislation providing for noncategorical grants and a statutory matching requirement would represent an improvement in existing authority. However, in view of present budget stringencies and the fact that authority exists to provide for such urgent needs as might arise, we would recommend that this legislation not be given favorable consideration at this time.

Sincerely yours,

DONALD R. BELCHER, *Assistant Director.*

DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE,
Washington 25, April 12, 1955.

Hon. LISTER HILL,
Chairman, Committee on Labor and Public Welfare,
United States Senate.

DEAR MR. CHAIRMAN: This letter is in reply to your request of February 2, 1955, for a report on S. 849, a bill to provide assistance to certain non-Federal institutions for construction of facilities for research in crippling and killing diseases such as cancer, heart disease, poliomyelitis, nervous disorders, mental illness, arthritis and rheumatism, blindness, cerebral palsy, and muscular distrophy, and for other purposes.

The bill would amend the Public Health Service Act by adding a new title, "Title VII—Medical Research Facilities," authorizing a 3-year program of Federal grants to universities and other nonprofit institutions to aid in the construction, remodeling, or equipping of research facilities. Annual appropriations of $30 million would be authorized for this purpose.

The Surgeon General now has authority to make such grants under the broad provisions of section 433 (a) of the Public Health Service Act, which reads in part (emphasis supplied): "Where an institute has been established unded this part, the Surgeon General shall carry out the purposes of section 301 with respect to the conduct and support of research relating to the disease or diseases to which the activities of the institute are directed (*including grants-in-aid for drawing plans, erection of buildings, and acquisition of land therefor*), through such institute and in cooperation with the national advisory council established or expanded by reason of the establishment of such institute." Funds were appropriated in the fiscal years 1948, 1949, and 1950 for grants for cancer research facilities and for fiscal 1950, for heart research facilities. The total amount of these prior appropriations was $22 million.

The bill would not, therefore, add to the existing authority of the Surgeon General to make grants for the construction of research facilities. Rather, for a 3-year period the bill would provide a parallel authorization for such construction grants and spell out in the law certain requirements, standards, and procedures, some of which could be established administratively under existing law and some of which could not. The significant differences between the present and the proposed authorizations are discussed separately below.

First, the proposed new title VII does not contemplate categorical grants through the various research institutes, as under the present authorization.

Rather, it proposes a consolidated authorization covering facilities for research into any of the "crippling and killing diseases." Accordingly, the bill would create a new National Council on Medical Research Facilities to review and recommend action on all applications for construction grants. This new council would be composed of 1 representative of each of the component institutes of the National Institutes of Health; 1 additional member experienced in the planning, construction, or administration of medical research facilities; and the Surgeon General, who would serve as Chairman of the Council. We believe this consolidated authority, with a single reviewing Council, is preferable to the present categorical authorization in section 433 (a) of the Public Health Service Act.

Second, the proposed new section 705 (c) would divide the States into four statutory regions and would require that, with certain modifications, research construction grants under the proposed new title to any region, when added to prior research construction grants made by the Surgeon General in the past, "shall be approximately equal to the corresponding sum for each of the other regions." Although we are in agreement with the principle that geographical balance is one of several criteria to be considered in the administration of Federal grant appropriations, we believe that this provision of the bill, as presently worded, is entirely too rigid and might seriously hamper the Surgeon General and the Council in achieving the optimum distribution of grant funds. We would not object, however, to inclusion of a statutory requirement that geographical balance be included as one of the factors to be considered in the review of applications for grants.

Third, a grant made pursuant to the proposed title VII could not exceed one-half the construction cost of the research facility. Under the present authorization there is no statutory limitation of the proportion of construction costs that may be covered by the Federal grant. We believe that some statutory matching requirement is desirable for any Federal construction grant program. We have some reservations, however, as to the desirability of a flat 50-percent limitation. It might be preferable to permit grants up to two-thirds of construction costs, as under the Hospital Survey and Construction Act, particularly if geographical balance of facilities is to be a major objective of such grants. It should also be noted that the term "construction" is so defined in the bill as to exclude the cost of acquisition of land, which may be included under the present authorization. We believe the limited definition in the bill is preferable to the existing provision in this respect.

Fourth, under the provisions of the proposed section 706 (b), the Surgeon General "shall make a grant-in-aid" if the council approves the application. This language would appear to leave no discretion with the Surgeon General. Under the present authorization, construction grants can be made by the Surgeon General "in cooperation with the national advisory council," and the present provision relating to research project grants, while requiring the prior recommendations of the council, still leaves the final determination to the Surgeon General. We believe that this provision of S. 849 should be amended so as to authorize, but not require, the Surgeon General to make grants recommended by the council.

Finally, the construction grant authorization proposed in S. 849 includes a statutory time limit of 3 years and specific appropriations authorizations of $30 million annually. The present authority is a continuing authorization with no specified appropriations ceiling. In our opinion such statutory limitations or specifications are not necessary or desirable. Appropriations for Federal aid to medical research must be considered each year on the basis of the general Federal budgetary situation and of the relative importance of various health needs. In particular, the need for research facilities must be balanced against other research needs. In our opinion, continued Federal assistance in the form of project grants and research fellowships is the paramount medical research need at this time. In the light of all the relative priorities of need in the health field in general, and in the field of medical research in particular, we are unable to concur in the implication of S. 849 that annual appropriations of $30 million for construction grants alone are necessarily justifiable for the next three fiscal years. We would recommend that this provision of the bill be amended so as to provide a continuing authorization with no annual appropriation figure specified.

In summary, we are in agreement with certain provisions of the bill which clarify and improve existing authority for the construction of research facilities. However, we strongly recommend amendments to authorize the Surgeon General to make the grants upon recommendation of the council, and amend-

ments to provide a continuing consolidated authorization, without specification of annual appropriations and without a rigid formula for geographical equalization grants. If the bill were so amended, we would further recommend that it include provisions rescinding the present research construction grant authorization contained in section 433 (a) of the Public Health Service Act.

The Bureau of the Budget advises that it perceives no objection to the submission of this report to your committee.

Sincerely yours,

OVETA CULP HOBBY, *Secretary.*

Chairman HILL. Our first witnesses will be our friends from the American Dental Association, Dr. Trendley Dean, and Mr. Bernard J. Conway. If you gentlemen will just take seats there, that will be fine.

Now, Doctor, if you will proceed in your own way, please, sir.

This is Dr. Trendley Dean accompanied by Mr. Bernard J. Conway of the American Dental Association.

STATEMENT OF DR. H. TRENDLEY DEAN, SECRETARY, AMERICAN DENTAL ASSOCIATION'S COUNCIL ON DENTAL RESEARCH; ACCOMPANIED BY BERNARD J. CONWAY, SECRETARY, COUNCIL ON LEGISLATION, AMERICAN DENTAL ASSOCIATION

Dr. DEAN. I am Dr. H. Trendley Dean of Chicago, Ill. I am secretary of the American Dental Association's Council on Dental Research. Before my retirement from the United States Public Health Service, I was director of the National Institute of Dental Health Research, National Institutes of Health. With me is Mr. Bernard J. Conway, of Chicago, Ill., secretary of the association's council on legislation.

The proposed Medical Research Act of 1955, S. 849, establishes four fundamental assumptions upon which the need of Federal support for the construction of non-Federal health research facilities is based. In substance, those assumptions are: First, that certain devastating diseases cause widespread suffering and weaken the Nation's economy and military strength; second, that scientific development of health research is retarded in many areas where research skills and patients are presently available; that is quite true in dental research today; third, that attracting more young scientists into health research depends primarily upon making facilities available for their endeavors; and fourth, that freshness of vision and exploration of new ideas will be enhanced by making research opportunities available in all regions of the country under competent local auspices. It would be difficult to challenge the validity of those premises. The first is particularly applicable to the Nation's health problem and economic burden caused by dental disease. The others portray a pattern of neglected research potential that has materially retarded the development of an adequate dental research program in the United States.

Few persons are fortunate enough to avoid the suffering caused by dental disease. Most individuals, moreover, experience the ravages of dental caries and the periodontal diseases before reaching their middle years. The loss of a substantial number of permanent teeth is not uncommon among the young adult and middleaged groups within our population. And despite the excellent corrective and restorative services provided by practicing dentists, the diminishment or loss of dental function, in too many instances, contributes to the aggravation of other systemic conditions, and is a particular handicap to those whose occupation require them to deal with the public.

Dental caries is the most prevalent disease in the United States today. There is no need to support this truism with statistics; most persons among this group have undoubtedly received treatment for carious conditions not once, but many times. Nor does the dental problem begin and end with dental decay and its many crippling effects. The periodontal diseases are also among the most prevalent of diseases affecting the American populace. Three-fourths of the persons over 40 years of age who have teeth extracted lose them as a result of periodontal disease. The physical, social, and economic toll taken by dental caries and the periodontal diseases is staggering. Perhaps the best reflection of the Nation's dental burden is the annual cost of dental care borne by the civilian population. About $1½ billion is spent annually for private dental health services. Despite this tremendous expenditure, less than one-half of the population obtains adequate dental care.

Although the treatment of dental caries and the periodontal diseases and correction of their effects are necessarily the main concern of the dental profession, the dentist, today, is also trained to detect and remedy many other oral disorders. Early recognition of oral cancer by the dentist, for example, is of utmost importance in the control of that devastating disease. Recent studies have shown that 7 percent of cancerous conditions occur in the mouth or lips. In 1950, there were 5,138 reported deaths from oral cancer. Crippling deformities in the dento-facial anatomy are also of vital concern to the dental profession. One of these conditions, cleft chin and cleft palate, occurs in about 1 of every 800 live births.

A successful attack upon dental disorders must depend ultimately upon effective methods of prevention. Only research can provide the knowledge essential for the development of effective preventive measures. The past decade has seen an aroused interest in dental research, but progress has been retarded by the small amounts of money available for dental research grants and by the lack of facilities and equipment to carry out investigations. The problem of inadequate facilities for dental research, in the association's opinion, exists here at the National Institutes of Health. The dental research activities of the Institute have outgrown their facilities. Although Congress, as far back as 1948, foresaw the need for an expansion of facilities for the National Institute of Dental Research, only a token effort has been made in that direction. Most members of this committee undoubtedly recall the enactment of Public Law 755, 80th Congress. Within that act, Congress authorized an appropriation of $2 million—

> for the erection and equipment of suitable and adequate buildings and facilities for the use of the National Institute of Dental Research.

Congress, moreover, clearly expressed its intention that the expenditure of those funds should be expedited to carry out the purpose of Public Law 755. Although $100,000 of the $2 million authorization has been spent for the building plans, nothing further has been done to carry out the intent of Congress. The remainder of the authorization, $1,900,000, unfortunately would not be sufficient today to construct the building according to the plans drawn up in 1949. It is estimated that the building and equipment as specified in the plans would cost at least 33 percent more to construct today than in 1948–49.

The Federal Government's failure to show an adequate appreciation of the need for expanding dental research efforts is also reflected in the

proposed budget for fiscal 1956 dental research activities of the National Institute of Dental Research. The grants for dental research projects conducted by the dental schools and other private institutions amount to only $421,000; the grants for dental fellowships are limited to $100,000. Reports from dental schools alone would justify at least $1 million to support worthy dental research projects and $250,000 in fellowship awards. Those increases are fully warranted if only to assist the Federal Government to reduce its dental care expenditures. The dental treatment of Federal beneficiaries costs the Government each year over $100 million.

The approach within S. 849 is, of course, in the direction of expanding private research facilities, particularly in schools for training health practitioners. The American Dental Association supports the objectives of the proposed Medical Research Act of 1955 without reservation. The association has long supported the principle that Federal funds should be made available to dental schools which are not able through private resources to support their programs adequately. On two occasions, the association has testified in favor of legislation designed to assist dental and medical schools to expand and improve their facilities and equipment. One of the primary factors in determining the association's support of Federal grants to the dental school was their need for research facilities and equipment.

Within the last 2 months, the council on dental education of the American Dental Association completed a survey of the dental schools to determine their need for additional facilities and equipment. The survey also disclosed the funds needed, but not available to finance essential expansion and improvement of present facilities. Of the 43 dental schools, 40 submitted detailed information in reply to the council on dental education's questionnaire and 38 of the 40 indicated a need of about $30 million for new construction and $10.5 million for equipment for all purposes.

I might add there, in the last 5 years they spent $26 million of their own funds.

Chairman HILL. Of their own funds?

Dr. DEAN. Yes.

They reported only about $6.5 million on hand to finance their needed projects. In the list of areas of need, 28 dental schools reported that their research laboratories are inadequate. Thirty-four schools stated that their research equipment is insufficient.

I have taken the report of the council in those places pertinent to this bill with reference to research laboratories and equipment, and I have put it in the column between heavy rules here.

Chairman HILL. Those figures will go in the record, Doctor.

(The tabulation referred to follows:)

SURVEY OF NEEDS FOR DENTAL SCHOOLS CONSTRUCTION AND EQUIPMENT, 1955[1]

CHART 1.—*Existing physical facilities are adequate for the present enrollment in terms of*

School	Classrooms	Science laboratories	Research laboratories	Offices and conference rooms	Clinics	Other
1	No	No	No	No	No	No.
2	Yes	Yes	Yes	Yes	Yes	Yes.
3	Yes	No	No	Yes	No	Yes.
4	No	No	No	No	No	No.
5	No	No	No	No	No	Yes.
6	No	No	No	No	No	No.
7	No	No	No	No	No	No.
8	Yes	Yes	Yes	Yes	Yes	Yes.
9	No	No	No	No	No	No.
10	No	No	No	No	No	No.
11	Yes	Yes	No	No	Yes	No.
12	Yes	Yes	No	Yes	Yes	Yes.
13	No	Yes	Yes	No	Yes	No.
14	No	No	No	No	No	
15	Yes	No	No	No	No	No.
16	Yes	No	No	No	Yes	
17	No	No	No	No	No	No.
18	No	No	No	No	No	No.
19	Yes	No	Yes	No	No	Yes.
20	No	No	No	No	No	No.
21	Yes	No	Yes	No	No	No.
22	No	Yes	Yes	No	No	No.
23	Yes	No	Yes	No	Nc	Yes.
24	No	No	No	No	No	Yes.
25	No	No	No	No	No	No.
26	No	No	No	No	No	No.
27	Yes	Yes	No	No	No	No.
28	(2)	(2)	(2)	(2)	(2)	(2)
29	Yes	Yes		Yes	Yes	Yes.
30	No	No	No	No	No	No.
31	No	No	No	No	No	No.
32	No	No	No	No	Yes	No.
33	No	No	No	No	No	No.
34	Yes	Yes	Yes	Yes	Yes	Yes.
35	No	No	No	No	No	No.
36	No	No	Yes	No	Yes	Yes.
37	No	Yes	No	No	No	No.
38	Yes	Yes	No	No	Yes	Yes.
39	Yes	Yes	No	Yes	Yes	Yes.
40	(2)	(2)	(2)	(2)	(2)	(2)
Total:						
Yes	15	12	9	7	12	13
No	23	26	28	31	26	23

[1] From data collected by the Council on Dental Education in a survey of dental schools.
[2] No answer for present class size.

CHART 2.—*Existing equipment is adequate for the present enrollment in terms of*

School	Visual aids	Audio aids	Demonstration equipment	Student laboratory equipment	Research equipment	Office equipment	Clinic equipment
1	Yes	Yes	No	No	No	No	No.
2	Yes	Yes	Yes	Yes	No	Yes	Yes.
3		No	No	No	No	No	No.
4	No	No	No	No	No	No	No.
5	No	No	No	No	No	No	No.
6	Yes	No	Yes	Yes	No	No	No.
7	Yes	Yes	No	No	No	Yes	No.
8	Yes	No	No	Yes	No	Yes	Yes.
9	Yes	Yes	No	Yes	No	Yes	Yes.
10	No	No	No	No	No	No	No.
11	No	No	Yes	No	No	No	
12	No	No	No	Yes	No	Yes	Yes.
13	Yes	No	No	Yes	Yes	Yes	No.
14	Yes	Yes	Yes	No	No	Yes	No.
15	No	No	No	No	No	No	No.
16	Yes	Yes	Yes	No	No	No	Yes.

CHART 2.—*Existing equipment is adequate for the present enrollment in terms of*—Continued

School	Visual aids	Audio aids	Demonstration equipment	Student laboratory equipment	Research equipment	Office equipment	Clinic equipment
17	No	No	No	No	No	No	No.
18	No	No	No	No	No	No	No.
19	No	No	No	No	No	No	No.
20	No	No	No	No	No	No	No.
21	No	No	No	No	No	No	No.
22	No	No	No	Yes	Yes	No	No.
23	No	No	No	No	Yes	No	No.
24	Yes	Yes	Yes	Yes	No	Yes	No.
25	No	No	No	No	No	No	No.
26	No	No	No	No	No	No	No.
27	No	No	No	Yes	No	No	Yes.
28	(1)	(1)	(1)	(1)	(1)	(1)	(1)
29	Yes	Yes	Yes	Yes	Yes	Yes	Yes.
30	No	No	No	No	No	No	No.
31	No	No	No	No	No	No	No.
32	Yes	Yes	Yes	Yes	No	No	Yes.
33	Yes	Yes	Yes	No	No	No	No.
34	Yes	Yes	No	Yes	No	Yes	Yes.
35	No	No	No	No	No	No	No.
36	No	Yes	Yes	Yes	Yes	Yes	No.
37	Yes	No	No	No	No	No	No.
38	Yes	Yes	No	Yes	No	Yes	Yes.
39	No	No	No	No	No	No	No.
40	Yes	Yes	Yes	Yes	No	Yes	Yes.
Total:							
Yes	17	14	11	15	5	13	11
No	21	25	28	24	34	26	27

[1] No answer for present size class.

CHART 3.—*Amounts needed and on hand for construction and purchase of equipment*

School	Amount needed for construction	Amount needed for equipment	Amount on hand	School	Amount needed for construction	Amount needed for equipment	Amount on hand
1	$800,000	$50,000	$200,000	22	$1,500,000	$50,000	----------
2	----------	200,000	None	23	500,000	300,000	None
3	40,000	100,000	None	24	300,000	475,000	None
4	560,000	100,000	150,000	25	800,000	200,000	(3)
5	209,480	250,084	16,000	26	1,000,000	500,000	$200,000
6	3,000,000	1,000,000	4,000,000	27	260,000	275,000	None
7	900,000	600,000	[1] 50,000	28	(4)	(4)	(4)
8	----------	20,000	None	29	----------	----------	----------
9	1,500,000	(2)	None	30	1,065,000	560,000	50,000
10	750,000	250,000	None	31	300,000	150,000	100,000
11	280,000	132,000	None	32	2,000,000	30,000	500,000
12	150,000	100,000	20,000	33	750,000	440,500	None
13	100,000	115,000	65,000	34	----------	10,000	None
14	1,500,000	250,000	None	35	2,000,000	500,000	100,000
15	149,000	313,294	25,000	36	160,000	100,000	10,000
16	400,000	100,000	None	37	900,000	500,000	70,000
17	4,000,000	900,000	400,000	38	150,000	100,000	50,000
18	250,000	200,000	None	39	81,000	664,650	415,000
19	600,000	70,710	100,000	40	----------	100,000	----------
20	3,000,000	700,000	None				
21	320,000	96,000	25,000	Total	30,274,480	10,502,238	6,546,000

[1] Per year.
[2] Included in col. 1.
[3] Bank loan.
[4] No answer for present class size.

CHART 4.—*Amount needed for construction and equipment by schools anticipating the possibility of an increased enrollment* [1]

School	Increase in number of students accepted	Amount needed for construction	Amount needed for equipment	School	Increase in number of students accepted	Amount needed for construction	Amount needed for equipment
1	27		$200,000	11	11	$350,000	$525,000
2	21	$800,000	150,000	12	15	1,000,000	500,000
3	21	250,000	150,000	13	9	1,200,000	500,000
4	8	160,150	334,794	14	21	650,000	90,000
5	10	1,100,000	300,000	15	4	1,000,000	550,000
6	11	4,000,000	1,000,000	16	13	450,000	250,000
7	25	2,000,000	164,450	17	3	81,000	664,450
8	48	4,500,000	1,600,000	18	34		100,000
9	18	2,000,000	250,000				
10	15	1,850,000	675,000	Total	314	21,391,150	8,003,694

[1] Many schools reported that an increase in enrollment would not be possible within the next few years.

CHART 5.—*Amounts spent by dental schools within the past 5 years for building, remodeling, and equipment*

School	New buildings	Remodeling or expansion of buildings	New equipment	Replacing or repairing equipment
1		$100,000	$20,000	$5,000
2	$1,500,000	250,000	350,000	25,000
3	1,051,000	50,000	513,000	50,000
4	1,300,000	75,000	250,000	25,000
5	[1] 750,000	6,000	9,000	2,500
6		10,000	10,000	25,000
7	7,500	135,000	45,000	30,000
8		2,100,000	365,000	35,000
9		20,000	1,000	3,000
10	2,164,773		[2]	300,000
11	1,000,000		443,730	
12	[1] 4,000,000		[1] 500,000	25,000
13		300,000	75,000	50,000
14		10,000		
15		30,000	50,000	15,000
16		20,000	60,000	2,500
17		25,000	35,000	20,000
18	300,000	50,000	12,500	5,000
19		296,931	114,870	[3]
20		26,000	350,000	45,000
21		62,970	44,507	10,933
22	[1] 3,276,253	27,000	27,500	[4]
23	260,000	65,000	95,000	20,000
24	None	25,000	20,000	18,000
25	1,300,000	90,000	25,000	15,000
26		30,000	10,000	4,000
27		30,000	300,000	25,000
28	20,000	114,000	30,000	41,725
29		88,088		182,380
30	150,000	125,000	10,000	35,000
31		20,000	15,000	5,000
32	391,963	53,000	125,000	10,000
33		120,000	40,000	
34	700,000		350,000	
35	996,917	57,792	254,348	19,267
36	1,200,000	30,000	[5]	[5]
37	99,424		97,697	
38	1,500,000	100,000	600,000	25,000
39	2,200,000	20,000	100,000	100,000
40	4,253,135	17,132	136,363	[4]
Total	28,420,965	4,578,913	5,484,515	1,174,305

[1] Includes amount spent by dental and medical school.
[2] Included in col. 1.
[3] Included in cols. 2 and 3.
[4] Included in col. 3.
[5] Included in col. 2.

Dr. DEAN. There is every reason to believe that a considerable proportion of the $90 million grants-in-aid proposed by S. 849 could be profitably utilized by the dental schools for the expansion of research facilities and equipment. It is also reasonable to assume that the required matching funds would be forthcoming as a result of the stimulus supplied by available Federal support.

In evaluating the specific provisions of the Medical Research Art, the association is concerned principally with three of its important features and implications. The formula for equalizing Federal grants among the four geographical regions designated in the legislation may arbitrarily restrict development of worthy research projects. The association suggests that this committee evaluate the disposition of the grants periodically, should the legislation be enacted, to determine the efficacy of the formula. The regional plan for allocating funds appears to be favorable in terms of the location of the 43 dental schools. There are presently 8 schools in region I, 10 in region II, 14 in region III, and 11 in region IV. Two more dental schools may shortly be added to region I: Seton Hall and Farleigh Dickinson Colleges in New Jersey are completing arrangements for the establishment of schools of dentistry. One more may shortly be added to region II: West Virginia University has approved the addition of a school of dentistry to its program.

The second concern of the association is with the actual administration of the grants. The American Dental Association believes that the grants for construction and expansion authorized by S. 849 should be distributed equitably and should reflect an appreciation of the need for research in fields which are now neglected. If that criterion is established, the association is certain that the dental schools, particularly, will receive a fair share of the available funds. Finally, the association suggests that a provision be added to S. 849 to safeguard the schools from any encroachment upon the administration of their research programs by the Federal Government.

In addition to this study which the Council on Education has completed, there was another study by members of the American Association of Dental Schools which was reported at their meeting about 10 days ago; the question of space, personnel, and other pertinent factors were gone into in considerable detail.

The space angle was handled by Dr. Seymour J. Kreshover of the School of Dentistry, Medical College in Virginia; personnel by Dean Maurice Hickey of Columbia University. Dr. Kreshover's study included reports from 36 of the 42 four-year schools. Of these 36 schools 18 reported that there was no room for expansion of research activities. In modern research animal experimentation is indispensable, 16 of the 36 schools reporting said that the animal facilities were absent or wholly inadequate. This situation was elaborated upon by Dean Buhler of Emory University on the discussion that followed and he called attention to the fact that many of the schools built 20 years or more ago were for training dental students largely in technology. Little thought was given to providing research facilities with adequate space, or provision for experimental animals.

We feel at this time that the trained personnel is adequate for a considerable expansion. It is ahead of facilities and equipment.

For instance, at the research meeting which precedes the school meeting, for 3 days, there were 174 papers dealing with the biological

sciences; among the authors listed were 52 Ph. D.'s, largely in the basic sciences. In addition, there were 22 dentists who had the Ph. D. degree; there were a number of dentists with M. S.'s; the trained personnel seems to have grown beyond the facilities presently available.

I might say in that regard that I think the fellowship program of training young people by the National Institutes of Health over the past 10 years has done very much to augment our manpower potential in fundamental research.

Thank you, Mr. Chairman.

Chairman HILL. You feel that surely one of your most crying needs is for the construction of the physical facilities which this bill would provide?

Dr. DEAN. Yes, sir.

Chairman HILL. Doctor, I note one thing in your statement, where you say:

> Finally the association suggests that a provision be added to S. 849 to safeguard the schools from any encroachment upon the administration of their research programs by the Federal Government.

Do you have any experience in the past upon which to base that suggestion?

Dr. DEAN. No, sir.

Chairman HILL. You do not. There has been no interference, has there, so far as the other grants are concerned?

Mr. CONWAY. The grants from the Public Health Service for research projects have been provided without any interference in the administration of the research program.

We have always insisted however, that Congress establish a provision of that sort in legislation to provide grants to the medical and dental schools for any purpose; a proper safeguard has been in those bills in the past. If there is any way in which Federal interference might take place in the administration of the programs in the schools, we feel that a similar safeguard should be established.

Chairman HILL. You feel that the safeguards in existing legislation for the grants that are now being made are sufficient?

Mr. CONWAY. In the administration of those grants?

Chairman HILL. In the administration.

Mr. CONWAY. The safeguards have been adhered to; that is true.

Chairman HILL. Then they are sufficient; I mean, if they were written into this bill they would be sufficient?

Mr. CONWAY. That is right.

Chairman HILL. All right.

Mr. Conway, do you want to proceed with your statement?

Mr. CONWAY. I have no statement. Dr. Dean has presented the entire statement.

Chairman HILL. Senator Lehman?

Senator LEHMAN. I just wanted to ask one question. I noticed on page 3, Doctor, you say that the grants for research projects conducted by the dental schools and other private institutions amount to only $431,000.

Now, obviously, in the last 30 or 40 years there have been tremendous changes in methods and improvement in the methods. How were they brought about? Were they brought about by individual dental

surgeons, or through recommendations of the schools, or in what other way?

Dr. DEAN. Much of it was done in the schools, largely development along technological lines.

In this connection, materials are highly important in the general practice of dentistry—alloys, gold, materials for fabricating dentures, and so forth.

The American Dental Association has long been interested in this development and for over a quarter of a century they have supported each year personnel in the National Bureau of Standards doing research in dental materials. Today we have 10 full-time ADA employees at the NBS.

Considerable work has been done for years in this particular field of technological development at Northwestern University, Indiana University, University of Michigan and, I believe, at Tufts at Boston. It varies in different schools.

Senator LEHMAN. That would not be included in this figure? This is only research?

Dr. DEAN. The amount that I referred to concerned only National Institute of Dental Research funds for research grants.

Now, there are probably about a million and a half dollars altogether going into grants to schools, grants being made by the Army, Navy, Air Force, and National Institutes of Health.

Senator LEHMAN. And these schools are continuously carrying on experiments?

Dr. DEAN. Yes, sir; they are continuously carrying on experiments.

Senator LEHMAN. Looking toward improvement?

Dr. DEAN. And it is continuously expanding.

For instance, at this research meeting that I spoke of, there were a total of 217 papers read this year. In 1950 there were 82. The number of papers has almost trebled in a period of 6 years, indicating the activity that is going on in the field of dental research.

Senator LEHMAN. I have no more questions.

Chairman HILL. Senator McNamara?

Senator MCNAMARA. On page 4 you talk about distributing the funds on an equitable basis. Are you talking about an area basis or on the unit basis of the hospitals, on the basis of need or what? You do not detail them, Doctor.

Dr. DEAN. I would say on the basis of need in respect to dental disease; an appreciable amount should go into a problem that is costing the American people close to a billion and a half a year.

Senator MCNAMARA. You would make no recommendation—the interpretation of this would be left to the council.

Dr. DEAN. Yes, sir.

Senator MCNAMARA. I notice on page 5 of the bill you spell out pretty well, or the bill spells out pretty well, the areas in the various regions, and designates them. You make no reference to Hawaii, Alaska, Puerto Rico, Guam, and some more of the other territories. Do you not think they are included or are there proper and adequate facilities in these areas?

Dr. DEAN. In the first place, there are no dental schools in any of those areas you mentioned, with the exception of one that is starting in Puerto Rico. When a school is started it takes 4 or 5 years for the school to get underway.

Senator McNAMARA. Don't you think these areas should be given consideration in this overall proposition?

Dr. DEAN. Yes sir, they should be considered if there are competent research men there to conduct work.

Chairman HILL. I think I might say this: this bill is for a 3-year period, and those areas certainly should be given every consideration.

I think a little statement should be made at this point. The reason they were not put in the bill originally, as the doctor has suggested here at the present time, is that it was not thought that there were any opportunities there, or much opportunity, but I think we might well explore that.

Dr. DEAN. It would be very limited, Senator.

Chairman HILL. It would be very limited, yes.

Senator McNAMARA. I would think that is a tremendous area for research because of the difference in diet——

Dr. DEAN. Climate.

Senator McNAMARA (continuing). Climate and water contents, and all these various elements. I would think it would be a tremendous place for research possibilities.

Dr. DEAN. Of course, at present the most effective way to approach this problem would be to send skilled investigators like those from the University of Rochester and Tufts, who went down to Puerto Rico and the Virgin Islands a few years ago. Thus the study would have the advantage of being made by experienced men.

Senator McNAMARA. You do not think they should be given much consideration in the construction bill?

Dr. DEAN. Not for 3 years.

Senator McNAMARA. Where is the existing one, in San Juan?

Dr. DEAN. San Juan, I believe.

Senator McNAMARA. I think that is all, Mr. Chairman.

Chairman HILL. Are there any other questions, gentlemen?

If not, we certainly want to thank you gentlemen for being with us today and bringing us this very helpful testimony.

Dr. DEAN. We thank you gentlemen for the privilege of being allowed to come.

Chairman HILL. Thank you, sir.

I believe Dr. Knight of the Austen Riggs Center has to catch a plane. So, Doctor, if you will come around we will be happy to have you testify at this time, sir.

This is Dr. Robert P. Knight, of the Austen Riggs Center, Stockbridge, Mass. We are glad to have you, Doctor.

STATEMENT OF DR. ROBERT P. KNIGHT, AUSTEN RIGGS CENTER, STOCKBRIDGE, MASS.

Dr. KNIGHT. Mr. Chairman and members of the committee, I do not have a prepared statement, inasmuch as I was called back from a vacation from the west coast to this hearing. I have a few notes.

I am representing the field of psychiatry, and more especially, the private nonprofit institution in the field of psychiatry.

I would like to speak, first, about the cost, the problem itself, and then about the answer provided by research, and then how this bill fits into this answer.

The figures about the cost of mental illness in this country have been publicized a good deal but, perhaps, should be in the record on this bill also.

The cost in public tax money for the care of mental patients alone is a little over a billion a year. This includes, I believe, also some pensions for neuropsychiatric discharges, and each State government has anywhere from one-sixth to one-third of its budget devoted entirely to the care of mentally ill patients. This is cash outlay.

Furthermore, the problem, concealed problem, is that the patients who get into public hospitals, public mental hospitals, often remain there for a great many years.

If there is no active treatment which has as its purpose their quick rehabilitation, and they are simply cared for, they may remain there for 1, 2, or 3 years, and the longer they remain the greater the chance is that they will remain for the rest of their lives, so there falls on the States a tremendous tax burden simply to maintain these people, in addition to the great loss to their families and to them, and to the economy and their productiveness, and so on, from their being inert and inactive.

Another frequent figure is that there are over 700,000 psychiatric patients in hospital beds each day, and they occupy over half of all of the beds for all purposes in the country.

Some people have estimated that there are 9 million of our citizens who could use psychiatric care and, obviously, many of them, the great proportion of them, are not getting it. No names are mentioned among these 9 million.

Even though this is true, that over half the beds are occupied by psychiatric patients, in 1951 only 4 percent of the total research money for everything in medicine was for psychiatry.

Thus the disproportion between the amount of research money for psychiatry, in comparison to the number of beds occupied and the size of the problem, is a glaring one.

Furthermore, it is very hard to raise money for psychiatry from the public. The public can be appealed to very well for illness for children and, especially, crippling illnesses for children.

It can be appealed to for the heart conditions largely, I think, because the men who have the money have gotten to the age where they fear heart disease, and they are willing to pay out in the hope that something can be done to prevent it.

Somehow, with respect to psychiatry, there is a feeling that this whole problem should be pushed under the rug, as if one pretends that it does not even exist, and then maybe it will not happen "to me or my family".

Hence, one encounters in trying to raise money for psychiatry from the public an original enthusiasm and then rather a quick letting down of this enthusiasm.

Also, of course, I suppose psychiatry is a young specialty, and the public education associated with it is lagging behind with what has been done with respect to heart disease and cancer and so on.

All the psychiatrists agree that the answer to this problem is in research, research which will find out more and more about the nature of the causes of illness, and the methods for more effective and for faster treatment.

There are two main kinds of research in anything: The basic research, which just attempts to explore the field and acquire new knowledge, new ideas, which can later be picked up by somebody and turned into some practical application, but which has as its main purpose only the acquisition of new knowledge and, second, applied research which attempts to tackle an immediate problem and find an answer to it.

Basic research leads to applied research, but applied research has as its purpose from the beginning to find an answer to a specific problem.

Also viewing it from another way, research in psychiatry has a rather broad spectrum. You will hear in some of the testimony, perhaps, that the research should be in organic aspects of psychiatry or it should be in psychological aspects of psychiatry. There is no "versus" here in the minds of progressive psychiatrists. There is a continuous line from these investigations which have to do with the brain, the spinal cord, the nerves, the endocrine system, the body chemistry, to the purely psychological and personality aspects of a person, and also to include a little farther along this same line, the reactions of an individual in a group, interpersonal reactions, social interrelationships. All of these belong in the field of research in psychiatry.

In order to conduct research, one needs two things: One needs trained men; one needs facilities.

The trained men have to be there not only to conduct the research, to plan it, to direct it, but to train the younger men who were attracted into the field, and one has to have a continuous attraction of such likely and promising young men into the field.

The facilities and equipment are in such bad state, especially in the private—by this I mean the nonprofit private—psychiatric institutions, that it is difficult to attract and hold the trained men, and certainly more difficult to bring in the trainees.

Almost all of the nonprofit private organizations are trying to do research on a shoestring in whatever kind of buildings they can acquire and convert—residences, basements, sheds, and they try to raise the money for this from the public.

Sometimes the very men who should be doing the research or directing it have to spend their time going around to the public asking for the money, and they become traveling salesmen of ideas or professional fund-raisers, instead of sticking to what they were trained to do, to be doctors and to be psychiatrists and to be research men.

This is especially illustrated, I think, by two places, the Menninger Foundation and the Riggs Center, both of which have been able to attract and keep some excellent research men but are struggling with exceedingly bad, cramped, ancient, and unadaptable facilities.

When one tries to raise money for psychiatry, one finds that the appeal of research itself is sufficient to bring some money, but that the idea of raising money for buildings is quite another matter.

Most foundations will not pay any attention to this. Their charters are such that they cannot give money for brick and mortar.

Many individuals, unless they have a very especial kind of relationship with the institution which is seeking it, will not give lump-sum money for buildings.

Industries will not give it unless you can get all of the industries in the area to give according to their size, so that each one can defend its gift to its stockholders.

I have encountered this in our own territory in the Berkshires, so that one has to make it appeal through the whole industry sweep of the area in order to persuade the next one to give so the stockholders will not be angry.

Hence one is faced in this private field with an extremely sizable problem in attempting to do research.

We would not need to do research at all if we simply wanted to conduct a private institution and care for patients and make money. This could be done very easily. But your best men come when you are doing research; you hold them because you do research. Therefore, you try to do research with what kind of equipment and facilities you have, and struggle to raise more money for more.

This bill, then, comes as exactly the answer to the problem not only because it provides at least half of the cost of the research facilities and equipment, but because by the very fact that it provides this money as the basic amount, it permits us to make an appeal to the public which we otherwise could not make. The "seed money" provided by the Federal Government in this bill, if it passes, will be the attraction to private money which will make the facilities possible.

That concludes my statement, Mr. Chairman.

Chairman HILL. Doctor, you come from one of the most famous institutions of its kind in the world. How do you raise your funds?

Dr. KNIGHT. We have a board of trustees. The fund-raising committee of the board consists of the entire board. One member of the board is chairman.

We employ an executive secretary who keeps track of lists and sends out letters and gets materials printed, and so on. The trustees line up possibilities and give dinners here and there, and I go and "sing for my supper" at these dinners, and tell the story of Riggs, and then hope that some of these people will make some contributions.

It is entirely a personal and a rather dedicated effort on the part of the trustees to do this.

Chairman HILL. Of course, whereas research brings tremendous profits, marvelous profits, at the time that research is being done it does not bring any profits to the particular institutions that are carrying on the research.

Dr. KNIGHT. Not at all.

Chairman HILL. In other words, at that particular time, while the research is being done, it is all, you might say, outgoing; outgoing, of course, in the sense of money—money never comes back to the particular institution that carried on the research; is that not true?

Dr. KNIGHT. It is true; and not only that, Senator Hill, it costs the institution money to accept research money.

If you get a grant from a foundation for a certain research project, that grant does not include all of the costs to the institution that puts on the research, not by any means, even if you are given, say, a 10 percent overhead.

What you furnish in the way of the building, the secretarial service, the accounting, the janitor service, the heat, light, and everything that goes into this, and the time of your men taken away from activities,

from clinical activities which would bring in money, and putting them on research is quite a cost to the institution to do.

Chairman HILL. In other words, what you are telling us, if we pass this bill, which we devoutly hope we will, and make these Federal contributions, then your different institutions will have to raise their part of the funds, and then in addition thereto, it will be a very considerable cost to the institution above the cost of construction; is that right?

Dr. KNIGHT. Correct, yes.

Chairman HILL. Would you say there is any greater need, from the standpoint of research today, than the provision for the construction of facilities, such as provided for in this bill?

Dr. KNIGHT. Well, there is a need which is almost as great, which you cannot legislate, and that is the provision of the men to do the research, but the facilities will attract the men.

Facilities and the research which is established there attracts the men, and brings on the young men as trainees, which then make the research personnel for the future.

Chairman HILL. Well, for one who is really interested in research, a young man really interested, I take it there is nothing that would attract that man more than the fact that he felt that he would have the real facilities and the tools with which to do his best work and which give him the best opportunity to get the maximum out of his efforts for research; is that right?

Dr. KNIGHT. That is right; and if he knows the place that he is going to is doing research, he knows he is going to a top place because only the top places attempt to do research.

Chairman HILL. Yes.

Senator Lehman?

Senator LEHMAN. I just want to say one thing: I think Dr. Knight has put his finger on a very, very important fact when he discussed the difficulty of raising money for the research work for the care and cure.

I think your statement, however, that the average businessman is very eager to brush the problem under the rug, while it is true, is only part of the difficulty. I can speak only for my State of New York—and I do not know exactly when the responsibility of caring for all the mentally ill was accepted by the State, but it goes back 60—70—80 years, possibly even more than that—but the State spends at least one-third of its State budget for the care of the mentally ill. That does not include, of course, State aid for education, State aid for public welfare and things of that sort; but it consumes at least one-third of the specific State budget.

Now, people feel, therefore, that they are relieved of any responsibility because they pay for the care of 130,000 mentally ill in the State of New York through taxes, and they are not interested in providing additional funds.

I would say that the mental health problem, the mental health hospital, is the only medical activity in which the taxpayers have assumed the whole responsibility. That is not true for the general hospitals; it is not true in dental care or research for cancer or anything of that sort.

But in the case of the care of the mentally ill, that is definitely a tax burden, and a lot of people use that as an excuse for not giving——

Dr. KNIGHT. That is true.

Senator LEHMAN (continuing). For not giving funds for research or for other purposes connected with the mentally ill.

So I think this bill is vitally necessary if we are going to continue or advance the cause of research through reputable medical schools and other similar institutions.

May I ask, how many patients have you, Doctor?

Dr. KNIGHT. The Austen Riggs Center is a small pilot plant; about 41 inpatients and about the same number of outpatients; but a staff of 18, which makes a very high ratio of staff to patients, because of the research and the intensive treatment.

Senator LEHMAN. Have you great difficulty in recruiting your staff?

Dr. KNIGHT. No.

Senator LEHMAN. Are those usually men who have been trained exclusively in psychiatry or——

Dr. KNIGHT. Yes.

Senator LEHMAN (continuing). Are they general practitioners who have also had experience in psychiatry?

Dr. KNIGHT. No, they are trained exclusively in psychiatry and psychology.

Senator LEHMAN. Yesterday at our hearing a number of doctors testified, the American Medical Association testified, that they thought it was not wise to recruit people in the mental hospitals exclusively from the ranks of trained psychiatrists.

They leaned toward using men who have been trained in general medicine, possibly even in surgery, but who have had experience in psychiatry which they gained through service in the hospital. They thought it was wiser to do that rather than to use exclusively trained psychiatrists.

Dr. KNIGHT. I think that depends, Senator Lehman, on where in this spectrum of research one is having one's focus.

If it is to include especially organic studies of the brain and spinal cord and nervous system, the hormone system and blood chemistry and so on, then you certainly need men trained in general medicine or trained especially in physiology or one of these specialties.

Not every institution will have their research on this whole spectrum; some will have theirs focused on this particular type of interest that their research men have, and ours happens to be the psychological and group aspect.

We do not have facilities for or men interested in doing the other. That does not mean we do not think it is good, but we think other men trained in other places should do that according to their interests.

Senator LEHMAN. Yes.

Chairman HILL. Any questions, Senator.

Senator MCNAMARA. Did I get this figure correct, that 700,000 beds are occupied each day by mental cases?

Dr. KNIGHT. That is right.

Senator MCNAMARA. And that is half of all the hospital beds?

Dr. KNIGHT. More than half.

Senator MCNAMARA. That is an astonishing figure.

Senator LEHMAN. We have over 130,000 alone in New York in our State hospitals.

Chairman HILL. Of course, what you are pleading for are funds that we may do the research that will make it possible to reduce this terrific cost——

Dr. KNIGHT. That is right.

Chairman HILL (continuing). To the individual as well as to the taxpayer about whom the Senator spoke so aptly.

Dr. KNIGHT. There is one point about this comparison: that is, that a large number of these 700,000 are the same people day after day and year after year; whereas with the other half of all the medical beds in the country, there is a tremendous turnover; millions are using these.

The problem is to get these people out and back into society, and research is a large part of the answer to this problem.

Senator MCNAMARA. You indicate, Doctor, from the questions of Senator Lehman and from your answers, that it is not necessary to take M. D.'s. There are some States which require that all psychiatrists are basically M. D.'s. I think my State requires that.

Dr. KNIGHT. All States require that.

Senator MCNAMARA. Then all of your people are M. D.'s, is that right?

Dr. KNIGHT. Not all of the staff are M. D.'s; some of the staff are M. D.'s; some of the staff are psychologists, Ph. D.'s.

Senator MCNAMARA. But there are some States where the Ph. D. is not allowed to practice psychiatry.

Dr. KNIGHT. Yes, but that is a different matter. The psychologists do clinical testing and research rather than practicing psychiatry.

Senator MCNAMARA. How does your staff divide?

Dr. KNIGHT. There are 5 psychologists and 13 medical men.

Senator MCNAMARA. I see. Then they are predominantly medical men who have had the additional training?

Dr. KNIGHT. That is right.

Senator MCNAMARA. I see.

Does your institution share in United Foundation funds?

Dr. KNIGHT. No.

Senator MCNAMARA. Like cancer?

Dr. KNIGHT. No.

Senator MCNAMARA. Is that by your choice?

Dr. KNIGHT. No private institution does.

Senator MCNAMARA. Oh, I see. No private institution does.

Dr. KNIGHT. Not that I know of.

Senator MCNAMARA. Well, these are private funds I am talking about gathered in community drives or what used to be the war chest drives.

Dr. KNIGHT. Yes; but so far as I know those do not go to psychiatric institutions, just as Blue Cross does not cover psychiatric institutions.

Senator MCNAMARA. I see.

Chairman HILL. Those funds do not go, so far as I know, to any research.

Senator MCNAMARA. Oh, yes, cancer research.

Chairman HILL. Oh, yes, the Cancer Society, raises funds. But there are none for psychiatric research.

Dr. KNIGHT. None that I know of, no.

Senator LEHMAN. Doctor, would you not say that the situation with regard to mental illness, instead of improving is getting more urgent, more critical?

Now, in New York State I said that we have 130,000 patients in our State hospitals for the mentally ill. But the population is increasing

by at least 3,000 a year, and has increased by 3,000 a years for as many years as I know anything at all about it, certainly in the last 20 years.

Now, that is a situation, it seems to me, that instead of improving is becoming more and more urgent and more critical.

Dr. KNIGHT. Yes, and that necessitates a building program of another kind than the one envisioned by this bill, and that is simply a continuous building program to house more patients for longer care. It never ends; whereas your bill is an attempt to put money into building for research for the purposes of emptying these buildings, getting the people back out of them.

Chairman HILL. Yes.

Senator LEHMAN. That is why it is so important because, as a matter of fact, I do not remember what the costs are, I do not know what the cost of hospital construction is today, but at the time I was Governor I think it was very close to $10,000 a bed for construction.

Dr. KNIGHT. It is more than that now.

Senator LEHMAN. I assume it is considerably more than that now.

Dr. KNIGHT. It is more.

Chairman HILL. I might say I was talking to some gentlemen about building a hospital in the District of Columbia. It costs there—of course, this would be a general hospital—about $23,000 a bed. It has gone up very, very considerably, as we know.

Senator LEHMAN. I know that.

Chairman HILL. Doctor, I happen to know you went to a great deal of trouble and inconvenience to be here today, and we certainly want to express our appreciation to you. We know that you speak with great authority, and you have brought us a very fine and interesting statement here this morning.

Dr. KNIGHT. Thank you, Senator Hill.

Chairman HILL. We are deeply grateful.

Dr. KNIGHT. It is a privilege to be here with you.

Chairman HILL. Dr. Hans Waine, medical director, New England Chapter, Arthritis and Rheumatism Foundation from Boston, Mass.

Dr. WAINE. Thank you, sir.

Chairman HILL. Doctor, will you proceed in your own way, please, sir.

STATEMENT OF DR. HANS WAINE, MEDICAL DIRECTOR, NEW ENGLAND CHAPTER, ARTHRITIS AND RHEUMATISM FOUNDATION, BOSTON, MASS.

Dr. WAINE. Mr. Chairman, I would like to first say that my opportunity of getting experience in this field, which is concerned with chronic disease in general, has been predominantly in arthritis and rheumatism, which I have worked with all my professional life.

I have had the opportunity to work in laboratories, to practice as an internist, to teach, and within the last 6 years I have directed the arthritis control program in the four northern New England States. This has brought me in touch with several thousand practicing physicians who are concerned with the problem of arthritis.

The very fact that arthritis and rheumatism affect such a substantial part of our population gives this bill particular importance.

The prevalence of arthritis and rheumatism is estimated variably as between 7 and 18 percent of the general population. More exact figures are now being sought.

On the other hand, we are on much more certain ground in the appraisal of the degree of disability caused by arthritis and rheumatism. There we can say for sure that per thousand of population each year there are 25 cases of incapacitation, of disability, due to arthritis among persons in middle life.

That would mean that among these people in this country we must expect to treat three and a half million cases of arthritis and rheumatism each year, and we also know for sure that 60 percent of this group are severe enough to become bed cases.

Now, the particular tragedy in the handling of crippling arthritis is that the cause and cure of the major forms of rheumatism are entirely unknown. If I could only articulate here for you the voices of these many patients who question their physicians, "What causes this and what can you do for me?" I believe you would find considerable appeal in their situation.

Therefore, it would seem to me to be eminently reasonable to search for the causes, the possible means of prevention, and the cure of these prevalent diseases, for the costs that we now are incurring in treating them are many, many times the expenditure of the creation of the research facilities contemplated in this bill.

There is another reason why arthritis and rheumatism deserve special thought in this connection. That is, the nature of rheumatic disease is such that it affects potentially every organ in the body.

I would like you to visualize the structure which is afflicted in rheumatism as like the framework of a building. In fact, the medical name given to the tissue which is affected by rheumatism is connective tissue. This is like the framework of a house.

There are many causes which affect this connective tissue, this framework tissue, ranging from injury to exposure to dampness and cold, to emotional upsets, to infections, to allergies; the whole gamut of etiological factors bears on this framework tissue much as the framework of a house is exposed to a large number of adverse influences of attrition from its environment.

Now, while it has become increasingly possible in modern medicine to do organic therapy benefiting one or the other organ, almost no attention was paid to this essential framework which actually holds all the organs of special function together; and if there is a primary disease of this framework tissue, by degeneration or by inflammation, every other organ in the body can be affected and, therefore, is threatened with damage.

For that reason, the doctors in the American Rheumatism Association—and I also speak today as the chairman of the committee on public information of that professional society—feel that research and expenditures for new facilities in research in this field will have very broad and important applications throughout medicine.

There is a third reason why we are in dire need of added facilities. It is that, in the field of arthritis and rheumatic diseases, progress we expect to make depends almost entirely on the application of half a dozen or so of techniques, modern techniques, such as the use of tissue culture, the use of tracer substances, labeled substances, radioactive materials, the use of electron microscopic examinations, and these tech-

niques have only become available within, let us say, a span of the last 10 years, and for them no facilities exist, in most medical schools.

To make this clear in a practical sense, I would like to recall to you a situation in which I found myself some years ago when we were doing a study on the metabolism of gold, which has been used in the treatment of one form of arthritis, and we wanted to use a radioactive form of gold which did not then exist.

This was on the campus of a western medical school, and it was necessary for us to do our work in 5 separate buildings, some of them as far 20 miles distant from each other.

We had to do this work in six different departments of the medical school, and since we could not entrust the transport of either biological specimens or of this radioactive gold to anyone but a member of the team, actually one of the doctors who was highly qualified to do research acted simply as a messenger boy.

It was possible during the whole period of this project, which consumed a year and a half, for us to be in personal conference only twice. All the other communications were carried on by correspondence or telephone.

One of the requirements of research in the field of rheumatic diseases is the need of teamwork, people who use these new techniques, being highly specialized scientists, and all their cooperation is needed.

Therefore, it would seem to me that this bill, which provides for the remodeling and the creation of new physical plants in which these efforts can be concentrated, is of tremendous importance.

Chairman HILL. Doctor, you spoke of being the medical director of the New England Chapter of the Arthritis and Rheumatism Foundation. You are chairman of the public relations committee of the American Rheumatism Association, are you not?

Dr. WAINE. Right, sir.

Chairman HILL. Now, you have been the author of a good many scientific articles and also the author of one book, I believe, Changes in Knee Joint at Various Ages; is that correct?

Dr. WAINE. That is correct, sir.

Chairman HILL. In other words, you have pretty much devoted your life to study and work in this field of rheumatic diseases?

Dr. WAINE. That is right, sir.

Chairman HILL. Doctor, would you emphasize a little for us this point, too: When you build one of these research laboratories, you not only build a place to work, but you build a place in which young men grow and develop in this field of research.

Dr. WAINE. That is very true, Senator Hill. People look on laboratories as, perhaps, just a place to have equipment and for people to handle test tubes.

Actually, it is an important part in the training program of modern medicine. Such a laboratory as might be possible under the provisions of this bill would be to a medical institution like a nerve center, like the brain from which new ideas come. Without adequate facilities in this respect, we will only stagnate.

Chairman HILL. Then, of course, it is not possible for anyone today to realize the benefit that may come to us from this research. Without research you could not do the things you are doing today, as you illustrated about the use of this gold; is that not true?

Dr. WAINE. Well, Senator Hill, I think it is only fair to say that the results of research are unpredictable.

On the other hand, when we speak with confidence of our expectations of research, we are not entirely without a basis in experience; and, again, if I review merely the developments in our own field in the last 5 years, I would like to point out some very concrete results which are the basis of the hope we have.

In three important forms of arthritis remarkable progress has been achieved. Now, in the Arthritis Foundation frequently we have to meet a board of trustees, which consists largely of scrutinizing businessmen, and they want to know whether their effort is worth while. I have been glad that I have been able to tell them that, for instance, in the field of what is called medically infectious arthritis, which previously constituted about 10 percent of the patient load in an arthritis clinic, today we see only 2 in a thousand; 10 per hundred, perhaps 15 years ago, versus 2 per thousand as of our latest study 2 years ago.

Now, infectious arthritis used to be a common crippling disease. It has practically ceased to be a public health problem, and the result is entirely due to research.

In the field of gout, gouty arthritis, which belongs to this group of diseases, the situation is not as far advanced, but the outlook is exceedingly good.

There are approximately 350,000 patients with gout in the United States. Gout is the most painful form of arthritis, and it is not only a health hazard to organs of locomotion, the joints, but it is also a health hazard to other organs where this uric acid is frequently deposited.

Thanks to research alone, which has developed new drugs, gout in just a few years, when this newer knowledge will be applied, will be a disease completely controlled. While we do not have a cure, it will be as good as a cure to a patient. The most startling example which I could quote to you is the advance that has been made in the prevention of rheumatic fever.

You are undoubtedly familiar with the importance of inflammatory rheumatism in children. The number of new cases each year has been given as about 50,000 in the United States. It is a disease which, in a certain percentage of patients later on in life, becomes fatal.

It is possible today, and again alone through research, to prevent the original attack of rheumatic fever, so that when these newer methods which have within the last years in the case of rheumatic fever been found by research, become applicable on a larger scale, and they are applicable, rheumatic fever will also cease to be a hazard in public health.

Now, you do not hear much from people who have been benefited by research. They do not appear before your committee and give testimony. You hear a great deal about those who are in need of something.

If we had some of the people here to tell us about what advances have been made, maybe, your job at times would be a little easier.

But in other forms of crippling arthritis, particularly what doctors call rheumatoid arthritis, the situation is as yet very desperate, and for that reason doctors in the rheumatism field feel extremely gratified about the initiative which this committee has taken.

Chairman HILL. Senator Lehman?

Senator LEHMAN. No questions.

Chairman HILL. Senator McNamara?

Senator MCNAMARA. I have no questions either. I think the statement has been very interesting.

Chairman HILL. Doctor, you have made a most interesting statement. I am sure my colleagues will agree with me.

You came all the way here from the great Commonwealth of Massachusetts?

Dr. WAINE. I hope you visit us soon, Senator Hill.

Chairman HILL. Thank you.

I want to say this: I am only sorry that every Member of the Congress, both of the Senate and the House, could not hear your testimony here this morning. It was very fine, and we surely appreciate it.

Dr. WAINE. It is a pleasure to have had the opportunity.

Chairman HILL. Thank you, Doctor.

I am very proud at this moment to say that we move from Massachusetts to the Deep South, to the neighboring State of Georgia. Alabama is Georgia's daughter.

Mrs. Center, you are with the Georgia Public Health Association?

Mrs. CENTER. Yes, I am.

STATEMENT OF MRS. MAYOLA CENTER, GEORGIA PUBLIC HEALTH ASSOCIATION, ATLANTA, GA.

Chairman HILL. And we are delighted to have you here from Atlanta, will you proceed in your own way, please.

Mrs. CENTER. Senator Hill and members of the committee, I want to say that Georgia is very proud of Alabama.

Chairman HILL. Thank you.

Mrs. CENTER. I am coming today as——

Chairman HILL. Incidentally, Mrs. Center, before you testify, you have been very active in the National Congress of Parents and Teachers legislative committee?

Mrs. CENTER. Yes, I have.

Chairman HILL. And a member of the steering committee of the Dental Health Assembly, chairman of the committee on social hygiene of the National Congress of Parents and Teachers, a life-long member of the American Social Hygiene Association, secretary of the Georgia Public Health Association and a member of the National Advisory Dental Research Council, 1950, 1954, is that correct?

Mrs. CENTER. Yes.

Chairman HILL. If you will proceed then, that will be fine.

Mrs. CENTER. I have a prepared statement I would like to give to you so I will stay within the time limit, please.

Chairman HILL. All right.

Mrs. CENTER. Our main hope for the control and prevention of dental diseases lies in research on their underlying causes. That a lack of research facilities is the main obstacle to solving this major health problem was evident from a survey made in 1950–51 by the National Institute of Dental Research.

In addition, it became obvious in reviewing applications for research grants that funds could not be requested by certain areas of the country simply because they did not have proper laboratories in which to do the work. The matter was discussed in many meetings of the

council during the years I served as a member. And it was also a great source of regret to me that this was true.

A related problem is the acute need for additional research space if scientists are to be expected to enter the dental field. And by the same token, inadequate laboratory facilities have caused research teaching to be slighted in dental schools.

Expressed in economic terms, the dental problem in this country is staggering. In addition to the enormous sum spent annually by the American people for dental care, there is the serious economic burden of lost manpower. According to a recent study, this amounts to more than 47 absentees a year per 1,000 employees. There are also serious implications for national defense, as shown in a study made during mobilization of troops in the Korean war. Of 556,000 men turned down for military service, more than 17,000 were rejected because of dental disorders.

Despite the national annual expenditure of over $1½ billion for dental care, less than a third of our people are receiving adequate dental service. In view of our growing population and longer life span, we must face the fact that we do not have, and may never have, enough dentists to meet a fraction of this perpetual and mounting need. In fact, for the past two decades the ratio of active civilian dentists to population has been declining. In 1949 there were only 27 dentists per 100,000 population in the Southeastern States and 69 per 100,000 in the Central Atlantic States. Throughout the country there is only 1 dentist per 1,900 people. In my own State of Georgia there is 1 dentist to 4,000 population.

The greatest research achievement in dentistry has been the control of tooth decay by fluoridation of community water supplies. As a result of extensive studies carried out by the Public Health Service during the past 15 years, over 1,000 communities throughout the United States today have fluoridation programs. This single advance points up the value of a fundamental research approach to the problem of dental disease.

The serious financial plight of the dental research field throughout the country can be illustrated by describing briefly the situation of the Dental School at Emory University in my own State of Georgia. In a recent conversation Dean Buhler told me that research in Emory's School of Dentistry is practically nonexistent because of the lack of research facilities.

The school's departments of anatomy, biochemistry, and physiology have been temporarily housed in Emory's Basic Science Building, but, due to pressure for space of other departments of the university, they face early transferral from these quarters. In the School of Dentistry Building, located in downtown Atlanta, there is practically no space and facilities for dental investigation.

About 150 feet of space is available for limited research in oral pathology, oral medicine, oral physiology, and developmental defects, and even this space is tied up with the undergraduate teaching program. For clinical research the school has one small operating room and laboratory, with less than 100 feet of floor space.

With financial aid in the construction of a new building for research, Emory could sell the downtown building and apply the assets to the new facility, and could even expect, with the stimulus of Federal aid, the help of local philanthropies. Without a new building, Emory

will be compelled to accept the inevitable stagnation and degeneration of its dental research program. This, in an area of the United States where the need for research and training facilities in dentistry is already critical.

The lack of dental research facilities at Emory is typical of dental schools in many areas in the United States. For example, Western Reserve University in Cleveland, the Universities of Buffalo and Detroit, even Tufts College in Massachusetts have very little in the way of dental research laboratories. Many schools, like Emory, are privately endowed and are therefore unable to obtain financial assistance through State tax funds.

Most dental schools were designed and built about a quarter of a century ago. Little has been done to modernize them, for they have not been able to keep up with our expanding economy. Unlike medical schools, they receive relatively little support from industry or private foundations, since dental problems as a whole are slighted in favor of research dealing with more dramatic diseases, such as polio and cancer.

Another reason for the lag in dental research is that dental schools until recent years were proprietary, and were completely dependent on the dental clinic for educational facilities. Even today they are obliged to share teaching facilities and laboratories with medical schools and seldom have facilities that can be used full time for research.

The type of dental research facilities needed can best be illustrated by listing the problem areas that present the best research opportunities. Malocclusion—the incorrect relation of the teeth or the jaws to each other—is a serious problem among at least 1 out of 10 children. Cleft lip and palate is a congenital affliction which occurs once in every 700 live births. And I remember as I was serving as a member of the Advisory Council on Dental Research, again and again, it was brought to our attention that there was so much room for research in that field.

All available evidence indicates that the nutritional character of the diet is involved in tooth decay. Special diets have been developed by which major features of human tooth decay may be duplicated in experimental animals. The relation of commercial heat processing of food to caries production is a matter of special interest and experimentation.

Disease of the supporting structure of the teeth-periodontal disease—is the major cause of tooth loss in adults. The prevalence increases with age, so that ultimately 85 percent of our population is afflicted with this baffling condition.

Little if anything is known concerning the relation between tooth infection and other diseases such as rhumatic fever and arthritis.

All of these problems must be approached through basic research studies, for which scientific laboratories equipped with modern precision instruments and experimental animal facilities similar to those in medical research areas are essential. There is no fundamental difference at this basic research level between dental research and studies of other chronic and infectious diseases.

The advantages to be derived from research construction are many. Progress in control as well as prevention of dental disorders will be accelerated, and a tremendous saving will be effected in Federal, State, and local expenditures, as well as by the public as a whole. For example, in Grand Rapids, Mich., there is an obvious saving from water

fluoridation, which has reduced tooth decay in children by 60 percent. Adequate dental care can now be extended to a much greater proportion of the population.

With research facilities made available through construction grants, public and private sources will be stimulated to support the type of research that has paid off so well in other fields of chronic disease.

Such research requires careful and patient study by trained scientists. And, as I pointed out earlier, we cannot expect scientists to enter this field without the necessary laboratories and equipment. Let us make sure that the good work begun in the field of dental research will not be lost "all for the want of a horseshoe nail."

Chairman HILL. And we are very far behind today in our research; aren't we?

Mrs. CENTER. We certainly are.

Chairman HILL. But we do have a classic example, to which you so well referred, in the fluoridation programs.

Mrs. CENTER. That's right, and that was all brought about because of research.

Chairman HILL. Because of research?

Mrs. CENTER. That's right.

Chairman HILL. I can well imagine, being with the Georgia Public Health Association, that you had a lot of insight among the children in the public schools; isn't that true?

Mrs. CENTER. That is quite true, and I have had opportunity to work in some of the programs where we have been working with tuberculosis patients, and venereal-disease-control programs that have been going on in our State, and we believe that some of the fine things that have happened and the reason that those two diseases, particularly, are somewhat under control, is because of the research that has been done in those fields. And certainly what has been done there can be done for dentistry if dentistry is given an even chance.

I felt all the time when I was serving as a member of the council, I heard you speak today about $400,000 being set up as research grant in dentistry now, but when I was serving it was $221,000, and really when it came to talk about the research grant, it was just pathetic there were so many requests and so little money, and so many opportunities to use it.

Chairman HILL. We had some splendid testimony yesterday about what research did down there in the matter of pellagra.

Mrs. CENTER. That's true.

Chairman HILL. You and I saw pellagra firsthand.

Mrs. CENTER. And we don't hear anything about it today.

Chairman HILL. Pellagra, hookworm, smallpox, so many things that were——

Mrs. CENTER. Quite true.

Chairman HILL. Senator McNamara?

Senator MCNAMARA. I think I have no questions, no comment. I think the statement is very good.

Chairman HILL. It was a splendid statement.

Mrs. CENTER. Well, thank you for letting me come and speak on behalf of dentistry. I just feel like, and this is my personal opinion, that compared with the other professions, we have certainly sold dentistry short.

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Chairman HILL. And yet, as you have emphasized here, dentistry ties right in with these other things.

Mrs. CENTER. So many opportunities for doing some things in these other fields.

Chairman HILL. I note Dr. Waine shaking his head in assent to that proposition. If we had the time here this morning he could no doubt tell us quite a story of the effect of tooth infection and things of that kind in this very field of arthritis and rheumatism which he spoke to us about.

Mrs. CENTER. What we need is space to do this work and money to do it with.

Chairman HILL. We appreciate your very fine and splendid statement that you brought us here this morning.

Mrs. CENTER. Thank you.

Chairman HILL. Now, Dr. Robert T. Morse, chairman of the public relations committee of the American Psychiatric Association. Doctor, we are delighted to have you here, sir.

STATEMENT OF DR. ROBERT T. MORSE, AMERICAN PSYCHIATRIC ASSOCIATION, WASHINGTON, D. C.

Dr. MORSE. Thank you, sir. I appreciate the opportunity of coming. I have some copies of the statement that I will give you.

Chairman HILL. Thank you, sir.

Dr. MORSE. My name is Robert T. Morse. I am a physician, specializing in psychiatry, in private practice, in Washington, D. C. Dr. Daniel Blain, who was to have testified today, is in Arkansas helping that State with its mental-health planning. Dr. Blain, incidentally, is the medical director of the American Psychiatric Association.

Although not engaged in research myself, I am naturally interested in the research which enables those of us who treat patients to do so more effectively. I am an officer of the American Psychoanalytic Association and chairman of the committee on public information of the American Psychiatric Association.

I have read and studied S. 849 which provides assistance for construction of facilities for research in diseases such as cancer, heart disease, poliomyelitis, mental illness, arthritis and rehumatism, blindness, cerebral palsy, and muscular dystrophy.

Not because I am a psychiatrist but because of the enormity of the problem of mental illness, I would have preferred a bill which would have been aimed solely at providing an all-out research attack on the problem of mental illness. Certainly in no way do I depreciate the national need for more medical research and the physical facilities which make it more efficient and effective in furthering the task of the eventual prevention and cure of most illness.

While I do not work directly in the research field, I know of our great need for research construction at Georgetown University, where I teach.

Whether we like it or not, the day of the lone researcher with his makeshift equipment and laboratory is largely past. The rapid technological advances in biological and medical sciences have made necessary the modern well-equipped laboratory, staffed by competent research teams whose experience and training are most likely to lead to fruitful pursuit of research aims.

The principal sources of the research scientists are, of course, the modern medical and dental schools which, as you gentlemen know, are themselves seriously handicapped. Funds are necessary to fill their ever-increasing need for expansion, so they can provide additional teaching space and faculty to maintain and increase the number and quality of their graduates.

These medical and dental schools, the hospitals and other nonprofit laboratories and clinics need Federal help to continue and increase the necessary and important work we all expect of them.

I would like to say here, parenthetically, and I understand it has been mentioned here earlier today, but I think it could and should be repeated—to obtain research personnel and provide investigators—our source is the medical school. If the facilities are not available to attract the interested young man into the field of research, we are going to fall farther and farther behind, and I am sure you have all heard the talk in the newspapers, the impression which may or may not be true, that Russia is beginning to outdistance us in numbers so far as training scientific researchers.

You, Senator Hill, with Senator Burton, recognized that local communities in postwar America could not shoulder the entire cost of lagging hospital construction occasioned by the war.

Today over 100,000 hospital beds have been made possible by matched grants-in-aid obtained through Hill-Burton funds. Here in Washington alone we have such new hospitals as the George Washington and Georgetown University and Suburban Hospitals, thanks to Hill-Burton funds. All of these excellent hospitals could contribute much more to medical knowledge had they the proper clinical facilities for research.

As I see it, Senate bill 849 can do for medical research what the Hill-Burton bill did for hospital construction. Medical education, good hospitals, and coordinated medical research in both schools and hospitals offer the logical approach to the problems of the Nation's health.

Chairman HILL. Along with the education in the hospitals you must have this research that you may continue to go forward.

Dr. MORSE. It is the third part of the triangle and none is complete unless all three parts are represented.

Chairman HILL. And it should be tied right in with the other two.

Dr. MORSE. It is a natural place to integrate it.

Chairman HILL. Senator McNamara?

Senator MCNAMARA. I think I have no questions. I would like to comment about tying in with the M. D.'s and I presume you are referring to the training of the M. D.'s that this whole thing should be integrated.

Dr. MORSE. And increased.

Senator MCNAMARA. Yes, expanded a great deal.

Dr. MORSE. I noted in preparing this material that last year Dr. Gottlieb of the University of Miami spoke to you on this subject, and pointed out at that time that because of his difficulty in obtaining research funds in the new university he was helping to set up there, he was having difficulty in holding his staff.

Perhaps you know, Senator McNamara, that Dr. Gottlieb is now the new head of your new Psychiatric Institute at Wayne.

Senator MCNAMARA. At Wayne? No, I didn't know that.

Dr. MORSE. And he was apparently vulnerable to the very danger he was pointing out and that is what happens to medical installations when research facilities continue to be unavailable.

Senator MCNAMARA. Quite logical, too.

Chairman HILL. You think that is one of the reasons he spoke with so much feeling, Doctor? As a psychiatrist, would that be your explanation?

Dr. MORSE. That is a reasonable assumption.

Chairman HILL. I am very proud to say that Senator McNamara is a member of the Board of Regents. He no doubt played a part in making it possible.

Senator MCNAMARA. A small part.

Chairman HILL. Well, Doctor, if we do not ask you too many questions, I think I might say it is because you, along with the other witnesses who have been here this morning, have persuaded this committee, if it needed any persuasion when we got here.

We certainly appreciate your testimony and appreciate your being here.

Dr. MORSE. Thank you.

Chairman HILL. Thank you.

Now let's go back to Massachusetts. Dr. Dorfman, you are from Shrewsbury and you are associate director of the Worcester Foundation for Experimental Biology.

Dr. DORFMAN. Yes.

Chairman HILL. We are delighted to have you here, sir.

Dr. DORFMAN. Thank you, sir, it is a pleasure to be here.

(Discussion off the record.)

Chairman HILL. Now, back on the record. All right, Doctor, we are delighted to have you here, sir.

STATEMENT OF DR. RALPH I. DORFMAN, ASSOCIATE DIRECTOR, WORCESTER FOUNDATION FOR EXPERIMENTAL BIOLOGY, SHREWSBURY, MASS.

Dr. DORFMAN. Thank you. I represent the Worcester Foundation specifically, but more in a general sense, I represent the research worker who is associated with the nonprofit, private research institution. We have affiliations with both Boston University and other educational institutions. We have students from not only other universities in this country, but from abroad. But the important thing is that the funds for the buildings and the cost of operation must be raised by our institution. We get no financial support from universities.

Chairman HILL. May I interrupt you 1 minute there, Doctor?

Dr. DORFMAN. Yes.

Chairman HILL. I believe you are a graduate both from the University of Illinois and the University of Chicago, is that right?

Dr. DORFMAN. That is right.

Chairman HILL. Having graduated from the University of Chicago in biochemistry, you served on the science faculties of the University of Chicago, the University of Louisiana School of Medicine, Yale University and Western Reserve University where you were professor of biochemistry, is that right?

Dr. DORFMAN. That is correct.

Chairman HILL. You are a member of the American Association for Advancement of Science, American Chemical Society, Society of Experimental Biology and Medicine, American Cancer Society, Society of Chemistry, Association for the Study of Internal Secretions, American Statistical Association, and the New York Academy of Sciences.

You have done lots of research?

Dr. DORFMAN. Yes, my whole adult life has been devoted to medical and biochemical research.

Chairman HILL. Then you proceed now, Doctor, in your own way, please, sir.

Dr. DORFMAN. Yes. So essentially we have the problem of accumulating funds for research, amassing personnel, and the building of new facilities as well as remodeling old facilities.

I might say at our institution we have about 136 workers, who are devoted full time to medical research, and a proportion of our workers are housed in a 40-year-old, remodeled residence, which includes a great deal of the basement laboratory space.

Other workers are housed in a remodelled structure, the original portion of which was originally the coachman's house. This old structure now accommodates about 40 research workers so that you can well imagine the critical need for money, for the construction of new facilities, for the remodeling of old facilities so that the vital medical research work can be done in the most efficient way.

My field is that of endocrinology and metabolism, which includes a whole series of diseases. Today I should like to discuss with you the disease of diabetes mellitus.

We know, through the efforts of research during the past 50 years, that this disease is related to a gland called the pancreas through a secretion called insulin. Insulin was discovered as a direct result of research and it has been of great value to control in part the disease. However, it is not the entire answer.

Insulin can control the abnormal sugar metabolism that is found in diabetics, but it does not correct the entire aspect of the disease, which includes such unpleasant things as coronary diseases, arterial sclerosis, kidney diseases, gangrene of the extremity, and blindness. Difficulties in pregnancies of the diabetic women are well known which include danger to the mother's own life as well as frequently the death of the new born child.

So the disease is an important one to study and restudy although an important start has been made.

How many people are involved? Perhaps something of the order of 2 million people suffer from this disease in this country, a million of whom are definitely diagnosed cases, and perhaps another million which have not been diagnosed.

In 1952, something of the order of 25,000 people died of this disease, and it is well possible that another 25,000 may have died indirectly due to this disease.

The economic costs itself to the country are difficult to evaluate, but one point we might make is that in 1952 approximately $10 million was paid to veterans through the Veterans' Administration just because of this disease.

This disease is probably one that can be controlled competely in the foreseeable future, however, expanded research is needed. We know

a good deal about certain aspects of sugar metabolism in the body, but we need more and more research to learn how to control the dreadful effects of this disease. This is absolutely necessary so that many people in the future will not die and will not be made invalids.

How is this to be done at the present time. We might say that the research manpower supply is reasonably good. It could be better, but it is reasonably good.

Grants-in-aid from the Federal Government through the Public Health Service have been a very important factor in adding new moneys for equipment, for chemicals, for experimental animals, but the great need at this time are adequate research buildings. I believe it is exceedingly important for the well being and strength of our Nation and even for eventual savings in money and human effort that this bill be passed.

Thank you, Mr. Chairman.

Chairman HILL. I was going to ask you the question, Doctor, why you thought it was necessary to continue research with reference to diabetes, but you certainly made that very, very clear.

Any questions, Senator?

Senator MCNAMARA. Your conclusion is something that is really well to think about, that actually we will save money by putting this money into this bill and this program at this time.

Dr. DORFMAN. It is a question of saving money, lives and adding happiness to our people.

Senator MCNAMARA. What we are concerned with mostly is the appropriation for the job, and you say that by appropriating this money at this time ultimately it will be a tremendous saving to the Nation as a whole.

Dr. DORFMAN. Exactly.

Chairman HILL. And to build the strength of the Nation.

Dr. DORFMAN. That's right. It is in the end, in the long run, cheaper to appropriate the money for the expansion of the research than it is to pay for the costs of these devastating diseases.

Senator MCNAMARA. The cure and misery.

Dr. DORFMAN. As well as dollars and cents.

Senator MCNAMARA. That's right.

Chairman HILL. In other words you could not have a wiser investment, as I see it, is that right?

Dr. DORFMAN. Exactly.

Chairman HILL. We certainly do appreciate your coming down here and bringing us this splendid statement, don't we, Senator?

Senator MCNAMARA. Yes, we certainly do.

Chairman HILL. Very fine. We are deeply grateful to you.

Dr. DORFMAN. Thank you, sir.

Chairman HILL. I want to say I have been in Congress a good long time, both in the House and in the Senate, but I don't think I have ever heard any finer testimony than we have had here this morning. If I might go off the record again——

(Discussion off the record.)

Chairman HILL. Is there anything you would like to add, Dr. Felix?

Dr. FELIX. Thank you, sir, but I do not believe there is anything, Senator, except as you say, you and I have worked together in a number of capacities for a long time. I think what you have done in the way of research and also in the way of improving training in the

Southland is something that our section of the country can never pay you enough for. I can testify to that because of what has happened recently in the South as a result of your efforts in that direction.

Chairman HILL. Thank you, sir. I appreciate that very deeply.

We will meet tomorrow in the old Supreme Court room at 10 o'clock in the Capitol to continue the hearing.

I think that while we are here at the National Institute of Health, we might pay a tribute, Senator McNamara, to the 17 devoted research workers of the United States Public Health Service, who gave their lives to the pursuit of research such as we have been hearing about this morning and such as we saw demonstrated when we visited earlier the Institute here.

And I want to say in this connection that I am happy to learn that the risk which these men and women so consciously and bravely accept has been greatly reduced because of the well-equipped building which we have now made available for the work of the Institute. What we propose to do by this legislation is to make the same kind of buildings available for our research workers who are not working here in the Institute, but who are working out in many other fine, wonderful institutions.

This hearing will stand in recess until tomorrow morning at 10 o'clock in the old Supreme Court room in the Capitol.

(Whereupon at 12 m. the committee recessed until 10 a. m. Friday, April 1, 1955, in the old Supreme Court room in the Capitol.)

MEDICAL RESEARCH ACT OF 1955

FRIDAY, APRIL 1, 1955

UNITED STATES SENATE,
SUBCOMMITTEE ON HEALTH OF THE
COMMITTEE ON LABOR AND PUBLIC WELFARE,
Washington, D. C.

The subcommittee met, pursuant to adjournment, at 10:15 a. m., in the old Supreme Court Chamber, United States Capitol Building, Senator Lister Hill (chairman) presiding.

Present: Senators Hill (chairman), Lehman, and Purtell.

Also present: Stewart E. McClure, staff director; Roy E. James, minority staff director; William G. Reidy, and John S. Forsythe, of the professional staff.

Chairman HILL. The subcommittee will come to order.

We will continue with our hearing on Senate 849, a bill to provide assistance to certain non-Federal institutions for construction of facilities for research.

Our first witness this morning will be Mr. James S. Adams of New York. Mr. Adams, will you come around, please, sir.

Mr. ADAMS. Thank you, sir.

Chairman HILL. We appreciate your coming down here, Mr. Adams. We are very happy to have you and ask you just to proceed in your own way, please, sir.

STATEMENT OF JAMES S. ADAMS, AMERICAN CANCER SOCIETY

Mr. ADAMS. I have written a statement which I would like to read, sir.

I am James S. Adams, a general partner in the banking firm of Lazard Freres & Co., investment bankers of New York City. I have been a member of the board of directors of the American Cancer Society and chairman of its research committee since 1945.

In addition I served for 2 years on the National Advisory Heart Council and for 3 years as a member of the National Advisory Cancer Council of the United States Public Health Service.

I am appearing before your committee as a representative of the American Cancer Society and its board of directors which has unanimously endorsed Senate bill 849 and wishes to congratulate the authors, Senators Hill and Bridges, for their leadership and understanding of the most serious problem now facing medical research.

I might say, it is a continuation of the remarkable support which medical research has received on a bypartisan basis since the start in 1945.

The American Cancer Society urged upon the Congress, as long ago as 1947 and 1948, the necessity of providing adequate physical facil-

ities at the laboratories, medical schools, and other centers where cancer research work could be undertaken on a scale commensurate with the problem which this disease presents.

In 1947 and 1948, when the present cancer research program was being worked out by the National Cancer Institute and the American Cancer Society, a careful survey disclosed that $25 million was the least amount which would provide adequate additional facilities needed at that time for work in this one disease alone. That is $25 million of Federal funds.

Chairman HILL. Federal funds?

Mr. ADAMS. We looked at it as seed corn.

Pursuant to this survey and our recommendation the Congress, in the fiscal years 1948, 1949, and 1950, appropriated a total of $16,300,000 of the recommended sum of $25 million. Since 1950 there have been no additional appropriations for construction so that the original program has not been completed. It has been stopped two-thirds of the way in the stream. In the meantime, of course, as the program of cancer research has expanded the needs for increased physical facilities have become greater. Almost always we have found, either under Democratic or Republican administrations, the Bureau of the Budget believed that construction funds should be saved for that depression which, fortunately, has not arrived.

Chairman HILL. They put it more as a public works program, didn't they, Mr. Adams?

Mr. ADAMS. Well, they told us all construction should be saved for a depression.

We advocated the completion of the original program in our testimony before the Congress in each of the years 1951 through 1954, but as stated above such appropriations were not approved.

We are therefore glad again to have the opportunity to present to this committee the urgent need for construction of facilities for medical research in the field of cancer in particular, and in the various crippling and killing diseases enumerated in the preamble to Senate bill 849 in general.

The diseases which we are all fighting today cause not only widespread suffering and anguish, but they also produce directly an uncalculated and in many ways an unnecessary economic loss through the cutting of the productive ability of the victims. This must be absorbed by industry. In addition, the huge cost of care for patients represents an enormous economic burden to be borne by our citizens, and by local and Federal governments.

There are now 700,000 patients suffering from cancer in the United States at any one time. There are a half a million new cases each year and about 230,000 of our fellow citizens die from this disease annually. Of those who get cancer perhaps a quarter are now being cured. Another 25 percent could be cured by prompt and effective diagnosis and treatment but hope for the other 50 percent who come down with this disease rests upon discoveries which must come and may only come from our research laboratories. Hence, in this field, research must be the keystone of our endeavor.

The picture for the future is startling. If present trends continue it is estimated that 1 out of 4 living Americans—that is over 40 million people—will be struck with cancer before they die. Each of these

cases will represent a real economic loss—either loss of production of the individual or the cost of his care, or both.

Some idea of the costs involved were gathered by the Wolverton committee of the House which issued a preliminary report to the 83d Congress in 1954. This committee estimated that new cancer cases developing each year represent a loss to the Nation of some 3 million man-years of work. If we take the average annual output per member of the labor force (age 18 to 65) at $3,500, the cases of cancer diagnosed in 1 year alone will cost society $12 billion in lost goods and services.

It is estimated that the treatment bill for the whole country for cancer runs from 300 million to 400 million dollars annually.

Some careful estimates have been made by the Veterans' Administration predicting that if present trends continue, the care and treatment of cancer among veterans and the benefit payments involved will cost the United States taxpayers from 3 to 5 billion dollars.

Therefore, the American Cancer Society urges that you look upon the proposed total Federal appropriation of $90 million over a 3-year period to construct research facilities to speed the conquest of cancer and other diseases as a necessary investment in the health of our people.

The legislation proposes that the Federal appropriation be made on a matching basis. In the field of cancer we have had some experience with the stimulation of local support brought about by such a program. For every dollar of the $16 million previously appropriated 6 additional dollars went into this building program from private and local sources.

Chairman HILL. Say that again, Mr. Adams?

Mr. ADAMS. For every dollar of the $16 million previously appropriated, 6 additional dollars went into the building program from private and local sources.

Senator LEHMAN. Is that for private——

Mr. ADAMS. No, some were State. I would say they are divided—perhaps equally between private funds and city or country or State funds.

Chairman HILL. But the important thing is that for every 1 Federal dollar, you got 6 dollars from the other sources?

Mr. ADAMS. Yes; we talked about seed corn in the first place; something had to get it moving off its dead base; and then when it had the stamp of approval from the Federal Government, private funds and local and State funds came in and filled the gap.

It is a pattern that is not unusual. In my own State university in Indiana, which is a State school, only 20 percent of the buildings are built from State funds. The other 80 percent has come from other sources. Accordingly the $16 million of Federal funds previously provided by the Congress brought out about $100 mililon of additional funds for a total building program of nearly $120 million. We have no reason to believe that the Federal appropriation we are discussing today will be less stimulating to local support.

This sum was allocated to 55 different construction projects at 48 institutions in 27 States. Often it meant the addition of a floor on top of a building, as at Columbia University. In some cases it meant the extension of a building; or the provision of half the facility of which someone else was providing 50 percent. It was a program of judi-

ciously placed bits and pieces rather than a giant building project in any one area.

These construction projects have all been completed and are now in active use. However, as of today, April 1, 1955, as I understand it, there are in the field of cancer research alone on file with the National Cancer Institute applications from 82 institutions in 34 States totaling $30,794,000 for grants to enlarge their research facilities. And all these have been carefully examined by the authorities who are familiar through visits with each institution. These construction projects are essential if we are to provide working space for the young scientists who are steadily becoming available from the fellowship training programs of the American Cancer Society and the National Cancer Institute.

We charted the growth of cancer research in the United States for the years 1949 to 1955 in the institutions which had received construction money from the earlier appropriations as compared to those who did not receive such funds.

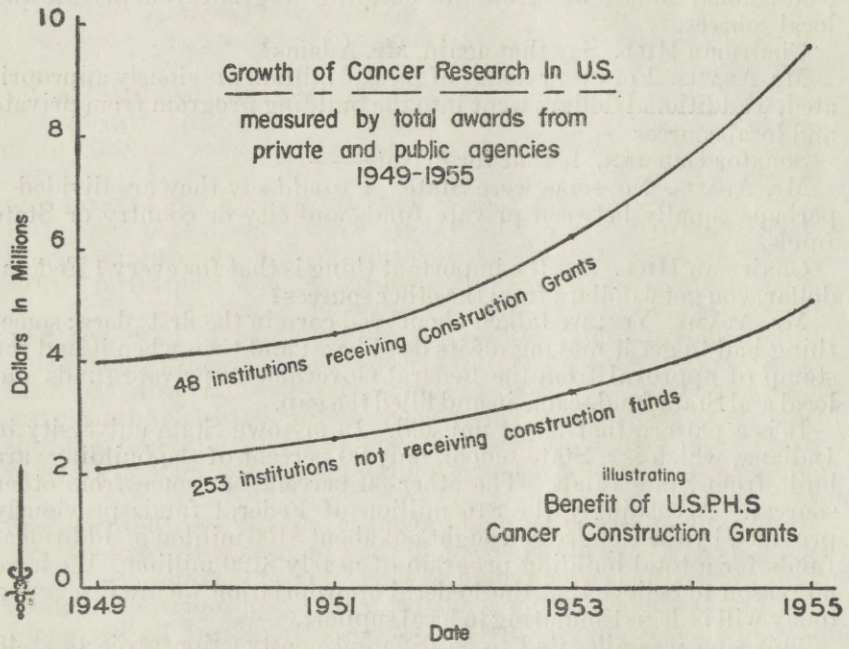
This chart will show you that situation.

The chart which you have before you shows——

Chairman HILL. Excuse me, Mr. Adams. We will place this chart in the record at this point.

Mr. ADAMS. Thank you.

(The chart referred to is as follows:)



Mr. ADAMS. The chart which you have before you shows that in the 48 institutions that received construction grants there were research programs aggregating some $4 million annually under way in 1949. In the 253 institutions which did not receive construction funds the comparable level of activity was about $2 million. From 1949 to 1955 the 48 institutions increased their research output from the level of $4 million to nearly $10 million or about 2½ times. The 253 institutions increased their output from $2 million to $4 million.

Putting it another way, the 48 institutions are carrying on about 2½ times as much cancer research as the 253 institutions which did not receive construction grants. This seems to be a justification, if one is needed, for a further enlargement of research facilities in this field at this time.

In summary, we urge favorable consideration of this legislation as an investment in the health of our country and its economic well-being and as a means of assuring the preservation of the most precious asset we have—the health and welfare of our people.

The sums should not be looked upon as annual expenditures but rather as one-time capital investments which will pay off handsomely in the future and for the benefit of all our people.

I would like to state, sir, that the 7 national advisory councils to the 7 Institutes of Health, each composed of 6 laymen and 6 doctors and scientists, have unanimously endorsed the construction program and have recommended to the Secretary, Mrs. Hobby, the need for the construction. Each has pointed out that their own programs are seriously held up without the facilities this bill would provide.

If I might, I have only one other suggestion to make, sir.

Chairman HILL. All right, sir.

Mr. ADAMS. That is, on page 4 of the bill, the committee, or the Council on Medical Research Facilities, it is stated that there would be 1 representative of each of the national advisory councils to be designated by the Council.

I would suggest, sir, that since widespread travel would be necessary, it would facilitate the work if there were 2 from each council: 1 lay person and 1 medical or scientific person. If this change is made, there will be enough personnel on the new Council to do the traveling necessary for satisfactory site visits. Thank you, sir.

Chairman HILL. Mr. Adams, we are delighted to have you here representing the American Cancer Society. You are also an outstanding man of business. You, of course, are familiar with the fiscal difficulties of the Federal Government at this particular time. But I judge from your statement that you feel very strongly that this would be a most wise investment on the part of the Federal Government.

Mr. ADAMS. There is no doubt about it, sir. We in the American Cancer Society have always come to the Congress with recommendations for those funds which could be wisely used at the time.

Our first testimony here was against a bill to appropriate a hundred million dollars to find a cure for cancer. Mr. Albert Lasker and I came down and testified to the Congress that we did not have the people to spend that amount of money wisely. We would like to come back to you as we help build up the private funds together with the

Federal funds for we operate as a partnership. Our research program, the American Cancer Society and the Cancer Institute work together. The money, whether it comes directly from contributions or from taxes, is handled in effect as one fund. There is nothing we can spend money on which is so useful and which will pay off so much as medical research.

Ten years ago we had a pathetically small program of medical research in this country. What we have today has come about through the superlative cooperation of the Federal Government and the private organizations. The product of this cooperative effort has been of benefit not only to the people of the United States but to the other peoples of the world as well.

Chairman HILL. That is stimulation through the relatively small Federal contribution?

Mr. ADAMS. Yes, sir.

Chairman HILL. Senator Lehman?

Senator LEHMAN. Just 1 or 2 questions. Mr. Adams, this research work has been carried on, of course, by a great many bodies, both public and private. Is there any effort, has there ever been any effort to coordinate the efforts, the work of these various organizations?

Mr. ADAMS. It is done constantly, sir.

Senator LEHMAN. I beg you pardon?

Mr. ADAMS. It is done constantly. I might give an example.

We have a problem in cancer, in lung cancer, that has received a great deal of publicity because of the smoking element which is involved in the studies that need to be made.

The incidence of lung cancer is rising at an abnormal rate in this country.

We have formed a conference on lung cancer, which is now in its third year. That conference is set up and operates as a joint effort of the National Cancer Institute and the American Cancer Society. It is a single program in the way it works out. We avoid duplication. The American Cancer Society's people are at all meetings held by the advisory councils of the National Cancer Institute and we are constantly in touch with each other reviewing all our common programs.

It is not possible for a medical man who has a poor project to go to one place where it is turned down and then run over to the other one seeking approval and not have it known to both.

Senator LEHMAN. What is your relationship with the National Institutes of Health?

Mr. ADAMS. Personally I have none today but formerly I served as a member of the National Cancer Council.

Senator LEHMAN. I don't mean you, personally; I mean the American Cancer Society.

Mr. ADAMS. We regard the National Cancer Institute and the American Cancer Society's research program and fellowship program as part of the same thing, and we work them out together.

Senator LEHMAN. Well, now——

Mr. ADAMS. In practical effect.

Senator LEHMAN. You refer to the National Cancer Institute that is——

Mr. ADAMS. Bethesda, the Public Health Center.

Senator LEHMAN. How about the one in New York on Second Avenue: Sloan-Kettering?

Mr. ADAMS. Sloan-Kettering is a fine institute and its chief, Dr. Rhoads, is here. We feel that Dr. Rhoads is one of the great men in the field of cancer research.

Senator LEHMAN. But is the research work—I know what they are doing—it is research work in which you are interested? Does your society carry that on directly or through the Sloan-Kettering?

Mr. ADAMS. The American Cancer Society carries on no research work directly. We make grants to institutions such as Sloan-Kettering. There are three types of grants: project grants, special purpose grants and institutional grants. The institutional grant is made to research centers such as Dr. Rhoads' institution or Dr. Clark's in Texas, who is here; the M. D. Anderson Hospital in Houston. It is a fluid grant where the scientists have great freedom in proceeding with research as against the project grant which is tied to a specific project. The methods are the same in disposing the funds of the National Cancer Institute and the American Cancer Society.

Senator LEHMAN. Thank you.

Chairman HILL. Any questions?

Senator PURTELL. None at all.

Chairman HILL. Thank you, Mr. Adams. We appreciate your coming here and bringing us this very valuable information. We are grateful to you, sir.

Mr. ADAMS. I can only say this: The lack of construction funds is hampering the development of cancer research in a way that I cannot over-estimate. We are going to lose capable young scientists and doctors if we do not find places in which they can do research necessary to solve the cancer problem.

The Cancer Society's policy is not to provide funds for brick and mortar because if we did we could not take care of our other obligations. Thank you, sir.

Chairman HILL. Thank you, Mr. Adams. We have a number of distinguished witnesses here this morning, who come to us from different parts of the country, some all the way from Texas and Kansas and Chicago. And we will have to proceed as expeditiously as we can. But we are very happy to have with us the Honorable Mrs. Joseph R. Farrington, the Delegate from Hawaii; the Honorable E. L. Bartlett, the Delegate from Alaska; and the Honorable Doctor A. Fernós-Isern, the Delegate from Puerto Rico.

Mrs. Farrington, we would like to have you come around and make any statement you see fit at this time.

STATEMENT OF HON. MRS. JOSEPH R. FARRINGTON, DELEGATE FROM HAWAII

Mrs. FARRINGTON. Mr. Chairman, thank you for the privilege of appearing this morning. I believe this to be one of the finest pieces of legislation that has ever come to my attention, and I want to assure you that, in spite of the fact that I am a Delegate without a vote, I will do everything within my power, when I see my colleagues both in the House and Senate, to help the passage of this legislation.

Out in the most western part of the United States where I come from, our people do suffer from the same incidence of these particu-

lar diseases listed in your bill as any other Americans on the continental United States, and because of that, and plus the fact that I believe it to be such a wise piece of legislation, the Territory of Hawaii would appreciate it very much and would like to be included in this bill. That is all I have to say.

Chairman HILL. Fine. Let me say this to you. I think the reason the Territory of Hawaii was not included is that there has been no request from Hawaii or any application for funds for the purposes provided in the bill. But I will say this: As one of the authors of the bill and chairman of this committee, certainly I would be very happy to see Hawaii included.

Mrs. FARRINGTON. Thank you very much.

Chairman HILL. We are very happy to have you here this morning.

Senator LEHMAN. Have you any medical schools in Hawaii?

Mrs. FARRINGTON. We don't have a college of medicine at the university, but we have a very forward program—I mean a very progressive program, through other agencies.

Senator LEHMAN. I realize, of course, that Hawaii needs this help just as much as any State on the mainland, but I was wondering whether you had the facilities to carry on that are available now.

Mrs. FARRINGTON. I think we have through our university there, through research. We have a very fine land-grant university and I can say this: Whether we are included or not, and I certainly hope we are, the moneys that are spent through this bill, we will be contributing to them; we will be happy if the others get the benefit if we don't. We would like to be included.

Senator PURTELL. Mr. Chairman, you have a leprosarium out there which you are very much interested in.

Mrs. FARRINGTON. Yes.

Senator PURTELL. I was interested in your remark about being a Delegate without a vote. I hope the time is not too distant when Hawaii will not have Delegates without vote but will have Representatives and Senators with votes.

Mrs. FARRINGTON. Thank you.

Senator LEHMAN. May I make an observation? I share that hope very much, but I hope also Alaska will get it.

Senator PURTELL. I was waiting, you see, until the Delegate from Alaska appeared. I would say I not only hope that but I might say last year I not only voted for that but last of this year I shall do so.

Chairman HILL. Thank you, Mrs. Farrington.

Now, Mr. Bartlett, we would like to have you make any statement you see fit.

STATEMENT OF HON. E. L. BARTLETT, DELEGATE FROM ALASKA

Mr. BARTLETT. Thank you, Mr. Chairman. I am going to restrain myself, but with great difficulty, from talking about statehood instead of S. 849.

To paraphrase, Mr. Chairman and members of the committee, the words of a very distinguished man, this bill is so broad in scope, so farseeing in its implications, so practical, so humanitarian in its approach, so necessary, so statesmanlike in its mechanical features that we would like to see its healthful and beneficial light shed upon the great Territories of Hawaii and Alaska and the great commonwealth of Puerto Rico, and I do hope they may be included.

So far as I am aware, Alaska could not at this time share under the program, but the time may soon approach when it might.

In any case, I think you have generally discovered that the Delegates from Hawaii and Alaska and the Resident Commissioner from Puerto Rico like to appear before any committee to urge as a matter of principle inclusion of those political subdivisions in any national delegation. Thank you.

Chairman HILL. Thank you, sir. Thank you.

Dr. Fernós; we would be delighted to have you make any statement, Doctor.

STATEMENT OF HON. DR. A. FERNÓS-ISERN, RESIDENT COMMISSIONER OF PUERTO RICO

Dr. FERNÓS-ISERN. I thank the committee for giving me this opportunity. I appear to support S. 849 and to urge that the terms be enlarged to include the Commonwealth of Puerto Rico as well as the Territories of Alaska and Hawaii.

The purpose of this bill is to aid in the fight against some of the killing and crippling diseases which each year strike tens of thousands. S. 849 is there in the national interest. It is impossible to say when, where, or by whom some remarkable new discovery may be made which might serve to cure or prevent such terrible diseases. Some significant finding might come to light in Ohio, Georgia, Oregon, or any one of the 48 States, or it could be that it might happen in Puerto Rico, Alaska, or Hawaii. Puerto Rico in recent years has made rapid and remarkable progress in the field of public health, hospital facilities, medical services, and research. We have fine universities and an excellent school of medicine.

An important discovery was that Puerto Rico's 30,000 acerola trees yielded an annual harvest of some 900 pounds of a wild cherry, producing a juice 80 times more potent in natural vitamin C than oranges. This has been recently reported. This was the result of work by the Puerto Rican researchers at the department of biochemistry and nutrition of the Puerto Rico School of Medicine.

Therefore, I think that in the national interest, research in Puerto Rico in medical matters as well as in other fields should be encouraged as in the mainland.

Chairman HILL. Thank you. Thank you, Doctor. We are very happy to have you here, Doctor.

Now, Dr. Gardner Murphy, director of research of the Menninger Foundation, Topeka, Kans. May I say Dr. Murphy bears the name of his father who is a very great Alabamian, a great American, a great pioneer and leader in the field of education, juvenile delinquency, and social welfare. We are certainly happy to have you here today.

STATEMENT OF DR. GARDNER MURPHY, DIRECTOR OF RESEARCH, THE MENNINGER FOUNDATION

Dr. MURPHY. Thank you, sir. Mr. Chairman and members of the committee, hundreds of thousands of our citizens suffer mental anguish, and live in a dream world of delusions and hallucinations, or their minds slowly rot to pieces, because we have not done the basic

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research to understand and control these conditions. We are at last learning to support research on cancer and polio; but the entire sum spent for research to prevent and cure mental disease in a year is still less than it takes just to feed and house these patients in hospitals for a week.

In the Menninger Foundation, for example, serving as the nucleus of a psychiatric community of 3,700 patients, in a setting in which a hundred young resident psychiatrists ought to be learning something about psychiatric research, we can scarcely do a tenth of what we ought to do. Relying on small, scattered units of space, backed away in odd corners here and there, we do what we can with a research budget derived partly from research grants and partly from donated funds, which contribute to salaries but cannot provide for adequate buildings.

To begin by choosing one concrete illustration, there is at the Menninger Foundation a team of eight persons investigating basic problems of mental health in childhood. What this team could be doing, if it had adequate space and laboratory facilities and funds would be to study these children thoroughly from a medical viewpoint and from a psychological viewpoint. Actually, the team of 8 persons is squeezed into 2 rooms in a small attic in an antiquated building. This is just a sample of our problem of trying to do basic research in mental health. This is a horse-and-buggy provision for research, in an era where real heavy industry construction with really adequate buildings and facilities are the least we can offer to children who are struggling for mental health.

To take another example, there is need for a building set up as a preschool for prolonged observation and research with "autistic" preschizophrenic children (who used to be considered defective), that is, children who have not been able by the age of 3 or 4 to make the beginnings of normal adjustment, who are already out of contact with human beings and unreachable. We need to learn how to help them begin to trust human beings and to learn what is causing this all too frequent childhood disturbance. Control of countless diseases has become possible as a result of research. Many of the disorders of the mind likewise are coming under control on a small scale. The scale is small because the investment in research is small.

Is there a sound way of determining the extent of our need for research buildings? The building needs must be considered in the light of the research program present and future. About half of our research funds go into clinical studies having to do with the diagnosis, evaluation, care, and treatment of mentally disturbed adults and children. The largest single unit is the psychotherapy research project, which undertakes to evaluate the actual gains made by adult patients under various types of psychotherapy. Another project is concerned with psychotherapy with severely disturbed children. There are also projects having to do with the newer drugs, thorazine and serpasil; with thyroid disease; and with other small, practical clinical problems.

The other half of our research program is committed to long-range research investigations into the dynamics of the development of human personality, that is, its interest is in the process of normal development. One investigation comprises studies of normal children and the ways in which they cope with the problems, difficulties, and mental-health hazards which they encounter in growing up; another is a fol-

lowup study of infants who were first studied several years ago. One of the adult studies using the psychological laboratory has to do with basic individual differences in the ways of perceiving the world, investigating the reasons why different people interpret the same situation in different ways. Another project at the adult level is related to distortions, or misinterpretations of the environment and ways in which these can be outgrown.

Now as to housing of these studies: In general, all of the research studies having to do with chidren are the most severely cramped for space, and the buildings are most hopelessly antiquated. The adult clinical studies are housed tolerably well at the moment simply because we do not and cannot do research on a large scale; and lack room for expansion. The development of a program to include the physical aspects of mental disorder—namely, brain disease, biochemical and physiological abnormalities, responses of the body and mind to various kinds of strain and excitement, to food and drugs, et cetera, would require a group of buildings containing laboratories—which we cannot even begin to dream of achieving out of our current clinical income. We have a nuclear staff which is interested in this group of issues and eager to make a complete study of the whole patient, that is, to see his psychological problems in a full context of a medical study of his entire makeup as a person and as a "living system"; but we cannot grow very far in this direction until we have the physical structures, the facilities, laboratories, offices, research hospital wings for clinical beds, et cetera, in which such research could flourish.

The basic research into the development of personality likewise makes out tolerably well at present only because we could not set out sights very high. What we ought to be doing is to study many healthy and sick personalities thoroughly. This takes space and facilities. We have laboratory facilities for a group of 1 full-time and 9 part-time research psychologists who are interested in the problems of distorted interpretation of the world which were mentioned above.

There is a circular relationship between a limited effort and limited facilities. We have a good research staff and can add to their number as fast as it is possible to have and equip such research. Moreover, our young psychiatrists—we train about one-tenth of all those trained in this country—need to learn psychiatry in a research atmosphere—research concerned with normal and abnormal development and with the question how to cure and how to prevent mental illness, so that they in turn can contribute to work on urgent problems in mental illness.

Almost everywhere in the hospitals for the mentally afflicted, research, if it is carried on at all, is crowded off into one wing of the building, or enjoys only temporary or flimsy structures, which immediately suggest temporary and flimsy apparatus, and the personnel overdriven by difficult working conditions and inadequate incentives to do their best. A building program in my judgment must be not only qualitatively of the best and adequate to the scope of the challenge, but so well planned and equipped as to be capable of setting up pilot investigations which will stimulate the efforts of investigators in other existing institutions. To be effective, research must capture the imagination both of the specialist and of the public. And, if research is to become a habit of mind, we cannot afford to make a sharp distinction between a few small research hospitals on the one hand

and large custodial group of hospitals which merely care for patients on the other hand. Ultimately the job must be so performed that the new research hospitals and institutes can exert a sort of contagious influence upon other hospitals and all other institutes in which patients are cared for, so that research may spread and gain in momentum.

Buildings, moreover, profoundly influence the kind of research that is carried on within them. The right kind of buildings tend to draw into themselves the right kind of facilities, attracting the right kind of personnel, both the general personnel concerned with the care of the mentally ill and the special research personnel who work side by side with them. Wherever buildings are adequate, it becomes second nature on the part of administrators and communities to obtain adequate personnel and facilities and the prestige which will come from a major local research contribution.

Research is often associated in people's minds with the problem of psychosis or insanity. But I would like, in concluding, to remind you that it is not only insanity but apathy, failure of nerve, demoralization, irresponsibility, alcoholism, drug addiction, gnawing fears, doubts, anxieties, self-hate, and hate of one's fellows that often surrounds and leads into the problem of insanity and in the long run becomes ever more important. Insanity is, in a certain sense, the region of total eclipse around which the partial eclipse of human nature through mental anguish appears. If we believe in a vigorous mental-health program, what can be more important than the facilities of basic investigation into the roots both of psychosis and of the violence, irresponsibility, and apathy which threaten so many of our citizens?

Chairman HILL. Doctor, you are not only director of research of the Menninger Foundation, but you are also past president of the Psychological Association?

Dr. MURPHY. Yes.

Chairman HILL. And you served as consultant on health education to the minister at New Delhi?

Dr. MURPHY. Yes.

Chairman HILL. And you have written several books on this question of psychology, the minds of men?

Dr. MURPHY. Yes, sir.

Chairman HILL. Isn't it true that one of the most distinguished members of your foundation, instead of devoting precious time to research or to psychiatry has to spend his time out on the road trying to raise some money to enable your foundation to continue?

Dr. MURPHY. We cannot carry out our program at all without his efforts. He is actually out on the road half the time raising funds, and when he is back with us, he is gathering information and making the plans for future trips.

Chairman HILL. Well, I have had the privilege, as a member of the subcommittee of the Senate Appropriations Committee, of hearing Dr. Menninger testify not once but on several occasions, and that has given even me an insight into the very fine, wonderful work that your foundation is doing at Topeka, Kans. I know it is recognized throughout the country, throughout the world for that matter.

Senator Purtell?

Senator PURTELL. I similarly want to express my appreciation to the doctor for coming here. I, too, know to some extent the remarkable work you and your associates are doing out there, and I am sure we shall find some way in which that can be assisted and more speedily assisted perhaps than is being done now.

Dr. MURPHY. Thank you.

Chairman HILL. Senator Lehman?

Senator LEHMAN. Doctor, how many patients have you got out there in your hospital?

Dr. MURPHY. In the Menninger Foundation Hospital there is a little less than a hundred.

In the community which we serve, the Winter Veterans Hospital and the Topeka State Hospital, in which our psychiatrists are trained, there are 3,700.

Senator LEHMAN. I am going to ask you a question now which has no direct bearing on this bill. My views are known on this bill. As is well known, I am strongly in favor of it, but I would like to have counsel from you which affects the entire field of mental illness.

Have you any suggestion to make as to the manner in which we could stimulate and make really effective research work in our great public hospitals?

Now in New York State we have in our State hospitals 130,000 patients. It seems to me—unless conditions have changed a great deal since I ceased to be Governor, that there is relatively little effective research work being done. There is some of course, but there is relatively little.

But we have in that great number, it seems to me, the facilities for clinical studies which are unsurpassed.

I have great admiration for your foundation. But you deal with a hundred patients. Even the National Institutes of Health deal with a small number of patients, maybe 100 or 150 mentally ill patients and here we have in New York, and I am sure there is a parallel to some extent in most of the other States of the Union, every possible type of mental illness. We have them in large numbers, unfortunately.

My recollection is that we have 20 and possibly more individual hospitals. Now it seems to me that those institutions offer such tremendous facilities for clinical research which could not be paralleled, could not be equaled anywhere else, and that we ought to find some means of making that research in the public hospitals much more effective than it has been in the past. I would like to have your judgment.

Dr. MURPHY. Yes, Senator. There are only three suggestions that I can think of: We have in the Menninger Foundation an interhospital research committee. It includes Topeka State and Winter Veterans Hospital. We have doctors and psychologists who meet there and integrate their medical research program. For instance, in these new drugs, thorazine and serpasi, which are bringing out intense and encouraging responses everywhere, something of importance seems to be going on.

We feel that many kinds of studies can be done. We can do an intensive vertical study of the whole patient in the Menninger Hospital, a large-scale statistical study can be done better in Topeka State or in Winter so that we study the problems both at the vertical and at the horizontal level, and in this it is possible for research personnel at Menninger to be useful to the research personnel at the other hospitals and vice versa.

And of course, there are many of us that serve as consultants and you can see ramifications of the influence of any institution that has

research programs upon those that do not have, or have rather limited facilities.

I think then that the first answer is that places that are relatively lucky in facilities can spread their influence in other places.

Now secondly, from what I know of State hospitals, I would say that they are doing a good deal in research relative to the very limited facilities that they have, in terms of buildings, in terms of laboratories, and they could do a great deal more if as much attention was paid to mental diseases as to many other types of disease.

We have reports and make visits to the State hospitals, a good deal, and we find one great problem, which has already been mentioned here several times, the problem of personnel, because it is assumed that research is rather a small field with opportunity for relatively few people.

The sheer cramped state of the buildings everywhere, the limited facilities, result automatically in the attitude among young men who are about to be trained that there is not much of a career in research.

Insofar as you can make research important in the minds of young medical and other professional personnel by giving it adequate physical facilities, I believe that you can draw in a high quality, a larger quantity and a high quality medical and general research personnel.

Senator LEHMAN. Is there any effective clearinghouse in this country for the exchange of information, not only with regard to the medical treatment, but with regard to the methods of treatment—for instance, parole and releasing of the patients who have been temporarily aided and discharged so they can go back to their homes.

Dr. MURPHY. It does not seem to us that the clearinghouse facilities are adequate. There are such things as the Biosciences Exchange, run through the Smithsonian, and so forth, the Council of State Governments, and various other studies of State hospitals.

We have found it very difficult actually to keep in touch with all the studies in progress. Of course, the statement would be made that these studies will be published when they have something definite to offer.

That does not answer us because there are many parallel studies. Take the case of these newer drugs, thorazine and serpasil, which are enormously important and the value of which has got to be scientifically appraised. It is difficult to keep up with what is being done and we have several men working with this problem.

Senator LEHMAN. I found four great hospitals—I think many of them are much too large, but that is another story—in which the administrators were so overburdened with administrative duties that there was relatively little attention given even to the scientific or medical questions.

Dr. MURPHY. It seems to me, Senator, that it is a question of priorities. If people live in buildings which are crowded, antiquated, and inadequate, not proper places to house research anyhow, not suitable for research, they do what they have to do in a crowded place and with a tremendous burden.

The minute that you make it physically possible, that is, you show that it is important, it has a high place in priorities to cut to the roots of these things, it seems to me that you get a payoff everywhere that I know of. I think of several in New York State.

Wherever there has been a research institute set up, they have begun to draw other types of funds which go into apparatus and personnel and so on, but there has to be the physical facilities, I would say.

Senator LEHMAN. May I ask just one more question?

Dr. MURPHY. Yes, sir.

Senator LEHMAN. Several of the witnesses who have appeared some days ago, testified that in their opinion, instead of selecting our research and administrative people in our institutions from the ranks of men who have been especially trained in psychiatry, it was much the better system to use men who were trained in general medicine, or possibly even in surgery, but who had some training, some experience in psychiatry in addition to their general training. They felt that in doing that we would broaden the field of those who might be available and also give a man a much broader point of view.

Dr. MURPHY. I think many types of research can best be done that way. I think the work done at Michael Reece in Chicago is an illustration of this under brilliant, psychiatric leadership, but with internists, psychologists, and people of 10 specialties working with psychiatrists in this integrated approach.

Chairman HILL. Yes, Senator Purtell.

Senator PURTELL. I agree with you there is not any clearinghouse in the way in which this information can with any certainty be passed on, but you are doing some of that, aren't you? I know the Institute for Living publishes monthly little booklets that carry, I think convey, some information about the research; is that correct?

Dr. MURPHY. That is correct.

Senator PURTELL. Does your institution do that?

Dr. MURPHY. The bulletin of the Menninger Clinic has reports on our work.

Senator PURTELL. Yes. So actually you have some exchange of information on research that is going on. It is not just a blank wall there.

Dr. MURPHY. That is right. But I was only speaking of the larger integration.

Chairman HILL. Doctor, we certainly want to thank you for coming here and bringing us this fine information this morning. We appreciate it deeply.

Dr. MURPHY. Thank you.

Chairman HILL. Dr. Sidney Farber.

Doctor, you are the director of research at the Children's Cancer Research Foundation in Boston; is that correct?

Dr. FARBER. Yes, sir, Mr. Chairman.

Chairman HILL. This foundation is a separate institution affiliated with the Children's Medical Center and through the Children's Hospital with the Harvard Medical School; is that right?

Dr. FARBER. Yes.

Chairman HILL. Then we would be delighted to have you proceed in your own way, Doctor.

STATEMENT OF DR. SIDNEY FARBER, DIRECTOR OF RESEARCH, CHILDREN'S CANCER RESEARCH FOUNDATION, BOSTON, MASS.

Dr. FARBER. Thank you, Mr. Chairman, and gentlemen. I am happy to have this privilege of appearing before you, and may I say

at once that I would like to give my enthusiastic support as a private citizen to this bill.

I would like to express my appreciation, too, for the very broad way in which this bill has been drawn up.

May I say before I forget it, with Mr. Adams, that I would like to suggest the minor change of having two members of each council.

Chairman HILL. Instead of the one?

Dr. FARBER. Instead of the one, merely to make it possible for this tremendous job to be done as effectively as possible in as short a space of time as possible.

My own work at the present time is in the field of cancer. My responsibilities, however, are more broadly in the various fields of research connected with disease in early life particularly, and so I should like to speak in favor of this bill not only because of what it will do for cancer research but what it will do for research in all fields of disease in which this country is interested at the present time.

The tremendous surge of interest in research which came at the end of the war came for many reasons. One of them was the acknowledgment of the problems which affect the country as a whole in the matter of disease.

Another came from the defection of research directions not recognized before which were so clear as to make it mandatory that very rapid progress be made.

That progress was made on the basis of grants from the Federal Government given through the National Institute of Health and the other grant agencies of the Government and through private organizations such as the American Cancer Society, the Heart Association, the United Cerebral Palsy and Multiple Sclerosis and others which which you are familiar.

Before speaking directly to the point of construction, may I just make one remark about the problem of research as a whole so that we may see it as a whole and then relate construction to research in understandable terms.

There are three parts to the acceleration of research as I see them: The first and by far the most important, are the men and women who are going to carry out the research. We must continue to look to the medical schools and to the science divisions of universities to turn out these men and women who will take care of patients and who will do the research in the laboratory. Support from many different sources must be available so that these medical schools and universities will continue to survive, for their plight at the present time is a very serious one.

The second part of this research program, of course, has to do with research funds which come from the Federal Government and from private institutions, from individuals in smaller numbers today and from the people as a whole in many different ways.

And finally, the third has to do with construction, without which there can be no research.

We now have a good number of young people coming from the medical schools and with support by foundations and the Federal Government they are capable of carrying out research. When we speak of construction funds we speak of the country as a whole, because there are splendid programs, in all parts of the United States; they are not limited to any part of the country at all.

In some areas there has been greater opportunity for the development of these young people than there has been in others and I would like to see that opportunity spread over the entire country in as fair and as equitable a manner as possible.

That has been done, as far as research projects have been concerned by the National Cancer Institute research program and the programs of the great private foundations.

May I give one personal example of what the construction funds provided by Congress a few years ago accomplished and then pass on to a consideration of one phase of research which will be benefited tremendously by this bill.

A few years ago, the Childrens Medical Center research program in the field of cancer was housed in 13 different installations in a three block area, in buildings and laboratories not suitable for the purpose.

The trustees of the new Childrens Cancer Research Foundation agreed to build a $300,000 research building. That was far short of the need, far short of the possibilities which were ahead.

When the construction funds, through the National Institutes of Health, were made available, most of the money had already been given out by the time this group was ready to act, but $100,000 was allocated to the institution for cancer research in children, to pay for equipment.

Because of that endorsement, if you will, of the National Institute of Health for their program, the people of New England, through these trustees, agreed to go much further and actually try to meet the needs. The end result was a $1,700,000 research building including $100,000 of Federal funds and $1,600,000 raised by the people of New England for an institution in which they were vitally interested.

I believe that is one example of the splendid byproducts of funds provided by the Federal Government and the stimulus they give to funds from private sources.

I might mention in passing, too, that in that new building, the cancer research facilities which can be used broadly for research in many different diseases, were shared with Dr. John Enders, one of my colleagues, who was struggling at that time to find a way of growing the poliomyelitis virus in tissue culture. All of the facilities of the second floor of this building were placed at his disposition and I think I may say very conservatively that his research program was pushed to fruition some 2 to 3 years ahead of the time it would have taken in the former antiquated and totally inadequate quarters.

Now the result of that you are familiar with on the basis of Dr. Ender's work and that of his colleagues, Dr. Wheller and Dr. Robbins. The Salk vaccine is now made and is now being tried against poliomyelitis, on the basis of the magnificent work of Dr. Salk in Pittsburgh.

I think this is another practical outcome which could not have been predicted in particular but in general can be predicted throughout the country if adequate facilities are available.

May I now address myself to one aspect of the research program in the country because we are particularly interested in it even though we do not want to overemphasize it.

It concerns the use of chemical compounds for the treatment of cancer, drugs for the treatment of widespread cancer which cannot be removed by the surgeon because the disease is too widespread or cannot

be treated by the radiologist because the problem is no longer within the reach of that technician.

Within the last 8 or 10 years, there has been tremendous progress on the basis of support through the National Cancer Institute and the American Cancer Society and other private agencies of research in the chemotherapy of cancer.

Chemotherapy takes in three great fields. The first is hormones, the sex hormones are chemical compounds which have such extraordinary effect upon cancer of the breast, or cancer of the prostate.

The second are chemicals, and some of these now, as you know, can produce long increase in survival, in children with acute leukemia, but they do not offer a cure. There is still no cure for acute leukemia.

Chairman HILL. You have done lots of work in that field, have you not, Doctor?

Dr. FARBER. We have been active in it for a number of years. There is splendid work going on in that field in many parts of the country in a large number of institution. Now there are a number of chemical compounds which may be used successfully for periods of time, of months, and even a few years in the prolongation of life of these children who formerly died within a very few weeks or months after the onset of the disease.

Chemicals may be used with temporary success in prolonging the life of patients with lymphoma, Hodgkins disease, neuroblastoma, a tumor arising in the adrenal gland and certain other solid tumors which we see in later life. They are now beginning to be affected by chemicals and there will be tremendous progress in this field in the immediate future, I think, on the basis of leads already available.

Finally, the most recent development in the field of chemotherapy concerns the discovery that antibiotics, those agents that are similar to penicillin and streptomycin, may have very important effect in cancer. So far we can speak only of these effects in mice, in cancers produced experimentally in the mouse. We now have an antibiotic which is capable of killing cancer of the breast in the mouse completely within 6 days, or of destroying completely 3 different kinds of leukemia which we produced in the mouse within a period of from 8 to 15 days, or an antibiotic which has striking effect on malignant melanoma in the mouse.

These antibiotics have not been studied yet in man. That is the next step but before we can go to man, there is a great deal of work to be done and I want to touch upon that in a moment. May I say that the very fact that there are 3 different antibiotics discovered in different institutions in the last 2 or 3 years, showing anticancer effect, makes mandatory today the study of hundreds of antibiotics and the manufacture of hundreds of antibiotics, not for the study against infectious diseases alone, but for study of their anticancer properties.

That creates a tremendous problem in laboratory facilities, and in clinical research beds.

Several institutions in the country have what we call vertical programs in chemotherapy of cancer.

These vertical programs require laboratories for biochemistry, that means ultracentrifuge, that means a great deal of very expensive equipment; laboratories for the screening of chemical compounds against thousands of tumors—thousands of mice with cancer which we implant into them, or screening against many other biological systems.

We must have laboratories of pharmacology, of experimental pathology, and finally we must have clinics and research wards where patients can be studied under ideal conditions and where these chemical compounds can be given as part of the total care to these patients and primarily for the good of the patient, not for experimental purposes.

Research beds, as you know, cost about $30 a day for maintenance. We can't begin to maintain them unless we have them. We cannot put our patients under these test conditions for careful study unless we have research wards, and these are badly needed in many places throughout the country.

Now, the most happy news in the field of chemotherapy of cancer has come to us within the last year.

In the National Cancer Institute, through the National Advisory Cancer Council, there was established a subcommittee on chemotherapy of cancer charged with the responsibility of accelerating by voluntary cooperation, progress in the chemotherapy of cancer throught this country, and beyond that, throughout the world.

In order to do this, it was agreed that we would develop new machinery or use old machinery which had not been used, to pool the information and to spread the results of research as rapidly as possible without delay from research laboratories to the bedside.

To do this quickly, it was clear that we had to be a national program. The American Cancer Society, which has always had programs of this general nature, joined immediately with the National Cancer Institute and the Damyon Runyon Fund, the Atomic Energy Commission and the Veterans' Administration and other agencies concerned with cancer in this country, in an overall national program on a voluntary basis for the acceleration of the program of chemotherapy of cancer.

I am very happy to report this morning that this now is an actuality, and that in Bethesda there is being created the machinery for a national chemotherapy service center where information will be pooled and disseminated, and where expert panels, made up of representatives from the different research laboratories and clinics of the country, will have an opportunity to work together to accelerate progress in this field.

Such acceleration of progress is going to demand construction facilities immediately.

The acceleration of progress will require laboratories of many different kinds, research beds, research wards, and the great need for construction will be more keen than ever before; but it will be a need that all of us will welcome because it is a need based upon the pursuit of directions of research of proved value and over directions of research with great promise.

Chairman HILL. Doctor, you brought us a most interesting and hopeful and challenging statement.

Are there any questions, gentlemen?

Senator PURTELL. None except you have my profound thanks for this information you have given us and for the marvelous work you are doing.

I am very happy that you mentioned Dr. John Enders. He happens to be from West Hartford, and we are very proud of him.

Dr. FARBER. Yes, indeed; I think you should be. We all are.

Senator LEHMAN. I just want to echo the comments that have already been made by my colleagues.

I have no questions to ask, but I do want to tell Dr. Farber that I found his talk extremely interesting and very, very informative.

Dr. FARBER. Thank you.

Chairman HILL. Interesting and challenging. You have certainly challenged us, who must do our part. You are doing your part so well.

Dr. FARBER. Thank you.

Chairman HILL. Thank you, Doctor; we deeply appreciate your coming.

Our next witness is Dr. Cornelius P. Rhoads.

Dr. Rhoads, I may say, is an old friend. He has been here with this committee and with the subcommittee of the Senate Appropriations Committee a good many times, and always has been so fine and so helpful.

Doctor, I think the record ought to show that you are the scientific director at the Memorial Center for Cancer and Allied Diseases in New York City, and that Memorial Center is the oldest cancer hospital in the United States.

Dr. RHOADS. Yes.

Chairman HILL. It is an institution with complex activities reaching into the most basic depths of modern science.

Dr. RHOADS. I did not write that.

Chairman HILL. You did not write that.

Dr. RHOADS. I did not write that.

Chairman HILL. You did not write it at all, but you cannot honestly disagree with it, can you?

Dr. RHOADS. Well, I am biased.

Chairman HILL. And since 1912 the institution has operated as an arm of Cornell University; is that not true?

Dr. RHOADS. Yes, sir.

Senator LEHMAN. How old is that hospital? I remember it for a great many years. When was is originally founded?

Dr. RHOADS. 1884.

Chairman HILL. It proceeds under a fourfold program, I believe, to wit: cancer prevention, research, and teaching in addition to the initial responsibility of cancer treatment; and emphasizing these different functions; is that correct?

Dr. RHOADS. Yes, sir.

Chairman HILL. Your research, your basic research, is conducted in the affiliated Sloan-Kettering Institute for Cancer Research?

Dr. RHOADS. Yes.

Chairman HILL. And also part of the Memorial Center group is the James Ewing Hospital, one of the two cancer hospitals built by the city of New York for the care of medically indigent patients.

Then also, I know, you yourself make a very fine contribution to the Southern Research Institute in Birmingham, Ala.

Dr. RHOADS. That is an affiliated laboratory; yes, sir.

Chairman HILL. The laboratory there is an affiliated laboratory of your center.

Well, Doctor, your modesty has forbidden you to confirm, but your honesty prevents you from denying it; is that right?

Dr. RHOADS. That is succinctly expressed.

Chairman HILL. Will you proceed in your own way, please, Doctor.

STATEMENT OF DR. CORNELIUS P. RHOADS, SCIENTIFIC DIRECTOR, MEMORIAL CENTER FOR CANCER AND ALLIED DISEASES

Dr. RHOADS. Yes, sir.

I am here to express my strong endorsement of the bill which is here under consideration, and I make this endorsement on three grounds: (1) It is the best possible investment in terms of economic as well as the social welfare of this country; (2) it is an absolute necessity that these facilities be made available if hundreds of thousands of lives are not to be needlessly lost; and (3) if they are made available, this wastage of life can be prevented, from all the indications presently before us.

I regard this as a good investment because I presume from what the statisticians tell me that we are losing between $3 and $10 billion a year in the care of cancer patients, acute and chronic patients, at the present time.

We know this can be prevented, already has been prevented, to a limited extent, by the allocation of public funds, Federal in nature, from our own experience and that of other institutions.

In our own institution the availability of $250,000 for a new laboratory for surgical, physiological, and basic radiation treatment, has saved in the past 5 years in our own institution nearly 1,000 lives, as we estimate the facts.

This is because of better control of the patients who are operated upon, the meticulous, precise methods of treatment possible through the availability of this new laboratory structure.

Secondly, we regard this as a good investment because in so many institutions, including our own—now, we are working with obsolete plant on which the maintenance is prohibitively high.

Thirdly, we know it is a good investment, as Mr. Adams has told you, because for every dollar of Federal funds that have been made available for this type of construction, something between $5 and $10 of private funds are brought in to supplement it.

In our own instance we built, with the $250,000 made available through a previous construction grant, a $1,200,000 laboratory; the $1 million, all from private funds, stimulated into being by the Federal grant.

Now, the need for these funds for construction is beyond question.

In the first place, we face in the cancer program what is called a pandemic.

Despite the very best efforts on a public scale of both public and private agencies over the past decade, we are losing ground.

We have improved our ability to cure patients with cancer, it is true, but the increased rate of incidence of occurrence of cancer and, particularly, of lung cancer, has more than neutralized our gains, so our death rate is steadily rising today, and will rise at an increasing rate in the years to come, because each year roughy 1 million additional individuals come into the cancer-susceptible age. Something must be done.

Secondly, we have in the past decade, thanks to Federal funds and funds of the American Cancer Society, undertaken and carried through an extensive program in training young scientists, both medical and nonmedical, into new methods of approaching the solution of the cancer problem by means not presently available.

These young scientists are now mature investigators, as are their associates, and we simply have not the space to put them to work.

As Dr. Farber said before, these men and women will turn away from cancer work and drift into other fields less useful to society if they do not have the physical space in which to work.

Thirdly, in the past decade there has been a complete change in the investigative methods applicable to the better control of cancer.

We never dreamed in our own institution of the changes that would occur in a very brief period. So now there is constant demand for new equipment, bulky equipment, material which has to be protected from X-ray effects.

Finally, the problem of studying the patients is enormously important. We are getting our methods now out of the experimental laboratory and into a phase where they can be employed to prolong life and human beings.

The care of these human beings is an expensive, difficult, time-consuming job which requires substantial facilities not presently at hand.

Now, I can give you a few examples of this need from my own experience.

Our own building, which is paid for by the Alfred P. Sloan Foundation, in large part, was occupied 7 years ago this month, and was considered to be a useful building.

At the present time, my wife has had to discharge her cook because we've had to put a cigarette vending machine in the cook's room.

We had to hire a barn in Woodside, Queens, where we could keep in isolation our incoming experimental animals—we have no space in town.

New methods in the chemotherapy of cancer, extensions of those that were devised in that institution and others, have required us to buy two ancient houses, so decrepit that we can neither heat them nor keep the dirt out and do effective work.

Finally, a radioisotope facility was deemed wholly ample several years ago, but is now so dangerously overcrowded as to cause the Atomic Energy Commission to threaten to withdraw permission to use isotopes, so we have every hall and every restroom full of equipment. This was a completely unexpected eventuality 7 years ago.

We know now we can diagnose cancer earlier, and we know now that while it is so localized in the organ in which it arises, we can achieve complete cure by methods of chemical, surgical, or radiation destruction of the cancer.

We can remove much more extensive areas of the tissue than 7 years ago, but to do this requires laboratory facilities for the precise control over those changes in the patient's body chemistry which threatens his life unless they are corrected.

This is what we do with these research facilities.

Secondly, we know now that we can modify those organs, called the organs of internal secretion, the sex and adrenal glands, either by surgery or by chemicals, in such a fashion as to restrain substantially the growth of certain types of cancer, notably, as Dr. Farber has told you, of the breast and the prostate gland, and one of these important observations came from the facilities provided by the Public Health Service through the old construction grant at our institution.

New methods of interfering with the function of these glands of internal secretion are coming to hand. We shall report officially next

month before one of the outstanding medical societies the fact that the pituitary gland at the base of the brain, formerly regarded as inaccessible to surgery, can be removed easily, quickly, and without adverse side effects.

When this is done, the patients with cancer of the breast, who are beyond aid by other means can be very substantially relieved and returned to work, oftentimes for months—indeed, out of our first 13 patients, 9 are still going at the end of a 9-month period.

We do not know how long they may go on, but at least here is a new procedure which supplements the restraint achieved by other means in the past. These are not cures.

We are now able to grow human cancer in test tubes, in fertile incubator fowl eggs or in experimental animals properly treated, so that for the first time we can begin to study the chemical needs, affinities, appetites of human cancer cells, and on the basis of these specific appetites, devise chemicals which will specifically and selectively poison them.

This is chemotherapy, as Dr. Farber told you. This is being done by our own institution by the aid of the Cancer Society and the National Institute.

We have worked with the Charles Pfizer Co. in Groton; they have made available to us no less than 42 working contractual arrangements with pharmaceutical houses like Pfizer, and laboratories such as the Southern Research Institute in Birmingham.

We have been able now to define jointly between the Birmingham laboratory and the one in New York what is apparently a common chemical abnormality, common to all kinds of cancer in man and animals.

This is not yet published. It is so important that we are not prepared to publish it until ample confirmation is had, but it seems to be—it seems so far to hold, and we hope that this common chemical abnormality which appears to differentiate cancer from normal tissues, may open the whole field to the selective destruction that will cure cancer in man which is presently incurable.

We have enough leads from these observations to justify, in cooperation with our affiliated laboratories in universities and pharmaceutical houses, extensive programs of synthesis, as Dr. Farber has described, so that now we have a constant flow of compounds from the synthetic laboratories around the country, to the testing laboratories, ours, Dr. Farber's and others, and information goes back to the preparing laboratory almost daily, so that every chemist at work may have the most recent and most important information to guide his program in preparing new compounds of the utmost complexity.

This network of exchange of information and experimental work is now really spread all over the country, thanks to what has been created with Federal aid. But it is slowing to a stop because we do not have more facilities to put the new discoveries to work in.

Finally, we can restrain cancer in man today by a variety of chemical agents, by those that are called hormones, by agents derived from the old military experience with poison war gases, with the Lederle Corp. antivitamins described by Dr. Farber and now, as he remarked, with certain antibiotics.

Really prolonged and useful life can be salvaged from many forms of cancer. Indeed, there appeared only this week in the New England

Medical Journal an article from Califronia where an indvidual using these chemicals in which we are all interested, describes substantial relief in one-third of all the patients with advanced cancer treated in one of the Veterans' Administration hospitals, not cures, but restoration from an agonizing tortured individual to comparative health for a reasonable time, and I believe that is worth having.

Finally, today we can utterly destroy transplanted cancer in experimental animals, and I hope we can go further in the years to come, if you gentlemen give us the help we need.

Chairman HILL. And all the progress has been made through research?

Dr. RHOADS. That is the only way you make progress.

Chairman HILL. Doctor, you made such an interesting statement, a statement that was so informative, that I even hesitate to ask any questions.

There is one question I would like to ask you though, and that is this: You spoke about the rising rate of cancer cases. To what, generally, would that rise be ascribed?

Dr. RHOADS. Two things, Senator: The rise in the rate of death from cancer of the lung alone has almost neutralized the gains we have made by better surgery. This is what has been called a pandemic of lung cancer.

Secondly, there is each year an additional million individuals, more than ever before, coming into the cancer age, and older individuals are more susceptible to cancer.

This happens because we have been able to eliminate, for practical purposes certain infectious diseases, which were the causes of death 20 years ago.

Senator PURTELL. Dr. Rhoads, I just hate to have you stop your discussion because we are learning so much from it here, and it is so helpful to us.

There is no question about—I know of nobody, let me put it another way—that in any way opposes the purpose of S. 849. It is a field in which we, I think, ought to spend more than we propose spending. But I wondered, Doctor, if you had given thought—I am for the purposes of the bill and all of us are, I am sure—but have you thought, given thought, as to the distribution of the bill? We are going to have $30 million a year.

The formula that is proposed is one in which you might well find that there will be not money available in certain parts of the country, perhaps, for work that has already been going on under the old grants. Have you given much thought to the formula of this bill?

Dr. RHOADS. Yes.

Senator PURTELL. And in the way this money will be distributed?

Dr. RHOADS. Yes. I have given considerable thought to it, and I have discussed it with my colleagues.

I believe firmly in broad national distribution of research funds. I also believe in putting the research support where the best work can be done.

I am sure that every effort has been made to achieve, by the formula before you, an equitable and reasonable distribution. It is balanced for medical schools, it is balanced for population, and I have no fault to find with it.

Senator PURTELL. You feel that enough thought has been given to it by you and your associates and others in the field to feel this is the way they should be distributed?

Dr. RHOADS. Yes. It will handicap the going institutions——

Senator PURTELL. What is that?

Dr. RHOADS. It will handicap the going institutions, but I do not think that makes any difference any more because the work has become so nationwide. There is so much cooperation and so much common interplay of experimental methods, of communication among scientists, so much exchange of scientists, as ours go between Birmingham, Miami, New York, and Detroit, that there are no longer State lines.

This distribution formula does not worry me at all. As a matter of fact, I think it is a rather thoughtfully planned formula.

Senator PURTELL. I think certainly we will want to spread this work so we will be alert to it, and following it up in all parts of the country, no question about that. I am glad you have studied it, and you and your associates have studied it, and you think that is the formula that should be employed.

Dr. RHOADS. I think it is the best formula that can be arrived at under the circumstances.

Senator PURTELL. Thank you.

Chairman HILL. Do you have any questions, Senator?

Senator LEHMAN. Just one.

Do any substantial number of the great private and public hospitals in New York City carry on serious research work in cancer?

I am talking now about hospitals like the Medical Center, Mount Sinai, Bellevue. How many of those are carrying it on individually?

Dr. RHOADS. The so-called medical center, the Columbia Presbyterian organization, has a very extensive and very fine program of intensive and serious work in the cancer field.

Hospitals without research institutes tend to be limited in their ability to carry out the exceedingly complicated team play in research which has become forced upon us by the new discoveries and new methods.

Twenty-odd years ago science was comparatively simple, and the individual scientist, working under starvation conditions, could make important contributions; but that cream has been skimmed. Nowadays scientific work is done by men of different intellectual discipline, bonded together to accomplish a common purpose, and they have got to be housed and equipped.

For that reason, the general hospital tends to be behind the big centers, such as the Columbia Presbyterian or the Children's Medical Center in Boston, where they have their own cancer institute, in which men of different types of training and competence can come together and solve a common problem.

Senator LEHMAN. Do you have a working arrangement with the New York Hospital?

Dr. RHOADS. Oh, yes, sir. Our staff serves not only in our two hospitals, but on the staff of the New York hospitals; and we are a part of Cornell University's Medical College.

This is actually a four-part arrangement, with the Cornell Medical College, New York Hospital, Memorial Cancer Center, and the Sloan-Kettering Institute, with the James Ewing Hospital. There is a common coordinated board.

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Senator LEHMAN. Thank you very much.

Chairman HILL. Well, Doctor, we certainly are most grateful to you, sir. You have been a wonderful witness, as always, and we are deeply grateful.

Dr. RHOADS. This is my eleventh year, Senator.

Chairman HILL. Yes. Off the record.

(Discussion off the record.)

STATEMENT OF DR. R. LEE CLARK, JR., DIRECTOR, M. D. ANDERSON HOSPITAL AND TUMOR INSTITUTE OF THE UNIVERSITY OF TEXAS

Chairman HILL. We are now to hear from Dr. R. Lee Clark, Jr.

Dr. Clark, you are the director and surgeon in chief of the Anderson Hospital at the University of Texas, is that correct?

Dr. CLARK. Yes.

Chairman HILL. You would not deny that is one of the great State universities, would you?

Dr. CLARK. No, I agree with you on that, Senator.

Chairman HILL. We would be delighted to have you proceed in your own way, please, sir.

Dr. CLARK. Thank you very much.

It is a great privilege to appear before this committee and to discuss Senate 849.

In coming before the committee, it was suggested that I bring a written statement. Knowing that I was from Texas they wanted me to keep on the subject today.

Medical research is today a potent force of incalculable humaritarian value. Such research must be stimulated and supported to the extent which may prove necessary to the maximum potential of the skilled manpower.

Progress has been made toward that objective. Support of medical research from both private and public sources has expanded. Increases in Federal support of research have been followed usually by increases in voluntary support.

As support has increased, the number of research projects has increased.

One of the greatest needs in our whole research field is probably the development of new ideas in the approach to the cancer problem; new ways to explore an old field.

Cancer research, as such, is difficult to define, as information from many sources are leading to better cancer care, and more knowledge of its fundamental behavior. Basic knowledge in many fields have contributed to medical knowledge.

For instance, from the dye industry there resulted sulfanilamide for the conquest of pneumonia and septicemia; the war gases resulted in—study in the war gases—gave us nitrogen mustard. That was the first promising substance in the chemotherapy of cancer.

The byproduct of the basics of the A bomb furnished us with an abundant supply of radioactive isotopes for the treatment and cure of cancer.

The National Research Council has assigned to the committee on growth the task of handling all affairs of investigation in regard to cancer, and in so doing expressed the hope that the biological proc-

esses that have to do with life and reproduction may someday be shown to encompass the processes that cause malignant growth.

This is one of the byproducts of the establishment of research institutes which we are discussing today, and that is the attraction of bright young minds to explore in the biological and life sciences and to furnish basic knowledge which will help, not necessarily in the conquest of any one disease, but even more fundamentally will furnish us with the basic knowledge that is essential for any advancement in the field of medicine.

It is this reason now why we are having so much difficulty with the problem of cancer. It is because we do not have enough basic information, our knowledge regarding the behavior of that in a biological fashion.

It is essential if we are going to make any further progress in that disease that we fill the storehouse with basic knowledge from which to draw the prospects for our curative attacks upon the disease.

A scientist who has an idea for research on the problem of cancer has a number of opportunities to seek and obtain support.

He can turn to the National Cancer Institute and make application for funds there. He can turn to the committee on growth of the National Research Council for Health which may come through the American Cancer Society.

He may turn to the Damon Runyon Fund for similar support, or other private organizations, many of which you are acquainted with throughout the land.

But this scientist who has an idea for a research project must also have something else before he applies for support, he must have a place to work and equipment to do it in.

In addition to the availability of the sources for funds, we may note other aspects of the increasing momentum on the attack of the problem of cancer.

Young scientists with the idea for a research project may have received their cancer training under a fellowship.

The National Cancer Institute has given fellowships to more than 800 young scientists for graduate training.

The American Cancer Society, since the beginning of its research fellowship program in 1946, has awarded 376 such fellowships; the Damon Runyon Fund has awarded 256 such fellowships to people in 170 institutions in the United States and abroad.

There are in the United States 11 cancer hospitals, approximately 475 cancer diagnostic and treatment clinics, and 175 cancer diagnostic clinics approved by the American College of Surgeons.

I cite these figures merely to note, in part, the increasing effort to control cancer on a national scale, but more important, to emphasize a point.

It is my feeling that notwithstanding the increased impetus in cancer research in recent years, the full research potential has not been reached; nor can it be attained without the building of additional facilities to attract young scientists like the investigator with the idea but no place in which to pursue it.

Most research in cancer today, except for a few of the concentrated institutions from whom you have heard the distinguished directors talk today, has been a byproduct of education and secondary teaching schedules.

To be effective it must be the primary objective and teaching the tool for the distribution of the new gained knowledge. This can only be done by having facilities designed for this specific purpose.

Mr. Adams spoke to you about the funds that have been contributed in the past from Federal sources for research building facilities, approximately $16 million, which brought over $100 million for this purpose from local sources.

Our own institution is one, in fact—and I would like to speak specifically to that point—as to what the Federal funds have done for us in our area, and the catalyst that it furnished to generate an institution that was not in existence. As a matter of fact, there was no such institution in the Southwest when this one was created in our own State.

At the end of the war there were 150 beds connected with research facilities for all medical purposes in the United States.

It was thought then that there should be created an institution where vertical research could be conducted from the basic science laboratories to the applied animal research facilities, to patient bed care and application to patients, and it was from this thought that our own institution was devised.

Although the bill that created it passed in 1941, it was not until 1946 that we could begin active planning for it, and at that time we had approximately three-quarters of a million dollars on hand.

We received $300,000 from the National Cancer Institute in grants and in addition to that, for our bed spaces, we received $2 million of Hill-Burton funds.

These funds generated a total construction fund for our institution of approximately $10 million. From this beginning of $300,000 from the National Cancer Institute and $2 million from the Hill-Burton funds, more than 3 times—nearly 4 times—the amount of money for construction alone was raised.

I must say that this was a great stimulus because here where we had no facility, but only a concept planned in keeping with national standards, we were able to more than triple the money provided by the Federal Government and we have since had appropriated to us over $25 million in State funds during the ensuing 10 years of existence of this institution.

In the 10 years since we began operating in temporary quarters on an old estate in Houston, we have admitted more than 13,500 patients who have been referred by nearly 3,000 physicians in Texas.

The staff has grown from 28 part-time physicians and 93 full-time employees to over 800, including surgeons, radiologists, internists, physicists, research doctors, and technicians, residents in training, nurses, volunteer workers, social service and medical artists and other specially trained personnel, as well as administrative, clerical, custodial, engineering trades, and other workers.

Our bed capacity has increased from the original 24 leased beds to the new building's 310, and the outpatient visits have increased from less than 1,000 the first year to nearly 45,000 during the past year.

Although these patients came from the 4 corners of the State of Texas, Texas has been 1 of the 20 States included in region IV in the division of the continental United States, as set forth in the proposed bill.

Surgery and radiology play a large part; so does research in chemotherapy in medicine, research in emotions in psychosomatic medicine, research in facts in epidemiology, and research in myriad other fields.

Following the trend toward close cooperation and integration, we have brought research and cancer patients and their doctors closely and conveniently together with the scientists, teachers and others who are working as a team in an integrated program of education, research and patient care in cancer in the same building.

It is not so much a battle against the disease that must be waged, as it is a baffling and intricate puzzle which must be taken apart to see how it was put together. That puzzle is growth.

Normally in life growth is under control. In cancer it is not. The researchers are seeking to understand the controls, and through education and communication, such as publications, visiting lecturers, courses, they are keeping up with each other's findings.

What they find as they go along also must be taught to the doctors in practice.

Then, the doctors can use this ever-increasing knowledge in improving patient care. If and when a control or a cure is found, only in this way will it reach the cancer victim.

We have been speaking about some of the resources that these funds have mobilized. In one of them, it will be of interest to you, and one which has been intriguing to us, as a specific problem, and to the economy of our region, that is the study of cancer eye in cattle.

This in some instances reached as much as 5 percent of the herd. It is a very destructive thing economically because here are good beef cattle that are afflicted with a cancer of the eye which can cause its death, but which first causes it to be condemned for eating purposes. It cannot be sold then as beef, but must be sold for salvage only. So a great economic loss in our part of the country is due to that fact.

We brought this to the attention of some of our people interested in the cattle industry in Texas. One of these, the Swenson family, whose members were on the Board of Regents of the University of Texas, assigned to us as a research laboratory an 80,000 acre pasture with 1,000 head of cattle to be kept in there for 5 years for us to observe their progress. We were to see the development of the disease, to outline it, to try to reproduce it so we now have a very interested group in this program, which before was not being touched anywhere in the Nation.

Although I fully realize that this is an economy-minded Congress, it is my sincere conviction that any sizable appropriation for the expansion or construction of facilities for medical research, including cancer, will be a long-term investment from which every citizen will receive large dividends.

If we are to continue to take advantage of the progress already made in medical research, if more young scientists are to be attracted to this field and given proper facilities for their education and training, and if our full research potential is to be realized so that the Nation can exert its greatest effort to find the cause and better treatment of cancer and other serious problems, we must provide adequate facilities for their basic research and clinical research and for education.

There is one phase of this that I would like to review for you very briefly, and that is the lack of trained people and the lack of basic information in this whole field.

We know that the bill for research annually in the United States in all fields is between three and one-half and four billion dollars.

Out of that 55 percent of it is governmental, 40 percent is industrial, and only 5 percent of it goes to the universities.

There are 600,000 scientists and engineers in the United States who are potential research people. Out of that group, 125,000 are now carrying the research load.

Sixty percent are in private industry and 33 percent are in Government. That leaves but 12,000 people available in this country for basic science research, and they also do a great deal of project or application research.

That leaves for our hospitals and nonprofit institutions about 2,500 scientists possible to do this work in all phases of human disease.

We know that perhaps not much over a thousand of those are now spending their time in cancer research, so you see what a small number, in view of the overall national picture, is really being devoted to the problems concerning life and living.

It is really an appalling thing to see how little time we have actually put on the medical problems of why we are here today, and how we might stay here longer.

There is one short message I would like to read to you here that I have had inscribed at a place in our building. It was written three quarters of a century ago by Louis Pasteur, probably the greatest of all scientists, and it might be addressed to you today:

> Take an interest, I entreat you, in those sacred places that are significantly designed as laboratories. Ask that they be multiplied and adorned. They are the future temples of wealth and well-being. It is within them that humanity matures and grows stronger and better.

Thank you very much, Mr. Chairman.

Chairman HILL. You ask us to heed Pasteur's advice.

Dr. CLARK. Yes, sir.

Chairman HILL. Doctor, we certainly thank you for coming here. You have brought us a very informative statement and, frankly, one that has interested me very much. If I may say this to you: You come from the great State University of Texas.

Texas is such an empire unto itself and is so mighty in its resources, that there are some people in Texas who feel that the Federal Government should not make grants, should not get into the field of grants at all, not only for research but for any other purposes, and you have told us a story of how much stimulation and benefit has come from the Federal grants that Texas has received, certainly in this matter of medicine and research.

We do deeply appreciate your being here.

Chairman HILL. We deeply appreciate your coming, Doctor.

Dr. CLARK. Thank you.

Chairman HILL. We are very glad to have had you come here, and we thank you for your very splendid statement.

Dr. CLARK. Thank you, sir.

Chairman HILL. Now, Dr. Louis N. Katz. You are the director of the cardiovascular research at the Michael Reese Hospital in Chicago; is that right?

Dr. KATZ. Yes, sir.

Chairman HILL. And you are the honorary permanent president of the Inter-American Cardiology Society?

Dr. KATZ. Yes, sir.

Chairman HILL. You have served as president of the American Heart Society, you have been active for a long time, I believe, in the Chicago Heart Association; you are a past president of the circulation section of the American Physiological Society; the Illinois branch of the Society for Experimental Biology and Medicine; and the Chicago Society for Internal Medicine; is that correct, sir?

Dr. KATZ. Yes, sir.

Chairman HILL. I am not going to ask you to comment on this, this is my comment: Your hospital is one of the Nation's great medical centers and, particularly, is it far-famed in your department, the department of cardiovascular research, we are very proud and happy to have you here today.

STATEMENT OF DR. LOUIS N. KATZ, CHAIRMAN, DIVISION OF LABORATORIES AND RESEARCH AND DIRECTOR OF THE CARDIOVASCULAR DEPARTMENT, MEDICAL RESEARCH INSTITUTE, MICHAEL REESE HOSPITAL, CHICAGO, ILL.

Dr. KATZ. Thank you, sir.

Senator Hill, because the time is getting late, if I would have your permission, I would like to have this prepared statement, with my penciled annotations, which I have been working very hard at, put in the record, either with or without retyping.

Chairman HILL. Good, it will go in in full in the record with your annotations and everything, complete.

(The prepared statement of Dr. Katz follows:)

STATEMENT BY LOUIS N. KATZ, M. D., CHAIRMAN, DIVISION OF LABORATORIES AND RESEARCH, DIRECTOR OF CARDIOVASCULAR DEPARTMENT, MICHAEL REESE INSTITUTE, MICHAEL REESE HOSPITAL, CHICAGO; PAST PRESIDENT, AMERICAN HEART ASSOCIATION; PRESIDENT, AMERICAN SOCIETY FOR THE STUDY OF ARTERIOSCLEROSIS; PRESIDENT, CIRCULATION SECTION OF THE AMERICAN PHYSIOLOGICAL SOCIETY

FACILITIES FOR MEDICAL RESEARCH, A DIVIDEND-PAYING INVESTMENT

At the outset, let me say that I am a "salesman," selling research. Having been in medical research full time for over 30 years I believe, from that long experience, that its progress is too slow compared to what it could and should be if there were more brains at work in more places all over the country. I am an enthusiast, and that is the only reason I am in my particular field which, moneywise, does not pay those in it as well as other fields of endeavor. But there is pleasure in it, a feeling of usefulness, a dedication to service, and the ability to be a rugged individual. So I feel an obligation to speak up for the needs of medical science and there are few more paramount than this matter of research facilities.

The legislation which you are considering provides aid long needed, and it provides it in a manner that will do a great deal of good. This bill and the funds it supplies can help achieve a very great thing. Let me be explicit. Medical research today, even with the progress made in the last quarter century, is still backward in many areas of the country.

Medical research is expensive. Simple approaches have been covered. It is an expensive game. Ordinary tools do not help in this kind of research. These highly expensive facilities are not needed, of course, for all kinds of medical research or in every place such research can be done—and they are useless without brains. But there isn't enough of the kind of equipment that is needed—that speeds up research tremendously and actually saves months or years of time—in enough places around the country. There aren't the funds to purchase it. The proposed bill would help greatly in this matter.

Yet equipment is not the only thing—or the most important thing that the bill can help accomplish. Because its scope encompasses aid that will mean much to all the scientific disciplines that medical research needs to bring to bear on fundamental, basic, and clinical problems, it will do much toward integrating these disciplines, making them closer partners, breaking down barriers of departmentalism and compartmentalism. If it can help achieve this it will, as I said earlier, mean a very great thing. It will do much to move us to the kind of modern methodology and teach approaches that will mean, in turn, greater benefits for present and potential victims of heart and other grave illnesses.

What I am saying as a "salesman" is that you people should, with tax-supported money, see to it that more young brains are put to work in this field by giving them—and established investigators—equipment, by giving them training, by making young investigators real scientists, by giving them space and buildings when they need them.

Then you will have done your share, and it is up to the researchers thereafter.

But why is it desirable to do this? Let us look at the costs of disease. Let me cite a few illustrations from the field with which I am most familiar: heart disease.

Heart disease is the leading cause of death in the United States. It causes more than 1 out of every 2 deaths each year. More than 785,000 people died in this country from heart disease in 1953.

It is the leading cause of death among children. It causes one-sixth of all deaths in the military ages, 20 to 39. It causes one-third of all deaths in the most productive years, age 35–54. It causes one-half of all deaths in the ages 55 to 74.

About 80,000 men were given disability discharges or died in service from heart disease in the war years 1942–45. Rheumatic fever alone immobilized more than 40,000 men in the Armed Forces during World War II.

At least 653,000 man-years are lost each year to industry alone because of heart disease disabilities. Over $2 billion was estimated to have been lost in 1951 in productivity as a result of heart disease.

Compensation and pension payments to veterans in 1950 because of heart disease disabilities were $168,250,000.

The proportion of insurance claim payments for deaths from heart disease has been steadily rising, one company report shows. This sum in 1951 was about 3½ times the amount paid in 1931.

If 50,000 patients with chronic heart disease received hospital care for a year, the cost in 1 year would be $219 million, at a hospital rate of $12 a day per patient.

Heart disease incapacitates about one-fourth of the persons who are beneficiaries of the federally aided program of assistance for permanently and totally disabled persons.

You are all familiar with the burden of coronary disease—heart attacks. But what about diseases of the blood vessels of the brain. This too shows how costly is the burden of hardening of the arteries to our Nation. For example:

1. Cerebral vascular diseases—which include the familiar and dreaded "strokes"—cause the death of over 170,000 persons each year, and there are an estimated 1,800,000 victims in the United States today.

2. Cerebral hardening of the arteries is the second leading cause of first admissions to State mental hospitals, schizophrenia being the only other cause to outrank it. This does not give the whole picture, however, because many of the senile and other patients have cerebral vascular diseases but are not categorized as such.

3. First admissions to mental hospitals from these causes have been increasing continuously over the years to their present prominence. Every person who lives long enough is an almost certain candidate for cerebral vascular disease in his later years.

4. The chances for recovery for patients in mental hospitals with cerebral arteriosclerosis are poor. A 5-year study of patients in New York State mental hospitals showed that, in the case of cerebral arteriosclerosis, only 18 percent of the patients with this disorder were discharged within the 5-year period.

5. In 1953, 44,510 of the cerebral vascular disease deaths which occurred were in the "working age" group 25 to 64 years of age. If these people had been able to live an extra healthy year, they could have earned over $168,000,000, and the Federal Government could have gained in one year about $21,943,430 in income tax revenue.

6. The estimated cost of care for cerebral vascular patients in State mental hospitals is staggering. This is far from the total cost to the country, for it does

not take into account the cost in other hospitals or the cost to families where the patient stays at home. Yet even the cost to Sate mental hospitals is enormous: the average per capita cost per patient in 1951 in these hospitals was $828. Thus, the cost of 1 year's care for all the 56,534 patients with this condition totals $46,810,152. Over the average length of their total stay, it is figured that the total cost will be about $192,000,000.

Something must be done about this!

While it is costing the Nation tremendous—and still increasing—sums for the hospital care of these and other chronic heart disease patients, we are spending, it is estimated, less than $3 million a year for research directed against hardening of the arteries and high blood pressure—two of the chiefest causes of disease costs. The problem of cerebral vascular diseases, for example, is closely related to the problems of hardening of the arteries and of high blood pressure. Any advance toward solving one of these problems is an advance toward solving the others. Any advance is a step toward—and may even mean the actual—cutting down of these kinds of bankruptcy-bringing disease costs.

An indispensable factor in such advances will be the interdigitation of research forces such as I mentioned earlier. Also indispensable will be additive research facilities such as the proposed bill provides, where this can be accomplished.

Now I would like to turn briefly to the needs for facilities as I have seen them from my personal observation and experience in research over many years. This includes, I must say, a great deal of traveling and visiting, talking with researchers everywhere, in the far reaches as well as the more developed areas, in this country and abroad.

Among the striking things I have seen in almost every part of the United States is the fact that there just isn't enough space for medical research to work in—the simple matter of four walls, a floor, and a ceiling, to say nothing of equipment and other facilities. In many of the places I have seen in traveling around the country, the men are in cramped quarters and doing work under very difficult circumstances. In other places, men who would be doing medical research aren't able to do it because they have no room to do it in or nothing to do it with. You should see how crowded our 400 chickens with hardening of the arteries are, and my associates and technicians!

There have been good results from the previous research facilities grants funds, such as those appropriated in 1950 for heart research construction, about $6 million. This was the only major appropriation in this field, I believe.

The types of construction carried out with the heart research facilities grants provide proof of the desire and ability of the institutions receiving them to purchase the utmost with these shrunken dollars. Ingenuity and sound planning, plus what might be called economy engineering, were shrewdly combined to get the maximum effect with the minimum of funds.

1. In some instances, they built animal quarters where the institutions had laboratory space but no adequate place to care for and experiment with animals; this broadened their research programs considerably.

2. In other instances, institutions which had usable animal space have built laboratory space and thus provided urgently needed rooms where additional, expanded research is today being carried on.

3. In other institutions, clinical laboratory rooms or wings have been constructed where previously no such rooms or space existed but where the institution had other types of space for basic work and for animal quarters.

4. In a number of the grantee institutions, various ingenious methods have been adopted: the moving of walls, the setting up of partitions, the adding of a floor to a building already under way, or the placing of walls in a roofed-over area that made it, in effect, a new building where added work could be done.

Incidentally, encouraging byproducts of research-facilities grants may be overlooked. The heart-construction grants in some cases stimulated gifts to an institution, in others improved the medical school's teaching program, and, in hospitals, both university and nonuniversity, boosted the number of patients referred by general practitioners to an institution, and, better still, improved patient care. More physicians and patients felt that because of the new facility and approach, the patients would receive the latest and best treatments while at the same time serving as volunteer members of the research team studying their condition, new products, new research products, were thus produced and utilized.

I am sure the results from these grants were therefore excellent. But the amount of money was like a very small drop in a very large bucket. I think

there were some 26 grants to 26 institutions in about 17 States. Even those represented only about half or less than half of the amount requested and needed by those institutions alone. The National Advisory Heart Council had an impossible task in apportioning the funds, because there were demonstrated needs so immensely far beyond what was available. You can see that many places which needed research facilities in a bad way then need them even more now. Many areas of the country haven't been aided at all. Yet they have men and brains capable of doing good research. Plant facilities should keep pace with product investment. Medical research should not be permitted to remain or become antiquated.

I can also speak with regard to my own institution. We had a grant of $10,000 for planning purposes. It was very helpful. But the aid we needed could not be found for the establishment of a research institute devoted solely to fundamental and applied research commensurate with our needs or capacities. I am sure that, if the country had had a program of research facilities construction funds from the Congress beginning several years ago, we would be a lot closer to emptying many thousands of hospital beds now filled with chronic disease patients—and we would be nearer to more answers in prevention and cure of a number of the great chronic afflictions.

The important fact is that new funds for research construction will provide now nonexistent facilities for concerted research programs by cooperating research specialists in clinical medicine, physiology, biochemistry, pharmacology, biophysics, bacteriology, pathology, and so on. In such facilities these experts would be able to focus their attention in a coordinated way. Such facilities would also be ideally suited to the flexibility in research programs that we need today because knowledge is advancing so rapidly on so many frontiers.

For example, teams of clinicians working closely with physiologists, pathologists, biochemists, and biophysicists can undoubtedly make basic contributions to our understanding of heart failure in a short period of time, while with the present haphazard approach and compartmentalization these can be solved only after long years of work, thus providing needed basic tools.

During this cultural lag many people now suffering from such conditions will pass beyond the point from which recovery might be made. Many others yet unafflicted will succumb. The problem is the same in some of the other chronic illnesses as in the heart field.

By providing funds to help meet this need, the course of progress in medical research can be accelerated. I do not mean to imply that size and organization alone are dominant factors in the prosecution of research. But beyond any question they can in the proper situation do much to increase the pace of new discovery. Look at what happened in the atomic research field.

It is obvious to anyone in this field that the facilities available for medical research are almost totally inadequate, with nothing comparable to that devoted to industrial research, agricultural research, or research in atomic energy. Plant should keep pace with investment.

Some figures on the Federal research dollar itself are enlightening. The April issue of Scientific Monthly cites the National Science Foundation as indicating that there has been a twentyfold increase in funds spent by the Federal Government for research and development between 1940 and 1954. In 1940, $97 million were spent. In 1954, $2,200 million were spent!

Now, as I understand it, about 85 cents of each Federal research dollar goes for military defense research and development. The remaining 15 cents goes to research in agriculture, transportation, communications, development of natural resources, welfare, health, etc. Another way of looking at this dollar shows that 87 cents goes to the physical sciences, 2 cents to social sciences, and 11 cents to the "life" sciences, in which are included medical research.

None can quarrel with the need for large sums for defense. But a comparatively few additional Federal dollars for vital medical needs such as the proposed research facilities funds can and will mean much not only for more and healthier manpower—an essential also to defense—but also for actual economic savings.

While the sum proposed in this bill is not large compared to many other types of funds, it is beyond the resources of private giving to do alone. Experience shows that. If voluntary contributions could do the job alone, they would have done so. But the provision of Federal moneys will encourage more private giving for research facilities than is now done. Experience also shows that these funds act as a sort of catalyst. People seem to feel that if a thing is important enough for the Government to recognize and to put money into, then they will also help with voluntarily contributed money. We in the heart field have always felt that

the appropriations for the National Heart Institute help, rather than hurt, us in our American Heart Association fund drives. Our two agencies have, actually, shown a somewhat comparable rate of sound growth.

By making Federal aid for new research facilities possible, you will stimulate private giving. The amount that is proposed federally is not enough for the job without voluntary funds. Nor should it be. Diversified support is essential to porper freedom for creative research by the most rugged individualists in the country—which is the only atmosphere science can work in to produce the best results. Moreover, diversified support permits people voluntarily to share in the task themselves in the way they choose to share.

From whatever aspect the proposal for new medical research facilities is viewed, it seems to me a sound investment. One could say that for every foot of research space provided, there will be many, perhaps hundreds, of times that much hospital bed space emptied. There will be thousands—and, sooner or later, hundreds of thousands of lives saved or usefully extended. A few millions invested could bring in a billion dollar return. As a research salesman, I heartily recommend investment in this medical research "stock" as being sound and profitable.

In conclusion, if the establishment of new research facilities for medical science—for the growing members of dedicated established investigators and the ever-increasing number of novices eager to join their ranks—is adequately provided for, there is no question in my mind that, within a few years, we will all look back with satisfaction on what probably will be the greatest significant contribution to the organization of medical science in the realization of cooperative endeavor in research. Our present knowledge of heart disease and other chronic illnesses would very soon be recognized as archaic. I must congratulate your chairman, Senator Hill, and Senator Bridges for the clarity of your vision in introducing this bill.

Dr. KATZ. Thank you, Senator.

On that basis, sir, I would like to speak off-the-cuff, as it were, but on the record.

I think if you had in the field of heart disease as able exponents as you had in the field of cancer, you would find that the story could be as eminently presented, both from the basis that Federal support money, which has been smaller in amount and, as I recall, only 26 grants in 17 States in about the sum of $6 million, as I have traveled around the country—and have had occasion to go almost some 50, 70,000 miles, and in practically 27 States, has been a very fruitful endeavor.

If one looks for the spectacular in the field of heart disease, I would say that in the great State of Minnesota you would find that at the Mayo Clinic there they have been able, within the very recent past, to develop and apply to human beings an artificial machine for the opening up and actual examination of a heart. The surgeon does not have to use his fingers alone but can use his eyes to guide the work of his hands.

I am given to understand, but I cannot verify from personal fact, that at Minneapolis they have used the lung of a dog to aerate the blood for such a heart while operating on it.

Now, a lot of that progress comes from the inculcation of young men who, like myself—I am not so young, but I was once—are dedicated to research; who have given up the opportunity of making a better living and, perhaps, getting more accolade from the people in the business, legal, legislative, and other walks of life, because we have the compulsion to do something that will help mankind.

I am a salesman of research. I think it is a product easy to sell.

I think the legislators in the States and in the Federal Government must contribute money so that more plants, more facilities, are made available.

I do not believe that these facilities should be confined to any one part of the country. As I have traveled around the United States and, as a matter of fact, abroad, in Latin America and in Europe, I have been amazed at how widespread is intellect, curiosity, and the compulsion to work.

As a matter of fact, it might be said that money seeded in the areas not so well fertilized in the past, if I might mix my metaphors, may turn out to make a broader base and new slant, because I had the privilege several years ago, to testify before a subcommittee of the Senate on appropriations. One Senator said to me, "Doctor, you are an expert on hardening of the arteries. Why did a friend of mine, within a week after seeing a doctor, die of it?"

He died of it, as will half the legislators here; as a matter of fact, half the public in this country, because high blood pressure and hardening of the arteries is the biggest killer of them all. Ninety percent of all heart disease is in that field. We have got to do something about it.

So I said to him, "The trouble is yours, Senator. If you would put in more and more money, into health, into living science, in making people healthier and in preventing and curing disease, you will be making only a small investment as the budget goes."

I said, "Sir, if you did that we would get some bright young person who would develop a method whereby we can inspect the blood vessels in the brain, in the heart and elsewhere, and anticipate what will happen, and then we would have a clear direction in which to go to find a preventative and a cure."

I must say that we have come a good long way. We do not sell fear in the heart field. We sell hope because we think we are saving more and more people. We are giving them better and more proper care and attention.

I put it to you that if you look at what has happened since the Federal Government through an act of Congress, created a National Heart Institute simultaneous with the American Heart Association becoming a voluntary health agency, you will see dramatic progress. Today I am given to understand there is some $17 million appropriated for the National Heart Institute, and I am happy to point out that from zero dollars a few years ago, we now are raising about $13 million from the public in support of the heart program, primarily for research.

Now, with all that expansion of research our physical plants have become antiquated. I would like to have you come and visit my laboratory and see 600 chickens which we have been working on for years in a little room.

I would like to show you how the house office and technicians are housed in a physical plant smaller than this room where the appropriations are made—the Michael Reece Hospital for Heart Disease got $10,000 for planning, and no more.

I think my whole physical plant, including the heart station in the hospital is smaller in square-foot area than this room. We have a budget and personnel and ideas that we would like to get going on, and I am not getting younger. I would like to have the ability to say, as some of the other people have, "Now I have something a little bit like the physical plant I need to pursue ideas."

Mrs. Mary Lasker, for example, asked to me undertake a study on stroke. Well, I could not accept the study. I did not have any place to put it. My team and I had begun to study the effect of certain hormones on man.

I find the handicap that limits us to a large extent is space to do chemistries.

I think Senator Hill and Senator Bridges deserve a great deal of credit for introducing this farsighted bill.

I think $90 million invested with matched funds will go a long way in saving costs as to beds, chronic beds, and in the long run I think the Federal Government, the State government and the voluntary contributions for disease will have been redeemed. Were I in the stock market selling this as stock I would say it is a safe investment. The capital will be returned many times over, and in the meantime the interest will be great.

Thank you, sir.

Chairman HILL. Doctor, I might say if this bill passes, and I hope and believe that it will, it will be due largely to the inspiration that comes to this committee and comes to the Congress from the work and the devotion and leadership of men like you. We deeply appreciate your being here this morning.

Senator Purtell?

Senator PURTELL. I want to state, Doctor, that I think there is no way you and others like you engaged in this research field, who are doing so much for humanity, I think, because of your remarks—I think you ought to be told that you are much more greatly appreciated and your work by legislators, by the fellow in the shop and the 163-million Americans, much more than you understand.

We are indebted to you. You are our hope, as a matter of fact, you and your associates, and I shall do what I can to see that you are assisted.

Dr. KATZ. Thank you, sir.

Chairman HILL. Thank you, Doctor.

Next is Mr. William P. MacCracken, Jr., representing the American Optometric Association.

Chairman HILL. Mr. MacCracken, you wish to submit the statement of another gentleman, do you?

Mr. MACCRACKEN. Yes, sir.

Chairman HILL. We want to welcome you here, Mr. MacCracken. I believe you first came to Washington as Assistant Secretary of Commerce, did you not, from Illinois?

STATEMENT OF WILLIAM P. MacCRACKEN, JR., REPRESENTING THE AMERICAN OPTOMETRIC ASSOCIATION

Mr. MACCRACKEN. That is correct, Senator.

Chairman HILL. Then you were for some time the Secretary of the American Bar Association?

Mr. MACCRACKEN. Eleven years.

Chairman HILL. Eleven years. You were also a member of the American Law Institute?

Mr. MACCRACKEN. Correct.

Chairman HILL. And many other different honors that have been conferred upon you; is that right, sir?

Mr. MACCRACKEN. Well, perhaps I should say undeservedly.

Chairman HILL. Again, Senator, we have a very modest witness.

Senator PURTELL. Yes, we have.

Chairman HILL. Mr. MacCracken, you may proceed.

Do you want to put in this statement in full and then summarize it for us?

Mr. MACCRACKEN. Yes, that is what I would like to do, Senator, if I may.

(The prepared statement of Dr. Joseph M. Babcock, vice president, American Optometric Association, follows:)

STATEMENT OF DR. JOSEPH M. BABCOCK, PORTSMOUTH, OHIO, VICE PRESIDENT OF THE AMERICAN OPTOMETRIC ASSOCIATION, IN CHARGE OF NATIONAL AFFAIRS

Mr. Chairman and members of the committee, my name is Joseph M. Babcock; I reside and practice optometry in Portsmouth, Ohio. In addition to serving as vice president in Charge of National Affairs of the American Optometric Association, I am also secretary of the Ohio State Optometric Association.

Our national association, like most others in the health field, is composed of individual members in each of the 48 States and the District of Columbia. In most instances the individual joins the local or State association and at the same time becomes a member of the national organization.

There are four groups which provide the services essential to the care and preservation of the vision of our citizens. No doubt most of the members of this committee are familiar with the services performed by the four groups, which taken together, provide the visual care for the American people. However, for the benefit of those who may not have this information at their fingertips may I submit the following by way of introduction.

The optometrists constitute the group especially trained to examine the eyes of their patients for defects in vision. When these are caused by conditions which either partially or wholly require medication or surgery, the patient is referred to another practitioner. When an abnormality is found to exist which could be corrected or the patient's vision improved by visual training or by the use of spectacles or contact lenses, the optometrist gives the training or prescribes the spectacles or contact lenses and in most instances furnishes the patient with the opthalmic material. Between 70 and 80 percent of those seeking professional advice for their visual problems consult optometrists.

In all 48 States and the District of Columbia, either by statute or regulation having the force of law, a person now seeking an original license to practice optometry in any one of these jurisdictions must be a graduate of an approved school or college of optometry, each of which requires a minimum of 5 years of study at the college level. There are approximately 18,000 optometrists licensed to practice in the United States. This is by far the largest group in the visual care field.

The opthalmologists are another group. They are physicians who have taken postgraduate work in the eye and have passed examinations given by the American Board of Opthalmology. They are especially trained to perform eye surgery and to treat diseases of the eye as well as to refract. When an opthalmologist concludes that spectacles or lenses are needed to improve or conserve the vision of the patient, he generally writes a prescription and gives it to the patient to be filled by a dispensing optician.

There is also another group in the medical field known as oculists or eye, ear, nose, and throat men. Any physician may, if he sees fit, use any or all of these terms without complying with any special educational qualifications other than those prescribed in order to engage in the general practice of medicine.

The dispensing opticians are the fourth group. They fill the prescriptions of those optometrists who do not do their own dispensing and also the majority of the prescriptions of the opthalmologists and oculists.

While the distinction between these four groups is not important as far as the legislation now being considered by this committee is concerned, I thought it might be worth while to make this brief statement. In general, it is well to keep in mind the respective functions performed by these groups.

Several years ago, the American Optometric Association sponsored the organization of the American Optometric Foundation under the laws of the State of New York. The purposes of the latter organization include:

"To aid and assist in the establishment and creation of sources of authoritative and impartial investigation and experimentation on optometric problems;

"To aid and assist in promoting or carrying out research in optometry and in allied and kindred fields and to provide that research and investigations be properly and sufficiently financed;

* * * * * * *

"This corporation shall not be conducted or operated for profit, and no part of the net earnings, or of the properties, or of the assets of the corporation shall inure to the benefit of any member."

Dr. William C. Ezell of Spartanburg, S. C., a past president of the American Optometric Association, is president of the American Optometric Foundation. This foundation hopes some day to have its own facilities for carrying on research in the field of vision, but up to the present time it has confined its research activities to allocating funds to graduate students to carry on research in the various schools and colleges of optometry which have been accredited.

Our interest in this bill is not only because it would provide funds for research facilities to aid in preventing blindness, but also because of the relationship between vision and nervous disorders or mental illness.

Throughout the Nation, the daily press carries stories of juvenile delinquency. In the vast majority of cases those juvenile delinquents who have been given a thorough eye examination have been found to be suffering from some visual abnormality which in all probability was responsible for the poor showing which they made in school achievement. We firmly believe that had these cases been discovered when the first symptoms could have been detected and the pupil provided with a visual correction or visual training, society might have been saved a great deal of money not to mention the heartaches of the relatives and friends of those thus afflicted.

Our association has a special committee which deals with visual problems in schools. Last February it held its eighth annual forum in Cleveland which was attended by over 1,400 educators from Ohio and the surrounding States. The work of this forum has attracted attention in other areas and regional conferences or forums are being held throughout the United States, dealing with this and other subjects pertaining to vision.

Not only is our profession concerned with the visual problems of schoolchildren, but also with the similar problems of the industrial worker, frequently referred to as industrial vision. In this age of high speeds and close tolerances clear and comfortable vision of the worker is important not only for his own safety and that of his coworkers, but also for the safety of those who may be using the products which are manufactured or inspected by the worker, not to mention the profits of his employer.

And again, mental illness even in adults certainly may be aggravated if not caused by visual abnormalities which could and should be corrected. Only recently a case was brought to my attention of a Government worker who was suffering from severe headaches and nervousness to such an extent that she was contemplating suicide. When she was referred to an optometrist who, after a most careful and painstaking visual examination and analysis, was able to fit her with contact lenses. These so improved her visual efficiency that she entirely recovered from her nervous disorders.

So far, my remarks have been devoted to the visual problems of our schoolchildren and our office and industrial workers. While I trust that never again will this Nation be involved in war, nevertheless I would be derelict in my duties if I did not point out that in warfare which utilizes atomic weapons, guided missiles and aircraft with supersonic speed, the selection of those on whose vision depends the success of the attack as well as the effectivenes of our defense is of vital importance. Money spent for research facilities in the field of vision, if it contributes to the effectiveness of our national defense, is money well expended.

May I therefore suggest that before the bill is reported to the Senate, page 3, line 4, be amended by inserting after the word, "dentistry" the word "optometry," and that page 4, line 17, be amended by striking out the last four words of the line, namely, "one additional member who" and inserting in lieu thereof the following: "two additional members, one of whom shall be an optometrist and the other."

These amendments will not in and of themselves mean that any of the funds authorized to be appropriated when this bill is enacted into law will be spent for research facilities in optometric institutions, but at least this profession which is devoted exclusively to the visual welfare of our people will be represented on

the Council which is to make recommendations to the Surgeon General as to how these funds should be allocated. With these amendments we favor the passage of this legislation.

Mr. MacCracken. Now, on the personal end of it, may I say that I was brought up in a family of physicians. Both my parents were physicians. Mother, if she were living, would be over a hundred, so you know that she was one of the pioneer women physicians in this country.

Chairman Hill. Off the record.

(Discussion off the record.)

Chairman Hill. You may proceed.

Mr. MacCracken. Dr. Menninger, I think, was one of my father's students, that is, the father of Dr. William Menninger, not the son.

I happen to know that, so that this hearing this morning has been very interesting to me.

I recall that one of the things I learned almost before I started grammar school was that an ounce of preventitive is worth a pound of cure, and that is what optometry is able to do in the field of mental health, particularly that branch of it that is known as juvenile delinquency.

There is many a juvenile delinquent who is in our courts because of lack of achievement in school, which was due solely not to any physical defect other than visual, and it is the optometrists who are paying particular attention to that field of work.

As Dr. Babcock points out in his paper, in Ohio last month they had a forum there attended by 1,400 schoolteachers on the subject of school vision, which was led by Dr. Lois Bing, an optometrist, a woman who graduated from Ohio State University School of Optometry, and has done marvelous work in that field. It seems to me that it is high time that a little of this money—not a great deal of it, but that some of it—was invested in his type of research dealing with school vision, in particular. Also there are many cases of older people who suffer from mental illness which could be greatly alleviated, at least, if their visual problems were better understood and solved.

Senator Purtell. Mr. MacCracken, may I interrupt: Is it not perhaps the situation—would you think, rather, that the prime requisite right now is to discover these cases in school? Do you feel enough work has been done on it?

Mr. MacCracken. No; there is not enough work being done on it.

Senator Purtell. That, of course, would not be research, would it?

Mr. MacCracken. No, but it also needs research, too, to find out the easy way to discover it. They have got these screening devices; they help some, but they are not the real answer to it.

There has not been enough attention given to it, and the professional optometrists have organized the American Optometric Foundation, which is a New York corporation, not for profit, which would qualify under the terms of this bill for a grant.

Chairman Hill. They are doing research that way?

Mr. MacCracken. Oh, yes, they are doing research; there is some being done now, but there is not enough of it.

One of the amendments that we have suggested is including optometry specifically, and the other is to get an optometrist on the council so that their voice may be heard. If they cannot sell their product, well, that is too bad.

It does not mean they are going to get some of this money, but at least they will have an opportunity to present their case for research in the field of vision, which can be carried on by optometrists; and I feel certain that if that opportunity is given, they will be able to make good use of it.

Chairman HILL. Let me ask you this, Mr. MacCracken: Is there any other institution outside of the foundation in New York that you think is engaged in this research?

Mr. MACCRACKEN. Well, some of the universities have research projects, and the foundation has been giving them grants.

They have not had enough money themselves to carry on independent research, but what they have done with the funds they have had available is to give grants to Ohio State, the University of California, the University of Houston, which is the one of the newest of the optometry schools.

I do not know whether my Texas colleague has vanished or not——

Chairman HILL. He is there.

Mr. MACCRACKEN. But Indiana has just opened their school of optimetry, and the State universities are beginning to pay more attention to it.

As I say, I am confident that both in the field of mental health and in the prevention of blindness—of course, when you get real true blindness, there is almost no cure for it. There are some types of temporary blindness like removal of cataracts and things of that kind; but an eye that once is really and truly blind cannot be restored. But there is a great deal that can be done in the field of prevention of blindness.

Now, of course, the ophthalmologist is carrying on research as far as medication and surgery are concerned, but very little attention is being paid to what can be done in the way of orthoptics, visual training, and special lenses. Particularly, it is important that we foster research that will enable the practitioner to quickly detect diseases of the eye in their early stages.

Glaucoma is one of the great causes of blindness, and one of the things is to detect it in an early stage and then arrest it. So far they have no cure for it, but it can be arrested, and that is worthwhile.

Chairman HILL. I have no questions.

Do you any questions, Senator?

Senator PURTELL. No questions.

Mr. MACCRACKEN. Thank you, Senator.

Chairman HILL. You may be sure that we will read the full statement of Dr. Babcock, and we will give careful consideration to all you have said, and the amendments that you have suggested.

Mr. MACCRACKEN. You know, I also had a slight interest in defense and the visual problems in connection with atomic weapons and supersonic airplanes.

Chairman HILL. Off the record.

(Discussion off the record.)

Chairman HILL. Thank you.

Mr. MACCRACKEN. Thank you.

Chairman HILL. Our next witness is Dr. Cornelius Traeger.

The Good Book says that the first shall be last and the last shall be first.

STATEMENT OF DR. CORNELIUS H. TRAEGER, CONSULTANT MEDICAL DIRECTOR, NATIONAL MULTIPLE SCLEROSIS SOCIETY

Dr. TRAEGER. I am the last man out of the band; I am almost out of the band altogether.

Chairman HILL. We are delighted to have you close this case, as we express it.

You are the director of medicine, consultant medical director of the National Multiple Sclerosis Society in New York?

Dr. TRAEGER. Yes.

Chairman HILL. Consulting attending physician of the Roosevelt Hospital, New York; attending physician, Hospital of Special Surgery, New York. Incidentally, we have just had one of our colleagues, Senator Kennedy, there, and he is one of the best members of this committee. He was in that hospital.

You are a fellow of the New York Academy of Science; a fellow of the New York Academy of Medicine; a fellow of the American College of Physicians; a fellow of the American Academy of Neurology; a fellow of the American Association for the Advancement of Science; a member of the National Advisory Neurological Diseases and Blindness Council; and cochairman of the National Committee for Research in Neurological Disorders.

Doctor, you may proceed in your own way. We are delighted to have you.

Dr. TRAEGER. Thank you, sir.

In the first place, I would like to make clear that I am not going to talk about multiple sclerosis. I am going to talk about the entire field of the neurological and sensory disorders.

I would like to take this opportunity to congratulate the authors of this bill. I am so pleased with it that I would crave the indulgence of the chairman for 40 seconds to read a few sentences from the bill.

> Congress hereby finds and declares that the ravages of certain devastating diseases causing widespread suffering, crippling, and premature death result in consequent loss of productivity to the Nation and unnecessary and economic loss to business and industry, severe financial impact on the families of the sufferers and economic burden on local communities, and an impact on the defensive strength of the Nation; that promising new scientific developments remain unexploited because facilities for research are lacking or sadly deficient in those localities where research skills or patients are located; that there is a need to attract young scientists into this most important field, which cannot be met if facilities to carry on research are denied them; that it is sound policy that in our search for the causes of and cures of these devastating diseases we encourage that freshness of vision and exploration of new ideas which can best be assured if research can be carried on in every region of the country and under competent local auspices.

Now, this is the theme song, Mr. Chairman, which has made wandering minstrels of my colleagues whom you have heard before me, and of myself. This is what we travel the country about with our palms outstretched, to try to get just what these few words have so clearly delineated.

Our task, of course, is to prove that all this is true.

From my point of view, we all ought to just read this first page and go home because there is the whole story. However, it is my job here to implement this plea.

As you may know, I am cochairman of the National Committee for Research into Neurological Disorders.

Now, this is a unique committee because it represents the leading voluntary health agencies concerned with the diseases of the central nervous system.

These agencies are the United Cerebral Palsy Associations, the National Foundation for Infantile Paralysis, the National Multiple Sclerosis Society, the National Society for Crippled Children and Adults, the National Epilepsy League, and the United Muscular Dystrophy Associations.

These voluntary agencies, and this committee have urged an expansion of research construction since their inception. Construction is expensive. By definition, as spelled out in the bill, research centers make no profit. They are non-profit organizations. They cannot build and equip from their own funds. They have not got any funds.

The funds must come from the Government. Voluntary health agencies do not have that kind of money. Their money is devoted to research and to service, to patient service.

Prior to speaking directly on research construction needs, I think it would be well to clarify the broad nature of the neurological and sensory disorders.

As a group of disorders, they may sound unfamiliar, although individually they are all well known. Some of the neurological conditions are cerebral palsy, epilepsy, poliomyelitis, multiple sclerosis, muscular dystrophy and cerebral vascular disease or stroke, Parkinson's disease, and so forth.

Incidentally, Mr. Chairman, in passing I would be very happy if the diseases multiple sclerosis and epilepsy were mentioned by name in the bill.

Chairman HILL. In section 702 of the bill where we set out certain diseases, you would like these two mentioned also?

Dr. TRAEGER. Yes, sir; multiple sclerosis and epilepsy.

Chairman HILL. Yes.

Dr. TRAEGER. Among the sensory disorders, those of the eye rather than of the ear are known more commonly, and these conditions are the common ones, glaucoma, cataracts, and corneal opacity.

All of these conditions I have mentioned, however, are just a small fraction of the total number. As a matter of fact, there are 200 separate disease which come under the category of neurological and sensory disorders, and these diseases affect 20 million people in the United States, half of whom are gravely disabled.

Most of these diseases are diseases for which there is no known cause and for which there is no cure, and for many of them not even effective treatment.

They occur at any age. These diseases occur from pediatrics to geriatrics, from childhood to old age. Many of them produce permanent disability.

A recent study of all persons receiving public assistance funds in the United States reveals that those with the neurological disorders represent 46 percent of the total who had endured their disabilities for 10 years or more.

These patients also represented the largest group of those who had been totally removed from the social and economic scene. They represent 35 percent of all patients who were housebound, 50.5 were chairbound; 41 percent were bedridden.

Strokes or cerebral vascular disease are the third most common cause of death in this country.

On the basis of these statistics which do not include the blind—I have not even talked about the blind—these disorders represent the leading cause of lost wages and income to the Nation, as well as representing the largest drain on the country's aid and welfare funds.

Now, the picture represented by the neurological and sensory diseases is not a pleasant one, but there is a ray of hope. It is not entirely a despairing picture.

Within the past few years the research attack on many of these conditions has improved considerably, largely because the Congress has made it possible through the creation and the growth of the Government's National Institute of Neurological Diseases and Blindness.

During this same period, from 1951 to the present, funds available to the voluntary health agencies in the field have also increased, although it should be mentioned that the enormous responsibility of these agencies for providing training and assistance to the crippled has been such as to severely limit their ability to support research and research training, and has made it impossible for them to support research construction.

The research attack on the neurological and sensory diseases has already demonstrated that it will pay off. Any research pays off. There is no such thing as a failure in research, no matter what research in what field.

You may not hit the target you have anticipated, but you develop a fund of knowledge.

The young scientist who goes into research today has behind him a backlog of scientific truth and fact and ideas; he does not have to start all over again and plow his way through years of research. He has this material, all of which has come to him from research, which may not have been originally successful in its original concept, but it has developed a body of truth which is useful to further research.

Research is important in terms of dollars.

Yankee dollars were not responsible for the industrial renaissance of the South. The elimination of pellagra and hookworm made the South an area where industry could thrive and flourish.

Senator PURTELL. I think, Doctor, you might well say that was one of the things that helped; but I think that perhaps you will not explore it now, but there are many other factors that helped in that at somewhat the expense of some of our Northern States, including the little old State of Connecticut.

Dr. TRAEGER. Where I live, Senator. I am from Greenwich.

The research in penicillin would have been way, way back if it had not been that penicillin was developed during the war. There was an urgency, and Government funds made the expansion of research possible—made penicillin available—and saved countless thousands of lives, so that research does pay off.

It pays off in the relief of the burden of human suffering, and it pays off in terms of dollars and cents.

For example, last year a group of scientists, supported by grants from the National Institute of Neurological Diseases and Blindness, discovered the cause of retrolental fibroplasia.

As a result of that discovery, they have now made it possible to almost completely prevent this disorder.

Senator PURTELL. What is the disorder?

Dr. TRAEGER. It is a disease affecting premature infants under three and a half pounds at birth.

It was comparatively a new disease, and the reason it is a new disease is because, as was discovered in this research, oxygen was used to bring these children up in incubators.

In the last decade there have been 8,000 children born blind because of this disease. Now, the cause has been discovered by research in this National Institute of Neurological Diseases and Blindness.

Of course, I do not have to go into the story of telling you the suffering which these blind children have brought to their families. But you have got to know that the special care and the training of these blind children through their average life span will cost approximately $100,000 each or a total of $800 million—these children that are already blind, 8,000 of them.

This sum, of course, has to come, for the most part, from Federal and State Governments.

This will no longer be necessary for the future anyway because no more children will be born with retrolental fibroplasia, with a few exceptions. Sometimes when these children develop a crisis in their prematurity, while they are in the incubator, they may have to have oxygen; but 90 percent of these children born blind will not be blind any more.

Now, how much did this cost the Government? About $40,000; $40,000 as an investment to bring you a return of $800 million.

Chairman HILL. You cannot weigh it in terms of dollars either, can you?

Dr. TRAEGER. That is right. I am not talking about suffering of 8,000 blind children or the suffering of their parents. I am just talking money, $800 million saved or more than that if we had not discovered this problem, this disease, on an investment of $40,000.

Now, it seems to me, begging the pardon of the Senators, that in terms of this revelation you are lax in your duty to the people of the United States, you are lax with respect to the economic situation in the country, if you do not support this bill, because just look at the return from one little fragment of it, one tiny little fragment.

This bill is really not an expenditure of funds by the Congress. It is an investment with a return which is colossal and fabulous and important.

The increased economy in the care and welfare of the sick go hand in hand with the growth of research and, of course, needs no further emphasis.

The components that go into successful research are important. These components are quite simply, first, good scientists and, secondly, good facilities in which the scientists can work. Both these areas need much greater support than they are presently receiving.

The need for substantial expansion of research manpower has long been recognized, and something is being done and has been done about it.

For the past 2 years, for example, the Congress has made increasing appropriations available to the National Institute of Neurological Diseases and Blindness so that training in neurology and ophthalmology could be initiated or strengthened in the Nation's medical schools.

On the other hand, no funds have been made available for the reconstitution of outmoded research facilities or for new research construction which can properly exploit new research techniques or which will allow scientists to better exploit new ideas.

In the history of medical education, departments of neurology and ophthalmology are relative newcomers. Medical schools which were built and hospitals which were built 25, 30 years ago and are still going strong, like my Roosevelt Hospital built in 1885, special surgery way back in 1896, they started out without a department of neurology and without a department of ophthalmology.

Now, since these departments are recognized in the hospital scheme, these facilities are grafted on already existing facilities. These are holes in the wall in corridors; they are completely useless almost. We have to borrow space.

Now, the borrowing of space scatters the whole effort. The patients are here, the laboratories are here, the scientists are down there, and the equipment is someplace else, and you just waste a lot of time trying to coordinate any effort.

Dr. Rhoads was complaining that his hospital, opened 7 years ago, is no longer adequate.

I will tell you a worse story. One of my hospitals is building today, and the building will be finished, we will move into it along about the 1st of June.

Three years ago I developed a plan of clinic flow, research flow, facilities, and so forth.

We have not moved into that building, yet it is already too small. The demands already made on our hospital are so great that the hospital is already too small. What happens? The patients come first, of course, so the fellow with his little research problem gets stuck away in a corner. His space is whittled away, and whittled away to a point where he soon has not got any space.

The same thing has happened at Roosevelt Hospital. We have just so much space. I have a laboratory room in the old Sims' operating room.

Chairman HILL. J. Marion Sims?

Dr. TRAEGER. That is right. That building is there since 1885; you can imagine what it is like.

Just the other day they said, "We have so many patients now we need the laboratory space. Can you move somewhere else?"

So my gadgets are out in the hall; my Warburg apparatus, which cost $1,000, is out in the hall. Every time anyone wants to go from one room to the other he kicks my technician; it is a difficult and hopeless problem.

I know of a situation where a laboratory was borrowed in the cellar of a Veterans' Administration hospital, and then came a bunch of new veterans from Korea, and the research people had to get out because they did not belong there.

The problem is right here in Washington. Frank Foster at Georgetown, trying to develop a neurological center, is cramped for space.

The ophthalmological service at Johns Hopkins is cramped for space, not only cramped for gadgets but for places to put men to work, for desk room for research science.

I know about New York, the Fifth Avenue and Flower Hospitals having difficulty. Albany's Medical College has no space; Montefiore Hospital, which is a gold mine of neurological cases has just about 200 square feet of space for research.

Now, Governor Lehman knows that. He knows that Montefiore Hospital, which is one of our oldest chronic diseases hospitals is being pushed and pushed and pushed, so that the research space today is practically zero.

I could go on, but the point is you know the story, the enormous problems which face us all for a little room, a few gadgets, and more brains.

The problems of neurology have the same disaster approach as the problems of cancer. Children, infants, are not dying as much as they used to; the infant mortality has been cut tremendously; people are living into the age groups when they are susceptible to chronic neurological problems.

More people are alive today than were alive 25 years ago because of the advances of research, and they are susceptible, therefore, to these diseases.

Senator PURTELL. May I interrupt you a minute? I would like to stay, but I have got to go, Mr. Chairman; I have to introduce a bill. I apologize to the doctor and I apologize to the chairman for leaving at this time.

Dr. TRAEGER. Thank you for staying so long.

The end result is that there are more people with more sickness; there are more young men coming into the research field to grapple with these problems; but there are no spaces or places to put them, and that is why for these reasons this bill, Senator Hill, is really a "must."

Thank you, sir.

Chairman HILL. Doctor, you certainly have most ably and graphically and, I may say, dramatically, summed up this case, and we deeply appreciate your being here with us.

Dr. TRAEGER. Thank you, sir.

Chairman HILL. At this point in the record I will place a statement by Dr. Chester D. Swope, chairman, department of public relations, American Osteopathic Association.

(The prepared statement referred to follows:)

STATEMENT BY DR. CHESTER D. SWOPE, CHAIRMAN, DEPARTMENT OF PUBLIC RELATIONS, AMERICAN OSTEOPATHIC ASSOCIATION

The American Osteopathic Association supports enactment of S. 849 to provide for grants-in-aid to accredited and nonprofit universities and schools of medicine, dentistry, and osteopathy, hospitals, laboratories, and other nonprofit institutions, engaged in or competent to engage in research, for the purpose of defraying the cost of construction of facilities, or the installation of equipment, needed for the conduct of research into the causes of and possible cures for crippling and killing diseases, including cancer, heart disease, poliomyelitis, nervous disorders, mental illness, arthritis and rheumatism, blindness, cerebral palsy, and muscular dystrophy.

The July 1954 annual report of Dr. Alden Q. Abbott, chairman of the bureau of research of the American Osteopathic Association, contains the following significant statement:

"One of the major problems in establishing research programs in osteopathic institutions is lack of space that can be assigned for this purpose. There is also the problem of accumulation of the basic equipment to convert such space, when

found, into research laboratory. It is permissible to expend part of grant moneys for major scientific equipment, but it is not permissible to make plant alterations or buy and install basic laboratory furniture and utilities. If the AOA did not have to appropriate large amounts for the major support of the research programs, it could be in a position to assist the colleges in setting up essential laboratory facilities that would help attract assistance from outside granting agencies."

The American Osteopathic Association annually allocates funds to the limit of its ability for research in osteopathic institutions. Last year the allocation was $54,000. This year it is $60,000. Osteopathic college research projects have received support from the Office of Naval Research and the National Institutes of Health, but these funds are not available for construction costs, although additional space is sorely needed.

As in other medical colleges, the cancer and heart teaching grants provided to the osteopathic colleges by the National Cancer Institute and the National Heart Institute not only help tremendously to emphasize the impact of cancer and heart disease and the methods of detecting and dealing with them but help also to kindle and channel in their direction the investigative interest of students who have aptitude for scientific research, Stimulation of interest and discovery of aptitude for research must be followed by training in scientific methods. Such training requires not only qualified supervision, but adequate laboratory space and equipment.

The Osteopathic Hospital and Clinic of New York is an example of an osteopathic institution (other than a college) which is in need of financial assistance for defraying the cost of construction of needed research facilities and equipment. A research project at the clinic was recently approved by the National Institute of Arthritis and Metabolic Diseases, but deferred for lack of funds. On March 29, 1955, Dr. J. Marshall Hoag, chairman of the research committee of the clinic, wrote me in part as follows:

"One of our important problems is space. At present we are taking space which was previously used for treating clinic patients. The basement has also been utilized where possible, even though it is below ground and not constructed for regular occupancy. Our equipment is borrowed from the clinic by inconvenient scheduling."

S. 849 will help to alleviate the problem of cost of construction of facilities and installation of equipment needed for the conduct of research in such cases, and stimulate additional assistance from private granting agencies.

Chairman HILL. The committee will stand in recess subject to call.

(Whereupon, at 12:45 p. m., subcommittee adjourned, subject to the call of the Chair.)

MEDICAL RESEARCH ACT OF 1955

WEDNESDAY, APRIL 13, 1955

UNITED STATES SENATE,
SUBCOMMITTEE ON HEALTH OF THE
COMMITTEE ON LABOR AND PUBLIC WELFARE,
Washington, D. C.

The subcommittee met, pursuant to notice, at 10:10 a. m., in the Old Supreme Court Chamber, United States Capitol, Senator Lister Hill (chairman) presiding.

Present: Senators Hill (chairman), Lehman, Bender, and Smith of New Jersey.

Also present: Stewart E. McClure, staff director, Roy E. James, minority staff director, and William G. Reidy, professional staff.

Chairman HILL. The subcommittee will kindly come to order.

The committee has previously held 2 days of hearings on the bill S. 849, which will provide Federal funds to help build medical research laboratories throughout the country to be used by scientists seeking the causes of and cures of cancer, heart disease, arthritis, multiple sclerosis, mental illness, blindness, and other crippling and killing diseases.

Leaders in medical science came from all over the Nation to tell our committee of the fruits of our medical research—of its bright promises and of its handicaps. They unanimously agreed that the greatest single handicap to more rapid advances in medical research is the handicap of cramped, inadequately equipped laboratories and other research facilities in which our men and women of science are today forced to carry on their battle against disease. Indeed, laboratory facilities are completely lacking in many areas of the Nation.

Our committee was told that the investment of $90 million in expanded medical-research facilities, as the bill provides, would return to the American people manifold dividends in dollars, as well as in the saving of lives and in the prevention of human suffering. This is the answer of men and women of faith and hope and indefatigable determination to those who throughout the years have argued and continue to argue that we cannot afford the cost of questing into the unknown for the cause and cure of disease.

On yesterday the faith of these devoted men and women of science found perhaps its richest reward in the dramatic and sensational announcement of proof of the effectiveness of the Salk vaccine in the prevention of polio. Boiled down to its simplest terms, the announcement means that after some 18 years of dogged effort, and an investment of less than $10 million, we have produced the means of saving from the terrible ravages of this crippling and killing malady from 80 to 90 American children out of every 100 children who would have

been struck down by the disease. Even now, Dr. Salk has plunged into the improvement of the vaccine.

There is no way to estimate in terms of dollars the dividends that will be returned to this and future generations of Americans from the investment of our dimes. We know that those returns will be counted high in the billions. But we can put no price tag on the value of the removal of the agonizing fear that has gripped the hearts of American mothers and fathers—indeed, mothers and fathers throughout the world.

Think what it means in terms of inspiration and stimulus for our men and women of science to redouble their efforts against other diseases.

Mr. Alton Blakeslee in Ann Arbor, Mich., writing for the Associated Press, appraised the announcement in these words:

> The announcement climaxes an often frustrating search for a weapon to strike back at polio. It encompasses years of drama, of stubborn courage, of tears and fears, of blind anger against a destroyer, white hospital beds, pulsing iron lungs, the quiet of scientific laboratories, and the imaginative, trained minds of dozens of scientists.

Here again our faith has been richly rewarded. Sustained as we are by concrete achievements, we must move forward with redoubled efforts in the battle against disease.

I am very proud and happy as the chairman of this committee to welcome as our first witness this morning, one of the authors of the bill Senate 849, the distinguished former chairman of the Senate Committee on Appropriations, the present chairman of the Republican Policy Committee of the Senate and one who has been deeply interested throughout the years in this matter of the health of the Nation and in this quest through research to find the causes and the cures for so many of these diseases which cripple and plague our people.

I am delighted to have you here, Senator Bridges, and I would be happy for you to proceed in your own way.

STATEMENT OF HON. STYLES BRIDGES, UNITED STATES SENATOR FROM THE STATE OF NEW HAMPSHIRE

Senator BRIDGES. Thank you, Mr. Chairman and gentlemen of the committee.

For many years, as the distinguished chairman of this committee knows, I have been interested in medical research. I have probably been one of those Members of the Senate most strongly opposed to any form of socialized medicine, and I still am.

However, I feel that there is a real field for the Federal Government in the field of health, and I feel very distinctly that that primary field is in medical research.

As the distinguished chairman of this committee knows, because both he and the Senator from New Hampshire have worked hand in hand in these matters, we have taken very decided steps through the Congress and the Senate, may I say, and particularly the Appropriations Committee of the Senate, in providing adequate funds for medical research. I have been one of those instrumental in providing those funds.

It was in the field of heart disease, I remember, that we first made, without any authorization or anything, an appropriation.

Now, in each of the past 2 years, during which time I served as chairman of the Committee on Appropriations, there was offered a motion to add funds for grants for medical-research construction in the markup of the annual appropriation bill for the Public Health Service. And each time the motion was defeated, without a record vote, as I recall, mainly for the reason that the subject had not received adequate attention from the legislative committees. The motion for funds followed requests and convincing testimony from medical and lay leaders attesting to the need for additional research facilities.

It is true, of course, that grants for research construction are authorized in sections 412 (d) and 433 (a) of the Public Health Service Act. During the 80th and 81st Congresses, our Appropriations Committee made available in excess of $22 million for research construction, of which $16,303,000 was granted by the National Cancer Institute, and $6,059,000 by the National Heart Institute.

Now, we started that, I might say, in 1947 when I was chairman of the committee, for the 1948 fiscal year and we again appropriated money in 1948 for the 1949 fiscal year and then in 1949 for 1950.

The authorization obviously received little, if any, attention prior to enactment of the law under which we made the appropriations—no specific sum is authorized, and for no specific period; no matching requirement is set out, nor is there any formula for an equitable geographic distribution of the grant funds.

The members of the committee felt that there should be some special attention given and some definite particular authorization made.

Now, I mention these particular points because in our consideration of the proposed amendment in the Committee on Appropriations, members, one after another, clearly indicated that until an authorization protected by various such provisions was enacted, they could not conscientiously support the appropriation of funds; there was little likelihood of approval of funds for this worthwhile purpose.

The distinguished Senator from Alabama, the chairman of this committee and member also of the Appropriations Committee, and the Senator from New Hampshire as well as certain ther members of the Appropriations Committee discussed this informally from time to time and we decided last year about the time of the appropriation report that we would go forward with such legislation so that the Congress would have an opportunity to pass on a definite authorization act and then that the Appropriations Committee would be fully within the law in considering appropriations for this type of research.

Let me quote from our committee report of last year, No. 1637:

> The committee received numerous requests, urgently presented, for appropriations for grants for construction of research facilities, and gave considerable attention and thought to the requests. The committee urges the Committee on Labor and Public Welfare to investigate this problem to determine the public policy. If such a program is adopted it is the view of this committee that it should be put on a matching basis and the grants be authorized according to formula.

With this as a background, the distinguished chairman of this committee, Senator Hill, and I joined in offering the pending bill, S. 849, drafted, we believe, to accord with the expressions from our colleagues on the Appropriations Committee.

We are each, of course, more familiar with circumstances back home in the various States. For instance, in New Hampshire we have a single medical school, a 2-year course at the medical college at Dartmouth. That is a very high-caliber school and it has a very competent faculty that has attracted exceptional students who went on to finish their education and training at the great medical centers in Boson and elsewhere in the East. Medical research opportunity is a requisite to retain a competent medical faculty, and adequate research facilities is a prerequisite to research opportunity. The pending bill offers the means to provide such facilities in the areas where they will do the maximum good—at Dartmouth College, for instance. I firmly believe that the need is greatest in connection with our medical schools from whence must come many of our advances against the ravages of disease.

I might add that our Appropriations Committee last year had the National Institutes of Health make a survey of the need for this purpose. The report, which was printed in our hearings last year, indicated a need for in excess of $155 million.

So the need is great. And it is necessary that the local schools and institutions be required to participate in the financing of research construction. It is also necessary that the funds be available to assist schools and nonprofit institutions throughout the Nation. The pending bill adequately provides for each of these needs.

This bill does not call for an authorization of that amount. It is put in on a conservative basis of $90 million over a 3-year period, and the Senator from New Hampshire feels very definitely that we should proceed that way, he feels we should do it on a conservative basis; it would give the medical research facilities in this country a great impetus.

It is a one-shot proposition. It will create these facilities, and they are not going to be coming back to the Federal Government year after year for annual appropriations. Once they are built the facilities will last for some time.

We have tried to provide in the bill as many safeguards as possible.

Now, the distinguished chairman of the committee, Senator Hill, can speak for himself, but the Senator from New Hampshire, as far as he is concerned, if the bill could be improved, if any further safeguards should be put in or anything to make the bill more equitable, stands ready to see that done.

But I do think that this Congress should start by a definite authorization of this work and proceed in that direction.

That is all, Mr. Chairman, unless you have some questions.

Chairman HILL. As the distinguished Senator from New Hampshire has said, if there is any way to fortify or strengthen or make this bill better, he would recommend the adoption of any such suggestions; is that correct?

Senator BRIDGES. That is right, Mr. Chairman.

Chairman HILL. Any questions?

Senator LEHMAN. Just one observation.

The Senator from New Hampshire and our colleagues on this committee know how strongly I favor this bill. I am very much hopeful—and this is only an authorization—that appropriations of the full amount will be made by the Appropriations Committee.

This bill would provide facilities being constructed for research in at least a dozen different important fields, so that the amount that can be devoted to each of those important fields is a relatively small amount.

I also want to say that I think that we will not gain the full benefit of this bill unless we also at this session pass legislation which will provide for adequate medical training in the United States.

I do not know whether you, Senator Bridges, listened to the telecast last night, in which Dr. Salk, Dr. Francis, and Dr. Gregg of the Rockefeller Foundation appeared. Emphasis was laid very definitely by Dr. Gregg, than whom there is no greater authority in this country on the subject, to our present inadequacy of trained medical personnel to carry on this research.

Senator BRIDGES. Yes.

Senator LEHMAN. I think that we must move in that field as well as this.

Senator BRIDGES. I will say to the distinguished Senator from New York that the opposition to this or the reluctance rather than opposition to appropriate funds in the committee before came from the fact that there was no clear-cut authorization.

I think that once this legislation is passed you will find that the committee is in a very receptive mood. That would be my judgment.

Chairman HILL. Well, Senator Bridges, I want to testify again to your long and devoted service in the cause of health in the United States and particularly to your great interest and effort in behalf of research, to find the causes and cures of these dread diseases. We are very proud and happy to have you this morning, and we certainly thank you.

Senator BRIDGES. Thank you very much.

(By direction of the Chairman the following is made a part of the record:)

RETINA FOUNDATION,
MASSACHUSETTS EYE AND EAR INFIRMARY,
Boston, Mass., April 9, 1955.

Re Senate Bill 849.
Hon. LISTER HILL,
Chairman, Committee on Labor and Public Welfare,
Senate Office Building, Washington, D. C.

DEAR SENATOR HILL: The crying need for a great deal more eye research has probably been stressed in detail by other witnesses. The purpose of this letter is to explain why it is important that Federal funds be allocated to aid with the construction of laboratories for eye research. Our own case will serve to illustrate this point.

Eye research, like all medical research, can conveniently be divided in two categories:

First there is clinical research in which new applications of known principles are developed into useful tools for either diagnosis or cure of eye disease. This type of research is carried out by medical doctors, in laboratories associated with hospitals; results are generally forthcoming within a small number of years. The usefulness of the project is easy to explain to lay people and, therefore, it is comparatively easy to raise money from private sources for this kind of work.

The second type of eye research may be called fundamental or basic. In this field, highly specialized research workers attempt to uncover new facts and unknown laws which govern health and disease in living eye tissues. This kind of research has no immediate practical goal, but it is designed to give us a better understanding of the physics and chemistry of the eye and of vision. Such knowledge forms the only basis on which to build a national program of prevention and cure of blindness in the future, because it is essential that we should be able to understand the problems before we can hope to solve them.

Unfortunately, it is very difficult to organize this type of eye research for the following reasons:

First, it is difficult to find suitable men as key investigators, because of the highly specialized background required of them, both in the natural sciences and in medicine. Such men are in great demand in industry where salaries are higher and offer more security.

Secondly, it is difficult to find financial support of this kind of research. Private organizations are often not interested because they cannot understand projects which are highly technical and not geared toward immediate practical results. It is because of the extreme importance of basic eye research, and of difficulties of financing such projects, that the Institute of Neurological Disease and Blindness makes its research grants to basic eye research in preference to clinical or applied projects.

This policy of the Institute seems to be a very wise investment, but the good results expected from it are somewhat delayed or even partly destroyed because of the lack of adequate quarters where to carry out basic research. Such laboratories have special requirements and the equipment required is often expensive; generally they cannot be fitted into old quarters without considerable remodeling. The absence of proper quarters has a paralyzing effect upon productivity.

As your committee probably knows, there are very few laboratories in the country which have the men and equipment necessary to carry out basic eye research, and several are housed in completely inadequate quarters. A good example of this is the case of the Retina Foundation. This group of laboratories is connected with the Harvard Medical School, Department of Ophthalmology. Its origin, development and research activities are described in the enclosed reprint. Our laboratories are among the largest and best-equipped eye research laboratories in the country. They have a staff of 28, and an annual budget of about $150,000; roughly, half of this is granted to us by Federal agencies. Our quarters are located in a remodeled tenement house, and overcrowding has become a serious handicap to our productivity. Within the next 2 years or so, we will be evicted by the city of Boston from our present building to make room for the West End redevelopment project. If we do not find adequate space before then, and if the money to construct a building is not raised, our work will be critically delayed. We need 12,000 square feet of laboratory space. Of this about 8,000 square feet is for basic eye research and about 4,000 square feet is for clinical or applied eye research. The estimated cost is approximately $750,000, and the investment made in our work during the last 5 years by Federal agencies will be gravely imperiled unless this amount is raised.

Our chances of raising the necessary money for this construction from private sources are extremely small, because it is so difficult to explain the purpose and importance of basic eye research to lay people.

In summary, the primary importance of basic eye research makes it essential that Federal funds should be allocated for building laboratories for basic eye research. It would strengthen the policy of the Institute of Neurological Disease and Blindness to support basic eye research in preference to clinical research. Another important consideration is that it would be extremely difficult to raise money for building laboratories for basic eye research from private sources. In the case of the Retina Foundation, which is one of the largest laboratories for eye research in the country, it is imperative that new quarters covering 12,000 square feet of laboratory space, be built within 2 years at a cost of approximately $750,000.

Sincerely yours,

C. L. SCHEPENS, M. D., *Director.*

[Reprinted from MGH news, March 1955]

THE RETINA FOUNDATION—ITS ORIGIN, DEVELOPMENT AND RESEARCH ACTIVITIES

(By Charles L. Schepens, M. D.)

It seems that in the last two decades, clinical centers have become increasingly propitious ground for the development of basic research. The fundamental reasons for this may be threefold. First, many of the diseases on which research is now focused cannot be investigated adequately in laboratories deprived of close hospital connections. Secondly, both the basic research workers and the research-minded clinicians derive immense stimulation from cooperative work.

Thirdly, a very alert and productive research staff is indispensable to a forward-looking teaching hospital. It is its best advertising agency, it offers a more stimulating atmosphere to residents and students, and it attracts problem patients to the hospital. The last factor becomes increasingly important to help balance the teaching hospital's budget.

The following paragraphs describe another case of successful symbiosis between basic and clinical research connected with a hospital.

ORIGIN AND DEVELOPMENT

In 1948, the Massachusetts Eye and Ear Infirmary established a special clinic called the Retina Service. All cases suspected of retinal detachment were sent to this clinic for examination and advice as to treatment. The number of patients referred increased rapidly, and improvements in the diagnosis and treatment of retinal detachment resulted in an increase in the percentage of reattachments of the retina from about 45 to over 70 percent.

It soon became apparent that, despite the number of successful operations, the lack of data about the formation, structure, and metabolism of the vitreous body was retarding further progress in the treatment of retinal detachment and of other conditions. For instance, shrinkage of the vitreous body was recognized as an important cause of breaks in the continuity of the retina and, subsequently, of retinal detachment; but there were no clues as to the possible causes of the retraction of the vitreous gel in vivo. In order to find the answer to this and other related problems, it was decided that a program of basic research should be instituted. The Retina Foundation was created in April 1950, by Dr. Schepens, to carry out the program; this was made possible through the assistance of a few good friends, such as Mr. Ralph Lowell and Dr Trygve Fundersen.

The foundation purchased a tenement house at 30 Chambers Street, and proceeded to raise the funds necessary for the equipment of laboratories. Through the good offices of the foundation's president, Dr. Paul Boeder, we received an electron microscope, light microscopes, and other equipment on loan from the American Optical Co. The late Mr. C. J. Maney, a former retina patient and a prominent Boston contractor, donated the remodeling of the foundation building into laboratories.

The creation of the Retina Foundation actually resulted from the renewed interest of the clinicians at the Retina Service in problems connected with the retina and the vitreous body. The success of the project was entirely dependent upon the solution of an arduous problem: to gather a team of basic research workers who would fit into this program.

In December 1950, Dr. Endre A. Balazs came over from Sweden, where he had been working at the Karolinska Institute for the previous 4 years. His first duties were to help plan and supervise the remodeling of the foundation's tenement house into laboratories, and to organize the first basic research unit of the foundation—the biochemistry laboratory. Dr Balazs also actively participated in the formulation of plans for future research activities.

In 1951, thanks to Dr. Dunphy's interest in our young organization, it became affiliated with the Massachusetts Eye and Ear Infirmary and the Department of Ophthalmology at the Harvard Medical School. The remodeled Retina Foundation building was dedicated on May 16, 1951, and on the same day, the foundation learned that it had been awarded grants from the Kresge Foundation and the Hyams Trust, for a total of $62,700.

In July 1951, Dr. Marie A. Jakus left the Department of Biology of the Massachusetts Institute of Technology to join the foundation's research staff and organize a laboratory for electron miscroscopy. At the same time, Dr. Fritz Wachendorf, a physicist interested in optics, arrived from Germany to head a 3-year lens computing program at the foundation. In September 1951, Dr. Laszlo Varga, who was research associate at the Department of Biology of the Massachusetts Institute of Technology, joined the foundation's staff as a part-time investigator in the biochemistry laboratory; in collaboration with Dr. Balazs, he set up a program in physicochemical research. During the spring of 1952, Dr. Balazs organized laboratories for tissue culture and for radioactive isotope work. In the same year, two members of the Massachusetts General Hospital research staff became consultants to the foundation: Dr. John Gergely and Dr. Gordon L. Brownell, in protein chemistry and nuclear physics, respectively. In July 1953, Dr. Arthur Howe, a biochemist from Yale University, and in January 1955, Dr. Natalie Mayer, a chemist from New York University, joined Dr. Balazs' team.

From the start, visitors from abroad have come to work with us for periods of time ranging from 2 months to 2 years. Among them are both basic scientists and clinicians who are interested in a fundamental approach to clinical problems: Dr. Antonio Grignolo, University of Parma (Italy); Med. Kands. Torvard Laurent and Ulla Helsing Laurent, and Miss Ann-Marie Allgoth, Karolinska Institute, Stockholm (Sweden); Dr. Carl Erik Zimen, Chalmers University of Technology, Göteborg (Sweden); Dr. Claes-Henrik Dohlman, University of Lund (Sweden); Dr. J. A. Szirmai and Dr. P. H. Mars, University of Leiden (Holland).

Parallel to this rapid expansion of our basic research, chinical research was developed, though on a more modest scale because it had to be tailored according to the space made available at the Massachusetts Eye and Ear Infirmary. Dr Ichiro D. Okamura joined our clinical unit in November 1952, to perform research related to retinal detachment and to abnormalities of the vitreous; and in September 1954, Dr. Robert J. Brockhurst started a study of certain aspects of uveitis.

The Retina Foundation, not quite 5 years old, has a staff of 28. The investigators are helped by the following 10 research assistants: D. M. Bunney, B. S.; M. C. Ciampa, M. S.; A. E. Collins, B. S.; E. A. Eckl, B. A.; A. F. Feldman; H. T. McCarthy, B. S.; R. E. McGovern, B. A.; A. M. O'Rourke, A. B.; M. T. Shannon; and M. G. Tobin, B. S. In addition, the investigators receive assistance from the foundation's two instrument makers—Robert Thompson and Carl Nyholm

As our organization is unendowed, we have to raise our yearly budget of $150,000 ourselves, through Federal agencies, private foundations, former patients, and friends.

RESEARCH ACTIVITIES

Unity in the activities of the Retina Foundation is fundamentally achieved by their orientation toward investigation of connective tissue. From a clinical standpoint, connective tissue in the eye plays a role of immense importance: it controls the transparency of the cornea and vitreous, and its disturbance is an important factor in the etiology of retinal detachment, uveitis, retrolental fibroplasia, and many degenerative conditions of the choroid and retina. Observation in the living eye of certain early alterations of connective tissue metabolism seems possible and deserves further study, as it may help elucidate problems of general importance in collagen diseases. The foundation's present activities are carried out in four units: a laboratory for biochemistry, for fine structure, for tissue culture, and a clinical research unit.

The research training of Dr. Balazs and his team covers a wide field: biochemistry, physical chemistry, immunology, histochemistry, and experimental cytology. The cooperation and teamwork, on parallel projects, between investigators representing different scientific disciplines, form the basis of our modus operandi. The subjects for investigation are selected from four general fields of connective tissue research: the chemical composition of extracellular substance, the formation of mucopolysaccharides, the physicochemical properties of mucopolysaccharides, and the interaction between the ground substance and connective tissue cells.

An extensive study has been made by this group on the chemical structure and formation of the vitreous body, with emphasis on the hyaluronic acid, ascorbic acid, and protein content. The formation of the vitreous and the changes in its chemical composition were studied in cattle embryos and in calves (Balazs, T. Laurent, and U. Laurent). Electrophoretic and ultracentrifugal studies were made on the liquefied vitreous body (Varga and Balazs). Certain gel properties of the vitreous body are currently studied (Varga). Years ago, Drs. Balazs and Laurent observed that mucopolysaccharides are easily destroyed by ultraviolet light. Further investigation of the radiation effect on mucopolysaccharides has been initiated in Dr. Balazs's laboratory along two lines: (1) the effect of ultraviolet radiation on hexoses (T. Laurent); (2) the effect of ultraviolet light, x-rays, and cathode rays on the vitreous body—the simplest mucoid connective tissue—is now being studied by Dr. Howe. Investigations on the chemical composition of two other connective tissues—the corneal stroma and Descemet's membrane—were made in collaboration with Dr. Dohlman. Similar investigations are in progress on the mucoid tissue of the rooster comb. One of the most interesting components of the extracellular substance of the connective tissue is hyaluronic acid; the biosynthesis and physicochemical properties of this substance was investigated. An apparatus for radioactive carbon assay in gas

phase was set up to facilitate the determination of C^{14} in small tissue samples or tissue components (Zimen, Brownell, Balazs). Incorporation studies of radioactive carbon-labeled glucuronic acid (a moiety of the hyaluronic acid molecule) in the developing vitreous and in the growing rooster comb are still in progress (Balazs, Szirmai, Mars). This group has an extensive interest in physicochemical studies of hyaluronic acid obtained from different connective tissues. The size and shape of this molecule were studied by means of a light-scattering method (Laurent, Gergely). The diffusion and sedimentation properties of hyaluronic acid are studied by Dr. Varga. Investigations are being carried out on the interactions between mucopolysaccharides and proteins or mucopolysaccharides and dye ions (metachromasia), by Drs. Balazs and Mayer. Quantitative tissue culture methods combined with cinephotomicrography are being used by Dr. Balazs to investigate the effect of mucopolysaccharides on the migration and mitosis of fibroblasts in vitro.

The laboratory for fine structure was established in order to investigate eye tissues. As Dr. Jakus had previously been interested in collagen, it was natural for her to start with a study of the cornea. After a suitable thin-sectioning technique had been worked out, the micromorphology of the different layers of the cornea was investigated, particular attention being paid to structural details not resolved by visible-light microscopes. Studies of the corneal epithelium, the stroma, and Descemet's membrane have already yielded fruitful results. Comparative studies of these structures in the adult are being carried out, as well as an investigation of their embryonic development. Parallel surveys of the sclera and of the lens have been begun and will be continued.

In the clinical research unit, there are three main areas of interest to Dr. Schepens and his team. The first is the improvement of methods for optical examination of the living eye. Instruments used for this purpose have not changed much for almost fifty years, probably because mathematical computation of new lens systems is a complicated and tedious process. High-speed computing machines have removed the tediousness by speeding up many phases of this computation. Dr. Wachendorf has been able to use the computing facilities of the Digital Computer Laboratory at the Massachusetts Institute of Technology, and of the Computing Unit of Dr. James Baker at the Harvard Observatory. Pilot models of new instruments are made at the workshop of the Retina Foundation under the guidance of our consultant in mechanical engineering, Mr. Charles V. Mahlmann.

The second area selected for clinical research is the improvement of surgical procedures for the treatment of retinal detachment. As this condition is caused by breaks in the retina, its cure depends entirely upon the surgeon's ability to detect and close the breaks. For the last 20 years, diathermy applications to the sclera overlying the retinal breaks have been used. In an effort to obtain better results, particularly in unfavorable cases, various methods for buckling the sclera and choroid, in the area of the retinal breaks, were developed by Drs. Schepens and Okamura, and proved successful. Experience gained with surgery of the sclera may open new possibilities, which are now being explored, for the surgical treatment of several other eye conditions.

The third area of activity in clinical research is a study of certain aspects of uveitis—one of the most frequent causes of blindness. During the last 30 years, investigation of infectious agents as possible etiological factors has been rather disappointing. Uveitis often resembles certain collagen diseases, and it seems probable that it may be caused by a complicated process in which the primary disturbance is localized in the perivascular connective tissue. The relationship between certain types of juvenile uveitis on the one hand and, on the other hand, rheumatic fever and rheumatoid arthritis in the young, are currently under investigation (Brockhurst).

Teaching is an important function of the Retina Foundation. In the laboratories for basic research, we have received a number of guests who came to familiarize themselves with special methods in biochemistry. Several members of our staff contribute to the teaching program of the Department of Ophthalmology at the Harvard Medical School. In the clinical field, young ophthalmologists have been trained and have later established retina clinics in their home city, such as New York, Baltimore, San Francisco, Parma (Italy), Lyon (France), and Buenos Aires (Argentina). In April 1954, a fellowship was created by the Retina Foundation for the training of young ophthalmologists in certain aspects of clinical eye research, and in the diagnosis and treatment of retinal conditions. It was awarded to Dr. Silvio von Pirquet, from Austria, who joined our laboratories for one year.

At the joint meetings of the clinical and the research staffs extremely useful discussions are taking place; they have become a strong stimulus for original thinking amongst clinicians overburdened with urgent problems of patient care. In return, such contacts also remind basic research workers, in a vivid fashion, of the fundamental usefulness and importance of their work to patients.

During the second half of the 19th century, the discovery of the ophthalmoscope gave ophthalmology an era of enormous development, as it permitted the ophthalmologist not only to see blinding lesions, located behind the lens, but it also helped considerably in the diagnosis of systemic diseases—particularly vascular and intracranial conditions. Having marked time for nearly 50 years, is ophthalmology due for a comeback? New techniques have opened possibilities for research in areas where it is a distinct advantage to work with the eye. Probing by the Retina Foundation's staff into some of these areas has raised challenging problems, which cannot be adequately solved unless many other investigators become similarly intersted. This would strengthen our effort and, we hope, help stimulate those research workers who explore the realms of connective tissue metabolism from other angles.

AMERICAN MEDICAL ASSOCIATION,
Chicago Ill., April 1, 1955.

Hon. LISTER HILL,
Chairman, Subcommittee on Health, Committee on Labor and Public Welfare, United States Senate, Washington, D. C.

DEAR MR. CHAIRMAN: I should like to take this opportunity on behalf of the American Medical Association to respectfully submit for your consideration our views concerning S. 849, 84th Congress, now pending before your committee.

We have previously stated to committees of the Congress our objections to the whole system of Federal subsidy unless the inauguration of a temporary program is necessary to meet a demonstrated emergency. We see no such situation in the area affected by S. 849. We feel very strongly that certain revenue sources should be left to the States and communities and that they should support welfare and educational projects within the framework of their own laws and customs. We see no profit in contributing money to the Federal Treasury and having a fraction of it filter back encumbered by numerous conditions imposed by a Federal administrator. Federal taxation can ultimately so deplete State and local revenue sources, and so dry up private funds, that institutions which have accepted Federal subsidy will have no other source of income and will become totally dependent on and subject to the will of a Federal administrator.

S. 849 is limited to direct grants for the construction of certain research facilities. We do not feel that it has been demonstrated that construction alone will materially improve research. The acceptance of a complete Federal subsidy for construction of facilities makes it only logical to accept another complete subsidy to defray the cost of operation of the facility so constructed, and yet another complete subsidy to produce the trained research workers to man it.

Further, S. 849 appears to leave selection of facilities to be subsidized entirely in the hands of applicants for the Federal grants and the administrator. We doubt the wisdom of a program which leaves States and local communities with no voice in the development of a planned and integrated system of laboratory and other research facilities.

While the association is wholly in accord with the desire to improve medical research which motivates this bill, we do not feel that a Federal construction subsidy will accomplish that purpose. Consequently, the board of trustees on March 19, 1955, voted to recommend against its favorable consideration by your committee.

Sincerely yours,

GEORGE F. LULL, M. D.,
Secretary and General Manager.

UNITED STATES SENATE,
COMMITTEE ON APPROPRIATIONS,
Washington 25, December 15, 1953.

MRS. OVETA CULP HOBBY,
Secretary of Health, Education, and Welfare,
Department of Health, Education, and Welfare,
Washington 25, D. C.

DEAR MRS. HOBBY: In an effort to determine the needs for additional medical research facilities throughout the United States the Senate Appropriations Committee desires specific information from institutions that have requested research construction grant funds for this purpose from the National Institutes of Health.

The information desired includes the following:

1. Brief description of present research facilities, both clinical and laboratory.
2. Description of needed research facilities. In what categorical disease(s)? Laboratory or clinical?
3. Estimate of cost. Is the proposed construction a part of another construction project or a separate one?
4. What funds are available now? What are the plans for fund raising?
5. How will additional facilities increase the productivity of the research program?
6. Is the research program being hampered by lack of facilities?
7. Outline of present research personnel. Will this staff be expanded if additional facilities become available?
8. How will funds be obtained for operating the new facilities?

It will be most helpful if you will have the National Institutes of Health staff obtain the above information from the present applicants for research construction grant funds together with such other data which may be useful in evaluating the needs.

Sincerely yours,

EDWARD J. THYE,
Chairman, Subcommittee on Labor-HEW.

DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE

PUBLIC HEALTH SERVICE

NATIONAL INSTITUTES OF HEALTH

TABULATION OF RESEARCH CONSTRUCTION NEEDS SUBMITTED BY APPLICANTS, JANUARY 1954

LEGEND

1. Present Facilities

Where information is available the area of present research facilities in square feet is given. In other cases the existing facilities are described in general terms.

2. Needed Facilities

The area of the needed facilities is given in square feet. Where detailed plans are not available, average per square foot cost has been used.

3. Amount Requested

The amount requested for research facilities is given. The cost of related construction such as for teaching is not included.

4. Financing

Part Funds Available.—The institution has available part of the money for the research facilities.

No Funds Available.—The institution has no funds available for the construction of research facilities.

Fund Campaign.—The applicant is conducting or planning a campaign to raise funds for general and/or research facilities.

Available for Related Facilities.—All or part of the funds are available for the construction of related facilities such as hospital or teaching facilities.

5. How Productivity of Research Program will be Increased

More Efficiency.—New facilities will increase productivity by making it possible for personnel to work more efficiently.

New Projects.—The institution will be able to undertake new projects and expand into new areas of research.

Attracting Personnel.—The applicant will be able to attract and retain capable research workers.

Animal Quarters.—The construction will make possible better use of animals in the research program.

Space for Present Personnel.—New facilities will permit present personnel to engage in research. Insufficient space is available for them at present.

Better Coordination.—New construction will make possible better coordination of laboratory work with clinical research or with related research programs.

6. How Research Is Being Hampered

Inadequate Animal Quarters.—Inadequate animal quarters are preventing the effective use of animals.

Facilities Used for Other Purposes.—Present facilities must be used for other purposes primarily—e. g., for teaching.

Program Limited.—Additional projects cannot be undertaken because of lack of facilities.

Crowding.—Crowding and antiquated facilities prevents personnel from working efficiently.

7. Research Personnel

Staff Part-time.—The research staff is composed of teaching or medical staff who devote part of their time to research.

Regular Staff and Research.—The regular teaching or hospital staff is supplemented by some full-time research personnel.

Full-time Research.—The entire staff devotes full time to research.

Expand Significantly.—When facilities become available, the research staff will be expanded significantly.

Little or No Increase.—Upon the completion of facilities it will not be necessary to add personnel.

8. How Operation of Additional Facilities Will Be Financed

No Additional Expense.—The new facilities will not entail increased operating costs.

Own Budget.—The additional cost will be met from the institution's regular budget or funds provided by state.

Part Outside.—Part of the additional cost will be obtained from outside sources—private or governmental.

All Outside.—All of the additional costs must be obtained from outside sources.

Blank spaces indicate the applicant furnished no information regarding this item. For full information see copy of correspondence submitted by applicant.

BEYOND POLIO: A GREAT TASK

[Article from Newsweek, April 25, 1955]

The world rejoiced. Everywhere, churches held special thanksgiving services, and everywhere, parents echoed Mrs. Ann Dann, a Detroit mother of five, who said simply: "God bless Dr. Salk." In Syracuse, N. Y., the traffic lights went red and traffic came to a dead halt, while bells rang out and sirens screamed. In Franklin Lakes, N. J., where all the schools had been closed and all public gatherings had been banned last year because of a polio epidemic, a terror was lifted.

It was the greatest news since V-J Day: Dr. Jonas E. Salk's vaccine for polio worked. The dread killer and crippler of children had finally been conquered.

"I like that," said 6-year-old Mary Kosloski of Memphis, Tenn., the 1955 polio-poster girl. Even the pro-Communist newspaper, Il Paese, in Rome was pleased.[1]

In the midst of the rejoicing, however, science sounded a sobering note. Polio might no longer be a menace, but the war against disease was far from won. Great battles still lay ahead: Some 10 million Americans suffer from heart disease, our biggest killer, and more than 794,000 die of it each year. Twenty years ago, it was responsible for fewer than one-third of all deaths. Today, it causes more than 1 death out of every 2.

[1] At President Eisenhower's direction, Secretary of State John Foster Dulles announced that United States know-how to make the vaccine would be sent to 75 other nations, including the Soviet Union.

SUMMARY OF RESEARCH CONSTRUCTION NEEDS SUBMITTED BY APPLICANTS, JANUARY, 1954

NATIONAL INSTITUTES OF HEALTH

(SEE PRECEDING LEGEND FOR EXPLANATION OF COLUMN HEADINGS)

	1	2	3	4 Financing				5 Productivity						6 Hampered By				7 Personnel					8 Operating Cost				
STATE AND INSTITUTION	Present Facilities (Area in Sq. Ft.)	Needed Facilities (Area in Sq. Ft.)	Amount Requested	Part Funds Avail.	No Funds Avail.	Fund Campaign	Avail. for Related Fac.	More Efficiency	New Projects	Attracting Pers.	Animal Quarters	Space for Pres. Pers.	Better Coordination	Inadq. Animal Quart.	Fac. used other Purp.	Program Limited	Crowding	Staff Part-time	Reg. Staff & Res.	Full-time Research	Expand Significantly	Little or no Increase	No Add. Expense	Own Budget	Part Outside	All Outside	
ALABAMA																											
MED. COLL. OF ALA.		20,000	$ 700,000		x				x							x									x		
UNIV. OF ALA., SCH. OF DENTISTRY	3,000 (10 LABS)	7,500	200,000		x				x							x			x		x			x			
ARKANSAS																											
UNIV. OF ARK.	(A)	30,000	1,000,000				x	x	x	x		x			x	x		x			x			x			
CALIFORNIA																											
CALIF. INST. OF TECH.	115,000	92,000	1,500,000(B)			x		x	x								x		x		x				x		
CEDARS OF LEBANON HOSP.	15,000	RECONSTRUCTION	10,000		x			x			x	x		x			x		x			x			x		
CHILDREN'S HOSP. SOC. OF LOS ANGELES	2 BLDGS., & 50 BEDS 20,000(C)	EQUIPMENT	100,000(C)	x					x		x			x		x			x								
COLL. OF MED. EVANGELISTS	(D)	52,000	1,725,000		x			x	x					x		x	x		x		x			x			
COLL. OF OSTEOPATHIC PHYS. & SURG.	NONE(E)	90,000	275,000		x						x	x	x		x			x			x			x			
COLL. OF PHYS. & SURG. OF SAN FRANCISCO (DENTAL)	753	2,250	26,500		x							x			x			x			x					x	
LOS ANGELES COUNTY HOSP.	7,500(F)	40,450 (REMODELING)	40,000(F)	x					x						x				x						x		
STANFORD UNIV.	(G)	100,000	3,750,000					x				x			x	x			x						x		
UNIV. OF CALIF., SAN FRANCISCO	101,000	151,000	5,149,800				x	x				x			x		x		x			x			x		
UNIV. OF CALIF., SCH. OF DENTISTRY	(H)	4,000	120,000				x		x					x		x			x						x		
UNIV. OF SOUTHERN CALIF.	4,500	11,350	500,000		x			x					x		x	x			x								x
COLORADO																											
PENROSE CANCER HOSP.	GENERAL HOSP.	57,000	1,000,000(I)	x															x								
UNIV. OF COLORADO	25,000(J)	75,200	1,350,000		x								x	x			x		x						x		
CONNECTICUT																											
YALE UNIV.	433,000	67,000(K)	2,595,000		x			x	x	x						x			x						x		
DISTRICT OF COLUMBIA																											
GEORGETOWN UNIV. - MEDICAL	7,600(L)	32,600(K)	1,137,500		x	x		x				x			x				x						x		
GEORGETOWN UNIV. - DENTAL	300(L)	2,600(K)	116,700		x	x							x		x			x								x	
HOWARD UNIV. - DENTAL	150	13,500	475,000		x			x				x			x			x				x		x			
FLORIDA																											
UNIV. OF FLORIDA	6,250(M)	85,000	3,000,000				x		x	x						x			x		x				x		
UNIV. OF MIAMI	NONE(N)	& 128 BEDS 65,000	250,000		x			x	x						x			x			x				x		
GEORGIA																											
EMORY UNIV. - MEDICAL	72,000	52,000(O)	927,000		x		x		x		x				x			x			x				x		
EMORY UNIV. - DENTAL	9,700(P)	25,000	500,000		x		x				x				x			x			x			x			
MED. COLL. OF GEORGIA	(Q)	(Q)	75,000		x		x					x						x							x		
ILLINOIS																											
CHICAGO COLL OF OSTEOPATHY	500	5,100	75,000			x	x		x		x				x			x			x						x
LOYOLA UNIV. - DENTAL	400	(R)	25,000			x					x				x			x			x				x		
MICHAEL REESE HOSP.	(S)	40,000	1,450,000		x		x		x						x	x				x	x				x		
STRITCH SCH. OF MED.	(T)	3,700	200,500		x	x	x		x	x		x			x	x			x			x					x
UNIV. OF CHICAGO	80,365 & 7 FLS. BASIC SCIENCE	& 6 BEDS 177,000	5,160,000		x	x		x		x				x		x			x						x		
UNIV. OF ILL. - MEDICAL	(U)	(U)	850,000	x				x				x					x									x		
UNIV. OF ILL. - DENTAL	(V)	(V)	35,758		x			x							x			x			x			x				
INDIANA																											
INDIANA UNIV. MED. CENTER	410(W)	13,774	750,000		x				x							x			x		x				x		
INDIANA UNIV. - DENTAL	1,200	57,000 & REMODELING	240,590		x	x		x									x	x				x		x			

(A) NEW MEDICAL CENTER UNDER CONSTRUCTION WILL PROVIDE ADEQUATE TEACHING FACILITIES BUT LITTLE SPACE FOR RESEARCH.
(B) TOTAL COST $2,500,000; $1,000,000 IS AVAILABLE.
(C) 35,000 SQ. FT. ADDITIONAL WILL BE AVAILABLE IN NEW BUILDING. $800,000 IS AVAILABLE FOR BUILDING, BUT NO FUNDS FOR BASIC EQUIPMENT.
(D) ADEQUATE LABORATORY FACILITIES IN BASIC SCIENCE DEPARTMENT AT LOMA LINDA; ANTIQUATED CLINICAL FACILITIES IN LOS ANGELES.
(E) NO SEPARATE FACILITIES AVAILABLE; RESEARCH IS CONDUCTED IN REGULAR TEACHING OR HOSPITAL FACILITIES.
(F) 7,500 SQ. FT. IN REMODELED JAIL WARD BUILDING. OTHER MISCELLANEOUS FACILITIES ARE AVAILABLE. TOTAL COST OF REMODELING $47,500.
(G) STANFORD MEDICAL SCHOOL IS TO BE MOVED FROM SAN FRANCISCO TO PALO ALTO. FACILITIES IN PALO ALTO ARE SCATTERED AND INADEQUATE; NEW MEDICAL SCHOOL FACILITIES WILL COST $15-20 MILLION.
(H) ADEQUATE LABORATORY FACILITIES WILL BE AVAILABLE IN SHORT TIME; ANIMAL QUARTERS AND CLINICAL FACILITIES ARE NEEDED.
(I) TOTAL COST $2,000,000.
(J) DOES NOT INCLUDE SCATTERED FACILITIES IN VARIOUS DEPARTMENTS.
(K) DOES NOT INCLUDE SOME REMODELING.
(L) DOES NOT INCLUDE CLINICAL OR OTHER SCATTERED SPACE.
(M) THE CONSTRUCTION OF A NEW MEDICAL SCHOOL HAS BEEN AUTHORIZED BY THE STATE.
(N) NO LABORATORY BUT SOME CLINICAL FACILITIES IN HOSPITAL.
(O) IN ADDITION REMODELING IN ANATOMY AND PHYSIOLOGY BUILDINGS.
(P) THIS WILL BE LOST IN NEAR FUTURE.
(Q) ADDITIONAL SPACE IS BEING PROVIDED BY STATE BUT PERMANENT EQUIPMENT IS NEEDED.
(R) RENOVATION AND EQUIPMENT.
(S) SEPARATE RESEARCH BUILDING PLUS SPACE IN OTHER BUILDINGS.
(T) PRESENT LIMITED FACILITIES ARE LOCATED IN MEDICAL SCHOOL; PROGRAM IS UNDERWAY TO BUILD NEW TEACHING FACILITIES.
(U) THE UNIVERSITY HAS MOVED INTO NEW TEACHING FACILITIES; AREA IS AVAILABLE FOR SPECIALIZED RESEARCH; REMODELING OF VACATED SPACE AT COST OF $960,000.
(V) SPACE IS ADEQUATE BUT PERMANENT RESEARCH EQUIPMENT IS NEEDED.
(W) THIS IS LABORATORY SPACE FOR LABORATORY PSYCHIATRIC RESEARCH; IN addition THERE IS A SMALL CLINICAL SUITE.

61998 O - 55(Face p. 96) No. 1

SUMMARY OF RESEARCH CONSTRUCTION NEEDS SUBMITTED BY APPLICANTS, JANUARY, 1954

NATIONAL INSTITUTES OF HEALTH

STATE AND INSTITUTION	1 Present Facilities (Area in sq. ft.)	2 Needed Facilities (Area in sq. ft.)	3 Amount Requested	4 Financing: Part Funds Avail.	4 Financing: No Funds Avail.	4 Financing: Fund Campaign	4 Financing: Avail. for Related Fac.	5 Productivity: More Efficiency	5 Productivity: New Projects	5 Productivity: Attracting Pers.	5 Productivity: Animal Quarters	5 Productivity: Space for Pres. Pers.	5 Productivity: Better Coordination	6 Hampered by: Inadq. Animal Quart.	6 Hampered by: Fac. used other purp.	6 Hampered by: Program Limited	6 Hampered by: Crowding	7 Personnel: Staff Part-time	7 Personnel: Reg. Staff & Res.	7 Personnel: Full-time Research	7 Personnel: Expand Significantly	7 Personnel: Little or no Increase	8 Operating Cost: No Add. Expense	8 Operating Cost: Own Budget	8 Operating Cost: Part Outside	8 Operating Cost: All Outside
Iowa																										
Des Moines Still College	(A)	10,000	$ 250,000		X	X							X			X		X			X			X		
State Univ. of Iowa-Medical	(B)	77,000	2,707,125	X				X	X							X			X					X		
State Univ. of Iowa-Dental	(C)	7,500	220,000		X				X							X		X				X		X		
Kansas																										
The Menninger Fdn.	4,500	20,000	600,000		X	X		X	X							X	X	X			X			X		
Univ. of Kansas	(D)	23,000	800,000		X		X			X			X			X			X		X			X		
Kentucky																										
Univ. of Louisville-Medical	19,450	30,000(E)	1,055,000		X		X		X			X		X			X	X								X
Univ. of Louisville-Dental	None	(F)	59,110		X				X					X	X			X				X			X		
Louisiana																										
Loyola Univ. - Dental	None	7,000	250,000		X				X			X			X			X								
Tulane Univ.	30,000	80,030	2,455,770		X	X			X							X			X		X				X		
Maine																										
R. B. Jackson Mem. Lab.	43,681(G)	9,000	238,000		X			X		X			X			X				X	X				X		
Maryland																										
Sinai Hosp. of Baltimore	6,000	30,000	750,000		X	X	X					X				X	X		X		X					X
Massachusetts																										
Austen Riggs Center	5,000(B)	10,000	250,000		X	X		X	X				X			X	X		X		X					X	
Children's Medical Center	(H)	42,000	2,000,000		X	X		X	X				X			X	X		X							X	
State Dept. Mental Health	(I)	20,000	700,000		X		X	X	X							X	X		X		X				X		
Forsyth Dental Infirmary		Equipment	8,460																							
Harvard Medical School	(J)	100,000	3,500,000		X	X		X		X			X			X			X			X	X				
Harvard Univ. - Dental	6,000	14,000	485,000		X					X		X	X			X			X		X					X	
House of Good Samaritan	13,300	2,000	66,000		X				X		X	X	X			X				X		X		X			
Tufts Coll. Med. Sch.	44,050	30,000(K)	900,000		X	X		X			X					X	X		X							X	
Tufts Coll. Dental Sch.	3,000	(F)	13,300		X				X							X		X				X	X				
Worcester Foundation	(L)	5,600	55,000(L)	X				X		X			X			X				X	X					X	
Michigan																										
Univ. of Detroit - Dental	1,500	(F)	226,592		X		X	X					X			X	X								X	
Univ. of Michigan-Dental	5,300	25,000	500,000		X	X		X			X	X			X	X	X					X			X	
Minnesota																										
Univ. of Minnesota	25,200	70,000(E)	2,150,000		X			X			X		X	X		X			X		X				X	
Mississippi																										
Univ. of Mississippi	(M)	17,000	500,000		X		X		X			X			X							X				X	
Missouri																										
Kans. City Coll. of Osteop. and Surg.	600	15,000	250,000		X	X		X					X			X			X		X					X	
Kirksville Coll. of Osteop. and Surg.	7,842(N)	10,000(N)	150,000		X	X			X			X				X			X				X				
St. Louis Univ. Inst. of Biophysics	900	2,000	160,000		X			X								X			X		X					X	
St. Louis Univ. - Dental	1,600	600 & Equipment	50,000		X			X			X			X		X			X				X				
Univ. of Missouri	(O)	43,035	1,500,000		X		X						X			X			X		X					X	
Wash. Univ. - Medical	(P)	60,000	2,049,000		X			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Wash. Univ. - Dental	None (Q)	70,000	250,000		X	X		X				X				X	X		X		X					X	
Nebraska																										
Creighton Univ. Med. Sch.	2,735	12,000	750,000(R)	X			X	X	X							X			X						X		
New York																										
Albert Einstein Coll.	None(S)	60,000	2,156,000	X			X	X			X	X				X			X		X					X	
Columbia Univ. Coll. of Phys. & Surg.	(T)	(T)	1,100,000		X			X						X		X			X				X				
Columbia Univ. Coll. of Phys. & Surg. - Dental	200(U)	(U)	750,000		X			X	X		X		X	X		X	X		X							X	
Cornell Univ. Med. Coll.	(V)	28,000	900,000		X			X								X										X	
Eastman Dental Dispensary	800	2,600	37,500		X							X				X			X		X				X		
Montefiore Hospital	23,000	31,000	900,000(W)	X				X		X		X				X			X		X					X	

(A) Laboratories for physiology and bacteriology are small but well equipped.
(B) Facilities are antiquated and very inadequate.
(C) Located in sub-basement of building constructed in 1915.
(D) Adequate laboratory facilities but inadequate clinical space.
(E) Some remodeling is needed in addition to new construction.
(F) Renovation and equipment.
(G) Additional animal facilities at Hamilton Station.
(H) Modern laboratory facilities for cancer; other facilities are scattered throughout the Center.
(I) Research facilities are located in 5 of 17 state hospitals.
(J) Laboratory facilities located in various medical school buildings; clinical in affiliated hospitals.
(K) Space in existing building to be renovated.
(L) Existing laboratories are in converted residence; total cost of new addition $140,000.
(M) A new medical school is being constructed but no special research facilities are included.
(N) 20 rooms in 3 buildings devoted to research - many other areas devoted in part to research or supportive activities - either by addition to present buildings or construction of new building.
(O) New clinical facilities, hospital and medical center under construction - State appropriated $13,500,000 - no provision for research facilities.
(P) Extensive clinical and laboratory facilities, but deficiencies in several areas. No answers provided for 5,6,7,8 above.
(Q) No separate facilities available - additional space and equipment required for all departments.
(R) Between 1 and ½ million dollars collected for construction of general teaching facilities - funds insufficient for research facilities.
(S) Ten-story teaching and research building under construction at estimated cost of $10,000,000, approximately one-half of sum available. Additional research facilities required.
(T) Columbia University has adequate research facilities in many areas, but there is a deficiency in animal quarters, cardiovascular research and neurology. Much of proposed work is remodeling.
(U) One room available - additional research carried on in other areas - new construction and remodeling of animal quarters.
(V) Research laboratories are in medical school and clinical facilities in New York Hospital.
(W) Total cost $1,500,000 - $250,000 available.

SUMMARY OF RESEARCH CONSTRUCTION NEEDS SUBMITTED BY APPLICANTS, JANUARY, 1954

NATIONAL INSTITUTES OF HEALTH

STATE AND INSTITUTION	1 PRESENT FACILITIES (AREA IN SQ. FT.)	2 NEEDED FACILITIES (AREA IN SQ. FT.)	3 AMOUNT REQUESTED	4 FINANCING: Part Funds Avail.	4 FINANCING: No Funds Avail.	4 FINANCING: Fund Campaign	4 FINANCING: Avail. for Related Fac.	5 PRODUCTIVITY: More Efficiency	5 PRODUCTIVITY: New Projects	5 PRODUCTIVITY: Attracting Pers.	5 PRODUCTIVITY: Animal Quarters	5 PRODUCTIVITY: Space for Pres. Pers.	5 PRODUCTIVITY: Better Coordination	6 HAMPERED BY: Inadeq. Animal Quart.	6 HAMPERED BY: Fac. used other Purp.	6 HAMPERED BY: Program Limited	6 HAMPERED BY: Crowding	7 PERSONNEL: Staff Part-time	7 PERSONNEL: Reg. Staff & Res.	7 PERSONNEL: Full-time Research	7 PERSONNEL: Expand Significantly	7 PERSONNEL: Little or no Increase	8 OPERATING COST: No Add. Expense	8 OPERATING COST: Own Budget	8 OPERATING COST: Part Outside	8 OPERATING COST: All Outside
NEW YORK (CONT'D.)																										
NEW YORK MEDICAL COLLEGE	(A)	11,000	$ 400,000		x							x				x			x						x	
N.Y.U. - BELLEVUE MED. CTR.	(B)	22,480 & CLINICAL	2,305,500(B)	x					x						x				x							x
N.Y.U. COLLEGE - DENTAL	(C)	(C)	750,000	x		x		x				x				x			x					x		
PUB. HLTH. RES. INST. OF	20,000	(D)	4,000,000(D)		x	x				x			x			x			x					x		
CITY OF NEW YORK, INC. SLOAN KETTERING INST. FOR	(E)	2,500	200,000		x			x												x				x		
CANCER RESEARCH STATE UNIV. N.Y. - MEDICAL	(F)	(F)	REMODELING 1,000,000(F)	x						x		x				x			x					x		
UNION UNIV., ALBANY MED. COLL.	--	20,000	695,000		x				x							x		x								
UNIV. BUFFALO MED. SCH.	(G)	5,796(H)	143,500(H)		x				x	x				x		x			x			x				x
UNIV. OF ROCHESTER	(H)	33,000	1,163,822		x			x	x				x				x		x			x			x	
NORTH CAROLINA																										
DUKE UNIV.	70,000	50,000	1,512,900		x			x				x				x			x			x			x	
UNIV. OF NORTH CAROLINA	(I)	25,000	885,000		x				x	x					x	x			x		x					
SCH. OF PUB. HLTH. UNIV. OF NORTH CAROLINA SCH. OF DENTISTRY	(J)	2,000 & REMODELING	210,000		x				x		x	x		x		x			x		x				x	
OHIO																										
OHIO STATE UNIV. - MEDICAL	12,720(K)	80,000	3,200,000		x		x	x		x						x	x				x			x		
OHIO STATE UNIV. - DENTAL	1,800	21,000	750,000		x					x				x					x		x					x
UNIV. OF CINCINNATI	72 BEDS	19,000	660,000		x			x	x				x			x		x				x			x	
WESTERN RESERVE U. - MEDICAL	1,500	10,000	363,000		x							x		x	x			x								
CITY HOSP. OF CLEVELAND	3,400	3,000	105,750		x			x					x			x			x		x				x	
UNIV. HOSP. OF CLEVELAND	(L)	47,000	1,665,000		x		x	x													x					
WESTERN RESERVE - DENTAL	4,000	10,000	500,000		x				x			x				x		x			x				x	
OKLAHOMA																										
OKLA. MED. RES. FDN.	53,000	18,000	645,000		x				x		x		x	x		x				x						x
UNIV. OF OKLAHOMA	(M)	11,000(N)	1,290,000		x	x			x		x			x		x			x		x			x		
OREGON																										
UNIV. OF OREGON - DENTAL	1,200(O)	9,000(O)	123,700		x		x		x	x	x	x		x			x	x			x			x		
PENNSYLVANIA																										
HAHNEMANN MED. COLL.	(P)	27,400	360,000		x	x	x	x			x		x	x	x		x	x			x			x		x
JEFFERSON MED. COLL.	1,500	3,500	295,000		x				x	x						x				x	x			x		
PENNSYLVANIA GENERAL HOSP.	200(Q)	13,000	442,000		x			x				x	x		x					x	x			x		x
UNIV. OF PENN. - MEDICAL	(R)	60,000	1,500,000		x			x					x				x			x	x			x		
UNIV. OF PENN. - DENTAL	2,400	6,500	250,000		x			x				x			x		x			x		x			x		
UNIV. OF PITTSBURGH-DENTAL	1,400	& RENOVATION RENOVATION & EQUIPMENT	52,375		x			x	x	x						x				x		x				x	
WOMAN'S MEDICAL COLLEGE	768 & CLINICAL	7,032	237,500		x			-	-	-	-	-	-	-	-	-	-			x		-	-			x	
SOUTH CAROLINA																										
MED. COLL. OF SO. CAROLINA	700(S)	8,000	250,000		x			x				x				x	x			x		x					x
SOUTH DAKOTA																										
UNIV. OF SOUTH DAKOTA	10,000	8,000	225,000		x				x			x			x	x		x				x			x		
TENNESSEE																										
MEHARRY MED. COLL.	16,000	4,400	132,000		x			x	x	x						x				x					x		
MEHARRY MED. COLL. - DENTAL	(T)	4,600	138,000		x				x		x			x		x					x				x		
UNIV. OF TENNESSEE	17,000	40,000	775,000(U)	x				x	x			x				x				x	x		x				
VANDERBILT UNIV. SCH. MED.	(V)	(V)	442,000		x			x	x							x				x		x			x		
TEXAS																										
BAYLOR UNIV. COLL. OF MED.	10,000(W)	8,500	250,000(W)		x						x			x		x				x		x					x
BAYLOR UNIV. COLL. OF DENT.	(X)	EQUIPMENT	300,000(X)		x			x								x				x	x						
UNIV. OF TEXAS, M.D. ANDERSON HOSP. FOR CANCER RES.	80,000	13,500	475,000		x			x									x			x	x			x		
UNIV. OF TEXAS - SOUTHWESTERN MED. SCH.	(Y)	50,000	1,842,000		x			x				x				x				x	x			x		

(A) ENTIRE 9TH FLOOR OF COLLEGE DEVOTED TO RESEARCH. REQUIRE ADDITION TO 9TH FLOOR TO EXPAND LABORATORY FACILITIES.
(B) TWO BUILDINGS OUTMODELED AND INADEQUATE IN SIZE. SOME LABORATORIES HOUSED TEMPORARILY IN RENTED BUILDING. CONSTRUCTION OF TWO NEW BUILDINGS COSTING $23,629,500 - $9,167,260 OF WHICH IS REQUIRED FOR COMPLETION.
(C) FACILITIES SPREAD THROUGHOUT MANY DEPARTMENTS - RENOVATION OF EXISTING BUILDING NEEDED. COST $850,000 OF WHICH $100,000 AVAILABLE.
(D) SPACE TO HOUSE DIVISION DEVOTED TO CHRONIC DISEASES. INSTITUTE SHARE OF COMBINED PROJECT COSTING $8,000,000.
(E) NINE GENERAL RESEARCH DIVISIONS, SUBDIVIDED INTO 39 LABORATORY SECTIONS.
(F) FACILITIES GROSSLY INADEQUATE, PARTICULARLY FOR CLINICAL SCIENCES. ADDITION TO BASIC SCIENCES BUILDING, $5,000,000, AUTHORIZED BY THE STATE. $1,000,000 NEEDED FOR CLINICAL RESEARCH IN CHRONIC DISEASES AS PART OF $12,000,000 PROJECT.
(G) LABORATORY FACILITIES LOCATED IN NEWLY COMPLETED SCIENCE BUILDING - CLINICAL RESEARCH CARRIED ON IN 4 DIFFERENT LOCATIONS. ADDITION NEEDED FOR CARDIOVASCULAR RESEARCH. NEW SCIENCE BUILDING COSTING $4,500,000 PROVIDED FROM PRIVATE SOURCES.
(H) RESEARCH CARRIED ON IN WIDELY SEPARATED AREAS. LABORATORY FACILITIES FOR CANCER ARE ADEQUATE.
(I) PUBLIC HEALTH BUILDING CONSTRUCTION RECOMMENDED TO LEGISLATURE. INADEQUATE SPACE AND EQUIPMENT AVAILABLE.
(J) SPACE USED JOINTLY WITH OTHER DEPARTMENTS. SOME UNFINISHED SPACE IS AVAILABLE.
(K) IN ADDITION THERE ARE SCATTERED FACILITIES IN OLD MEDICAL SCHOOL BUILDINGS.
(L) ADDITIONAL FACILITIES ARE BEING PROVIDED FOR PSYCHIATRIC DIVISION. SEVEN BEDS FOR PEDIATRIC UNIT.
(M) LABORATORY FACILITIES IN BASIC SCIENCES ARE ADEQUATE. CLINICAL AND ANIMAL FACILITIES ARE LACKING.
(N) IN ADDITION TO NEW SPACE, EXTENSIVE REMODELING AND EQUIPMENT ARE NEEDED.
(O) PRESENT DENTAL SCHOOL BUILDING MUST BE VACATED. PART OF PROPOSED SPACE WILL BE COMPLETED BY STATE.
(P) PRESENT FACILITIES ARE SCATTERED IN VARIOUS MEDICAL SCHOOL BUILDINGS. NO FACILITIES FOR CLINICAL RESEARCH.
(Q) RESEARCH IS ALSO CONDUCTED IN SPACE USED FOR OTHER ACTIVITIES. CLINICAL FACILITIES ARE GOOD.
(R) PRESENT FACILITIES ARE IN BASEMENT AND ARE UNSUITABLE FOR RESEARCH.
(S) IN ADDITION THERE WILL BE CLINICAL FACILITIES FOR CARDIOVASCULAR RESEARCH IN NEW HOSPITAL.
(T) ONE SMALL AREA FOR ORAL PATHOLOGY. CONSTRUCTION OF LABORATORY SPACE, ANIMAL QUARTERS AND EQUIPMENT NEEDED.
(U) STATE HAS PROVIDED $6,300,000 FOR NEW CONSTRUCTION AND ALTERATION OF EXISTING BUILDINGS. OF THIS $2,400,000 HAS BEEN SPENT ON RESEARCH FACILITIES. MAY BE ABLE TO CONSERVE FROM $275,000 TO 300,000 FOR EXPANSIONS.
(V) CLINICAL AND LABORATORY FACILITIES AVAILABLE IN SEVERAL BUILDINGS. PROPOSED WORK IS LARGELY RENOVATION.
(W) DEVOTED TO ANIMAL AND OPERATING ROOMS - ADDITIONAL RESEARCH AND CLINICAL FACILITIES AVAILABLE IN OTHER AREAS. NEEDED CLINICAL FACILITIES BEING PROVIDED BY CONSTRUCTION OF 750 BED HOSPITAL.
(X) RESEARCH FACILITIES ADEQUATE. NEED STRICTLY SCIENTIFIC AND LABORATORY EQUIPMENT. $340,000 AVAILABLE TO DEFRAY PART OF BUILDING COST - NO FUNDS AVAILABLE FOR EQUIPMENT.
(Y) NO CLINICAL RESEARCH FACILITIES. LABORATORY RESEARCH CARRIED ON IN TEMPORARY BUILDINGS. BUILDING TO HOUSE LABORATORY FACILITIES NEEDED.

SUMMARY OF RESEARCH CONSTRUCTION NEEDS SUBMITTED BY APPLICANTS, JANUARY, 1954

NATIONAL INSTITUTES OF HEALTH

STATE AND INSTITUTION	1	2	3	4 FINANCING				5 PRODUCTIVITY						6 HAMPERED BY				7 PERSONNEL					8 OPERATING COS				
	PRESENT FACILITIES (AREA IN SQ. FT.)	NEEDED FACILITIES (AREA IN SQ. FT.)	AMOUNT REQUESTED	PART FUNDS AVAIL.	NO FUNDS AVAIL.	FUND CAMPAIGN	AVAIL. FOR RELATED FAC.	MORE EFFICIENCY	NEW PROJECTS	ATTRACTING PERS.	ANIMAL QUARTERS	SPACE FOR PRES. PERS.	BETTER COORDINATION	INADQ. ANIMAL QUART.	FAC. USED OTHER PURP.	PROGRAM LIMITED	CROWDING	STAFF PART-TIME	REG. STAFF & RES.	FULL-TIME RESEARCH	EXPAND SIGNIFICANTLY	LITTLE OR NO INCREASE	NO ADD. EXPENSE	OWN BUDGET	PART OUTSIDE	ALL OUTSIDE	
VERMONT																											
UNIV. OF VERMONT	(A)	BUILDING(A)	$2,000,000		X			X		X		X				X	X	X			X				X		
VIRGINIA																											
MED. COLL. OF VIRGINIA	(B)	58,600	1,253,000(B)	X				X								X			X		X				X		
MED. COLL. OF VIRGINIA, SCH. OF DENTISTRY	(C)	(C)	35,000		X			X				X													X		
UNIV. OF VIRGINIA	450(D)	4,200	127,000(D)		X				X				X			X			X			X			X		
WASHINGTON																											
TUMOR INST. OF THE SWEDISH HOSPITAL	15,000	5,500	163,000(E)	X		X			X		X			X		X						X			X		
U. OF WASHINGTON	(F)	80,000(F)	2,900,000(F)	X							X		X			X			X		X				X		
WEST VIRGINIA																											
WEST VIRGINIA UNIV.	(G)	REBUILDING(G)	1,000,000(G)	X						X		X				X	X		X					X			
WISCONSIN																											
MARQUETTE UNIV. SCH. MED.	172,342	6,400	160,000(H)	X							X			X					X			X			X		
MARQUETTE UNIV. SCH. DENT.	(I)	25,000(I)	840,550	X		X		X	X	X						X			X							X	
PREVIOUS REQUESTS			47,085,312																								
TOTAL			154,296,214																								

(A) TWO ANTIQUATED BUILDINGS DEVOTED TO RESEARCH AND TEACHING FACILITIES. SOME RESEARCH CARRIED ON IN ADJACENT HOSPITALS. NEED A NEW COLLEGE OF MEDICINE BUILDING CONTAINING RESEARCH FACILITIES, CLINICAL AND PRECLINICAL, AND COURSE SPACE FOR TEACHING.

(B) FACILITIES SCATTERED THROUGHOUT SEVERAL HOSPITALS, CLINICS AND LABORATORIES. NEED A NEW BUILDING TO HOUSE RESEARCH LABORATORIES. FUNDS AVAILABLE TO CONSTRUCT ONLY THE PSYCHIATRIC AND SURGICAL WING UNIT NOW UNDER CONSTRUCTION.

(C) NEW DENTAL BUILDING EQUIPPED FOR DENTAL RESEARCH. NEED FUNDS FOR COMPLETION OF AN UNFINISHED AREA TO PROVIDE CLINIC FOR GRADUATE STUDY AND RESEARCH.

(D) POTENTIAL FACILITIES FOR CLINICAL RESEARCH IN 40-BED WARD FOR PSYCHIATRIC PATIENTS AND LARGE OUTPATIENT DEPARTMENT.

(E) RECENTLY COMPLETED CONSTRUCTION PROGRAM AND EQUIPMENT COSTING APPROXIMATELY $450,000. NO FUNDS AVAILABLE FOR FACILITIES REQUESTED.

(F) PRESENT HEALTH AND SCIENCE BUILDING HAS COMPLETE RESEARCH AND TEACHING FACILITIES FOR BASIC SCIENCES, BUT VERY CRAMPED AND INCOMPLETE FACILITIES FOR CLINICAL SCIENCES. CONSTRUCTION OF UNIT #1 OF NEW UNIVERSITY TEACHING AND RESEARCH HOSPITAL UNDER WAY. NEED RESEARCH FACILITIES IN CONNECTION WITH NEW CONSTRUCTION.

(G) OUTMODELED AND RESTRICTED RESEARCH SPACE FOR BASIC SCIENCE. MINIMUM AMOUNT AVAILABLE FOR CLINICAL RESEARCH. REQUIRE REBUILDING OF FACILITIES IN CONNECTION WITH 4½ MILLION DOLLAR CONSTRUCTION OF NEW MEDICAL CENTER.

(H) REMODELING AND EXPANSION OF ANIMAL QUARTERS. ALMOST $1,000,000 HAS BEEN SPENT FOR BUILDING PROGRAM.

(I) FACILITIES AVAILABLE IN SEVERAL AREAS. REQUIRE NEW ADDITION TO SCHOOL OF DENTISTRY AND REMODELING OF PRESENT BUILDINGS TO PROVIDE RESEARCH LABORATORIES AND MORE ADEQUATE FACILITIES.

SUMMARY OF RESEARCH CONSTRUCTION NEEDS SUBMITTED BY APPLICANTS, JANUARY 1954

NATIONAL INSTITUTES OF HEALTH

STATE AND INSTITUTION	1	2	3	4	5	6	7	8
	PRESENT RESEARCH FACILITIES	NEEDED RESEARCH FACILITIES	NEEDED TEACHING FACILITIES	FINANCING	PRODUCTIVITY	NUMBER PER DAY	TRANSPORTATION	OPERATING COST
	(Area in sq. ft.)	(Area in sq. ft.)						

The cost is staggering: Industry loses the work of 653,000 men annually because of heart-disease disabilities; annual compensation and pensions to veterans total $168 million.

Important progress has been made in heart and blood-vessel surgery; finding drugs to control high blood pressure; and preventing rheumatic heart disease (which kills 20,000 a year) by treating rheumatic fever with antibiotics. But cause and cure of such major villains as arteriosclerosis (hardening of the arteries), responsible for half of all heart-disease deaths, remain a mystery.

Cancer, our No. 2 killer, took 128,000 lives in 1933, 224,000 in 1953, and, at the present rate of increase, would kill 415,000 in the year 2000. Of the present United States population, 50 million will probably acquire cancer and 25 million will die of it. Estimated cost: $175 million a year in hospital bills, $12 billion annually from loss of productivity of the afflicted.

Better surgery and radiation techniques and earlier diagnosis are curing more cancers than ever, but the total "breakthrough" that is the hope of cancer sufferers and researchers is still to come.

The most dramatic possibility: Development of chemicals, taken by mouth or injection, that would kill cancer cells anywhere in the body. Will such agents be found? Said one top Government research administrator last week: "We have some exciting leads."

Mental illness is rated the biggest health problem by many experts. More than half of all United States hospital beds are occupied by mental patients. Their care costs more than $1 billion a year in public funds alone, and the load is rapidly increasing. Some States spend one-third of their budgets on the mentally ill.

In no other branch of medicine is trained help so scarce or more urgently needed (intensive therapy, applied during a patient's first year of hospitalization, has brought excellent results, but many hospitals lack staff to administer it). New drugs to calm patients are giving psychiatrists a better chance to work, but the real problem is that nobody yet knows much about causes and mechanics of the mind's malfunctions.

Each year, the arsenal of medicine becomes more effective against these usually slow-moving, long-lasting afflictions and such others as arthritis and rheumatism (10 million victims; cost of their medical care $100 million a year). But it took the Salk vaccine to light up the long road ahead.

(Whereupon the committee adjourned.)

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