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ORGANIZATION OF PUBLIC HEALTH SERVICE

HEARINGS

BEFORE A

SUBCOMMITTEE OF THE
COMMITTEE ON
INTERSTATE AND FOREIGN COMMERCE
HOUSE OF REPRESENTATIVES

EIGHTY-EIGHTH CONGRESS

FIRST SESSION

ON

H.R. 2410

A BILL TO AMEND THE PUBLIC HEALTH SERVICE ACT TO PROVIDE GREATER FLEXIBILITY IN THE ORGANIZATION OF THE SERVICE, AND FOR OTHER PURPOSES

APRIL 23, 24, 25, 26; MAY 14, 15; JUNE 10, 11, 1963

Printed for the use of the
Committee on Interstate and Foreign Commerce

AUTHENTICATED
U.S. GOVERNMENT
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ORGANIZATION OF PUBLIC HEALTH SERVICE

TUESDAY, APRIL 23, 1963

House of Representatives,
Subcommittee on Public Health and Safety
of the Committee on Interstate and Foreign Commerce,
Washington, D.C.

The subcommittee met at 10 a.m., pursuant to call, in the caucus room, Cannon Office Building, Hon. Kenneth Roberts (chairman of the subcommittee) presiding.

Mr. Roberts. The subcommittee will please be in order.

This morning, the subcommittee on Public Health and Safety is beginning hearings on H.R. 2410, entitled "A bill to amend the Public Health Service Act to provide greater flexibility in the organization of the U.S. Public Health Service, and for other purposes."

The bill was introduced by Representative Oren Harris, chairman of the full committee, at the request of the administration. The bill would grant to the Surgeon General broad powers to reorganize the Public Health Service.

During the first days of hearings, the subcommittee will attempt to lay a broad foundation for the subsequent and more detailed consideration of the provisions of the bill.

In order to deal properly with this legislation, I believe that it is necessary for the subcommittee to have a clear picture of the present programs administered by the Public Health Service, and to be aware of the directions in which these programs have developed over the years and are likely to develop in the future if the public health needs of the American people are to be met adequately.

No person and no agency is an island. This is also true of the Public Health Service. The nature of the demands made by modern developments in the health field is such that these demands can no longer be met by the Public Health Service alone.

In order to properly meet these needs, the responsibilities of other Federal agencies both within and outside the Department of Health, Education, and Welfare must be coordinated with those of the Public Health Service.

Therefore, the subcommittee will take a brief look at the health responsibilities of other Federal agencies and at the governmental machinery and procedures used to coordinate the public health responsibilities of these several agencies.

In conducting these hearings, the Chair and all of the members of the subcommittee are very mindful of their responsibilities. In approaching the pending reorganization legislation in this manner, it is the purpose of the subcommittee to make a careful review of the programs and the organization of the Public Health Service. This is a

responsibility which is placed upon us by the provisions of the Legislative Reorganization Act of 1946 and by the rules of the House.

It will be the purpose of the subcommittee to discharge this responsibility in a manner which will bring credit to the subcommittee and will strengthen the agencies which administer the programs authorized by laws which emanate from this committee.

At this time, without objection, I will insert in the record, the bill H.R. 2410 and letters from the Bureau of the Budget, and the Department of Health, Education, and Welfare both addressed to Mr. Harris, the chairman of the full committee, which are favorable to this legislation.

(H.R. 2410 and the letters referred to follow:)

[H.R. 2410, 88th Cong., 1st sess.]

A BILL To amend the Public Health Service Act to provide greater flexibility in the organization of the Service, 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 "Public Health Service Organization Amendments of 1963."

SEC. 2. Section 202 of the Public Health Service Act (42 U.S.C. 203) is amended to read as follows:

"ORGANIZATION

"SEC. 202. (a) The Service shall consist of (1) the Office of the Surgeon General, (2) the National Institutes of Health, (3) the Bureau of Medical Services, (4) the National Library of Medicine, and (5) such other bureaus or other constituent units as the Surgeon General may find appropriate for the organization of the Service and the efficient administration of its functions and as may be approved by the Secretary. The Surgeon General shall assign the several functions of the Service among such units.

"(b) The Surgeon General may establish within any units established by or pursuant to subsection (a) such divisions, sections, or other subordinate units as he finds necessary; and from time to time may abolish, transfer, or consolidate divisions, sections, and other subordinate units, and units established pursuant to cause (5) of subsection (a), and assign their functions and personnel in such manner as he finds necessary for the efficient operation of the Service; except that, without the approval of the Secretary—

"(1) no unit established pursuant to clause (5) of subsection (a) may be abolished,

"(2) no division may be established or abolished and no division may be transferred, and

"(3) no such units or divisions may be consolidated.

The Surgeon General may, whenever he deems it appropriate in view of any changes in functions assigned to any unit established by or pursuant to subsection (a), redesignate such unit, but only if such redesignation is approved by the Secretary.

"(c) The Surgeon General may delegate to any officer or employee of the Service such of his powers and duties under this Act, except the making of regulations, as he may deem necessary or expedient."

SEC. 3. (a) Subsection (a) of section 205 of such Act (42 U.S.C. 206) is amended by striking out "to administer the Office of the Surgeon General,".

(b) Subsection (b) of such section is amended to read as follows:

"(b) Any commissioned officer assigned to be the Director of the National Institutes of Health, the Chief of the Bureau of Medical Services, or the chief of any bureau established pursuant to clause (5) of section 202(a) shall, while so assigned, have the grade of Assistant Surgeon General. The Surgeon General shall assign commissioned officers to be, respectively, Chief Medical Officer of the United States Coast Guard, Chief Dental Officer of the Service, and Chief Sanitary Engineering Officer of the Service and, while so assigned, they shall each have the grade of Assistant Surgeon General."

(c) The first sentence of subsection (c) of such section is amended by striking out "eight positions created by" and inserting in lieu thereof "positions created by or pursuant to". The last sentence of such subsection is amended by striking out ", and while so serving they shall each have the title of Assistant Surgeon General".

SEC. 4. The Surgeon General is authorized to replace the Bureau of State Services management fund with a management fund or funds with such titles as he may prescribe to be operated in accordance with that section of the Act of September 2, 1960, entitled "Bureau of State Services Management Fund" (74 Stat. 755, 765).

SEC. 5. This Act shall become effective at such time as the Secretary of Health, Education, and Welfare may specify after the month in which it is enacted, but in no event later than the first day of the third calendar month following the month in which this Act is enacted.

SEC. 6. As used in the amendments made by this Act, the term "Secretary" means the Secretary of Health, Education, and Welfare.

EXECUTIVE OFFICE OF THE PRESIDENT,
BUREAU OF THE BUDGET,
Washington, D.C., April 22, 1963.

Hon. OREN HARRIS,
Chairman, Committee on Interstate and Foreign Commerce,
House of Representatives, Washington, D.C.

DEAR MR. CHAIRMAN: This will acknowledge your letter of February 14, 1963, requesting the views of the Bureau of the Budget on H.R. 2410, a bill to amend the Public Health Service Act to provide greater flexibility in the organization of the Service, and for other purposes.

The bill originally was prepared by the administration to carry out the President's recommendations for reorganization of the Public Health Service contained in his special health message of February 27, 1962, to the 2d session of the 87th Congress. In that message, the President stated as follows:

"Changes in recent years have greatly increased the responsibilities of the Public Health Service. Some major organizational changes are necessary in order to help this agency carry out its vital tasks more effectively. I will shortly forward to the Congress a proposal which will make these reorganizational changes possible. It will permit more effective administration of community health programs and those dealing with the health hazards of the environment."

The President renewed this recommendation in his special health message of February 7, 1963, to this Congress. You are advised that enactment of H.R. 2410 would be in accord with the President's program.

Sincerely yours,

PHILLIP S. HUGHES,
Assistant Director for Legislative Reference.

DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE,
Washington, D.C., April 23, 1963.

Hon. OREN HARRIS,
Chairman, Committee on Interstate and Foreign Commerce,
House of Representatives, Washington, D.C.

DEAR MR. CHAIRMAN: This letter is in response to your request of February 14, 1963, for a report on H.R. 2410, a bill to amend the Public Health Service Act to provide greater flexibility in the organization of the Service, and for other purposes.

This bill embodies the provisions of the draft bill submitted to the Congress by this Department on June 26, 1962. For the reasons stated in the President's health messages of 1962 and 1963, and in the enclosed letter to the Speaker transmitting the draft bill, we urge enactment of H.R. 2410.

Sincerely,

ANTHONY J. CELEBREZZE, *Secretary.*

DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE,
Washington, D.C., June 26, 1962.

Hon. JOHN MCCORMACK,
Speaker of the House of Representatives,
Washington, D.C.

DEAR MR. SPEAKER: I am enclosing for your consideration a draft of a bill to amend the Public Health Service Act to provide greater flexibility in the organization of the Service.

As the President pointed out in his 1962 health message to the Congress, some major changes in organization are needed to enable the Service to carry out its greatly increased responsibilities.

With one notable exception, the present provisions of the Public Health Service Act give the Surgeon General broad discretion with respect to the delegation of statutory authorities and the assignment of functions among the various bureaus, divisions, and other units of the Service. The exemption referred to is contained in section 202 of the Act, which specifies that the Service "shall consist of (1) the Office of the Surgeon General, (2) the National Institutes of Health, (3) the Bureau of Medical Services, and (4) the Bureau of State Services. * * *" Thus, both the number and the names of the principal organizational units of the Service are prescribed by statute and may not be modified by administrative action.

Although this four-unit organization pattern was well suited to the needs of the Service in 1943, when this statutory provision was originally enacted, more than 20 new peacetime programs, some involving major new functions, have subsequently been assigned to the Service by legislative or administrative action. Organizational changes to reflect these program changes are particularly needed with respect to programs currently administered through the Bureau of State Services. Intensive studies of these programs indicate the desirability of grouping them into two main categories, with a separate bureau for each category. One category would include those programs and activities concerned with the development of adequate community health services and facilities and with the control of communicable diseases. The other category would embrace programs and activities focused primarily on the prevention and control of environmental health hazards, and related measures for the conservation of resources essential to health. Some administrative actions have already been taken in recognition of the need for regrouping of these programs and units. However, the statutory specification of the number and designations of major bureaus of the Service does not permit these actions to be carried to their logical conclusion—i.e., the abolition of the present Bureau of State Services and its replacement by two new bureaus.

Another organizational change that would be desirable, but which cannot be effected under present statutory limitations, is to establish the National Library of Medicine and the National Center for Health Statistics as separate constituent units of the Service. Although full bureau status is not warranted for either of these units, their specialized functions and operations are not appropriate for assignment to any one bureau or to the Office of the Surgeon General.

The enclosed draft bill would amend section 202 of the Public Health Service Act in three respects. First, while retaining as statutory constituent units the Office of the Surgeon General, the National Institutes of Health, the Bureau of Medical Services, and the National Library of Medicine, it would delete the statutory reference to the Bureau of State Services. Second, it would authorize the Surgeon General, with the approval of the Secretary, to supplement these statutory units with additional bureaus or other constituent units when required for the efficient administration of the Service, and to redesignate any bureau or constituent unit when necessary to reflect a change in its functions. In addition to these substantive amendments, the proposed revision of section 202 would delete the requirement, which is no longer necessary, that the National Institutes of Health "shall be administered as a part of the field service."

The proposed changes in the statutory provisions relating to the major bureaus of the Service are paralleled by corresponding changes in the provisions relating to bureau chief positions. Section 205(a) of the act now calls for the assignment of regular officers of the Commissioned Corps to each of the three named positions and provides that officers so assigned shall have the grade of Assistant Surgeon General. The draft bill would substitute a more flexible authorization for the assignment of officers to such positions, but it would continue the provision that officers so assigned shall have the grade of Assistant Surgeon General.

In addition, the bill would authorize the Surgeon General to replace the Bureau of State Services Management Fund with one or more management funds to be operated in accordance with existing law. Such authority would permit the adjustment of management funds to parallel future changes in bureau structure and designation.

Finally, the draft bill would delete from section 205(a) of the act the present requirement that the Deputy Surgeon General shall "administer the Office of

the Surgeon General." With the increasing need by the Surgeon General for a deputy to assist him in the general administration of the Service as a whole, such a statutory identification of the deputy with one subordinate unit of the Service is no longer appropriate.

As indicated by this summary of its principal provisions, the bill is limited to amendments relating to the organization of the Service and in no way extends or modifies the substantive or program authorities of the Surgeon General or of the Service. Except for minor administrative expenses incidental to the changes in the organization of the Service, the bill will entail no additional costs to the Government, and no additional appropriations will be requested by this Department to implement the provisions of the bill when enacted.

We shall appreciate it, therefore, if you will refer the enclosed draft bill to the appropriate committee for early consideration and action.

The Bureau of the Budget advises that enactment of this proposed legislation would be in accord with the program of the President.

Sincerely,

ABRAHAM RIBICOFF, *Secretary.*

Mr. ROBERTS. It is a pleasure to have you, Dr. Terry, the Surgeon General of the Public Health Service, as our first witness.

I also have two publications which have been furnished for the benefit of the committee to which I will make reference, as I am sure the Surgeon General will probably do in his statement.

One is the Public Health Service, consisting of background material concerning the administration and organization of the Public Health Service, and the other is a Compilation of Selected Public Health Laws, including particularly the Public Health Service Act, the Federal Water Pollution Control Act, and acts relating to air pollution, both with the date of April 1963.

STATEMENT OF DR. LUTHER L. TERRY, SURGEON GENERAL; ACCOMPANIED BY DR. DAVID PRICE, DEPUTY SURGEON GENERAL; DR. JAMES M. HUNDLEY, ASSISTANT SURGEON GENERAL FOR OPERATIONS; AND ELTON WOOLPERT, ASSISTANT TO THE SURGEON GENERAL FOR LEGISLATION, PUBLIC HEALTH SERVICE, DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE

Dr. TERRY. Thank you, Mr. Chairman.

Mr. Chairman and Mr. Harris, I have with me this morning on my far left Dr. David Price, the Deputy Surgeon of the Public Health Service; on my immediate left Dr. James Hundley, Assistant Surgeon General for Operations in my immediate office; and on my right Mr. Elton Woolpert, Assistant to the Surgeon General for legislation.

Mr. Chairman, I have, as you are aware, a very long statement here prepared, but in light of the understanding which we had received from you and your committee, it was felt that this was the best way by which we could make a firm foundation for an understanding of many of the programs and activities of the Public Health Service.

I would like the opportunity, Mr. Chairman, if you and the members of the committee are willing, to go through this statement. However, if you find that it is unnecessarily long at any stage, I will be happy to brief it for you.

Mr. ROBERTS. I think we will leave the method of proceeding up to you, Mr. Terry.

Dr. TERRY. Thank you, Mr. Chairman.

I am very pleased to have this opportunity to open these hearings.

Mr. HARRIS. Mr. Chairman, before Dr. Terry proceeds, in view of the fact that I have a good many irons in the fire this morning and today, I would like to make a few comments at this time about these hearings which reflect some of my thinking. I think these comments will probably further clarify what I had in mind last year during the course of the drug bill and other legislation on the floor of the House.

I am fully cognizant of the importance of these hearings. Mr. Roberts, as Chairman of this subcommittee, has already given some indication of the purpose of these hearings and outlined the course of action this subcommittee should take in obtaining a clearer picture of the programs administered by the Public Health Service and your department.

I want these to be thorough hearings, Doctor. I want to go into every phase and have a complete analysis and explanation of the entire program. I do not wish to indicate any criticism at all. I am merely saying that this is what we wish, and that is to find out the facts.

Therefore, there are several reasons why I have asked this subcommittee, under the direction of our very able and esteemed chairman, Mr. Roberts, to proceed with the hearings on this legislation.

First, the bill that I have introduced here, H.R. 2410, would grant to the Public Health Service broad authority to reorganize its structure. The grant of such broad authority by the Congress requires careful consideration. It is a vehicle that we are also using to look into the public health program fully and completely.

Second, there has been substantial criticism, both within the Congress and outside of the Congress, with regard to the manner in which some of these programs have been administered. This criticism, in my judgment, should be gone into carefully in connection with the proposed legislation as one of the purposes of these hearings.

Third, questions have been raised as to whether the regulatory or police functions of the Public Health Service, as distinguished from the service, research, supportive, and formal responsibilities, should be separated in some manner organizationally.

This is an important area which the hearings should examine, and I would like to suggest rather critically so.

Fourth, there have been contentions that the coordination between the Public Health Service and its sister agency, the Food and Drug Administration, which is in the Department of Health, Education, and Welfare, leaves much to be desired, and that the organizational pattern of the Department of Health, Education, and Welfare in this regard should be strengthened. This aspect, in my judgment, should be explored Mr. Chairman, during these hearings.

Fifth, there are some questions whether the present division of the responsibilities and functions between the Public Health Service and the Food and Drug Administration are appropriate in the light of modern scientific developments or whether some realinements are indicated. I hope this will be gone into thoroughly during the course of these hearings.

Also, our committee for many years has dealt with the health and food and drug problems on a piecemeal basis. I believe it is time to take inventory of existing programs in order to gain a picture of the

overall operations of the two agencies so that this committee and the Congress will be better informed when dealing in the future with legislation affecting these two important agencies.

Also, this overall picture is badly needed in order to ascertain whether the different programs now administered by these two agencies are consistent and in balance with each other. As I have already indicated repeatedly in the course of hearings on the medical school construction legislation, which, incidentally, is on the floor of the House this afternoon, there is a serious question whether certain programs administered by NIH should remain open ended as they are at present, or whether they should be circumscribed more closely as is the case with other programs administered by the Public Health Service.

As I have stated, these other programs have not been subject to the same kind of criticism that has been made of the programs administered by NIH. This is an important aspect which I am very anxious for these hearings to fully explore.

Some of these matters were brought to my attention vividly recently in connection with these other health programs that we have, and particularly when I was before the Rules Committee a few days ago. It seems that there is a great concern among many people with respect to some of these programs and apparently some members who are very much interested in them, feel that nobody keeps up with things and nobody knows just what is going on overall in that agency, important as it is.

As they called to my attention the other day, within a matter of a few years, its expenditures have gone from roughly a few million dollars to nearly a billion dollars and, as the chairman of that committee said to me, "You don't know who is doing what and why," and I had to frankly confess that I didn't.

It may be our fault, and a part of it probably is, for not staying closer to the situation. We are all busy, as you are down there. However, it may also be partly your fault.

I think we should have the whole picture laid out in the record and brought together so we will know who is doing what and whether or not it is justified. You run a very important agency down there. We all know that. There is no more important department of our Government.

But, if we are to continue the good work and service for the American people, and maintain the repuation and the confidence of the people, and avoid what resulted last year—as you no doubt know, there was some controversy with another committee of Congress—I think we are going to have to have a better understanding of the organizational services and the programs.

Mr. Chairman, I do realize the task that you and this subcommittee have in view of the complexity of the problems, which I know you will explore. It is a great and important challenge. It is not my intention to try to rush these hearings to any premature conclusions whatsoever. I want you to take plenty of time, and I have in mind assigning another member or two of our staff to the subcommittee for the purpose of helping to explore these matters in cooperation with Dr. Terry and his staff.

I feel we should be diligent in exploring these ramifications in the best interests of the executive agencies and the interests of private and

public organizations which depend on and are affected by the programs administered by the Public Health Service and the Food and Drug Administration. Certainly, the objective of all of these programs is improving the health of the American people.

I apologize for taking all this time, but I did want to make it very clear what, in my judgment, we should do, and I believe that with your usual committee's work in this regard it will do another good job. I want you to know that I am in this with you all the way.

Mr. ROBERTS. Thank you, Mr. Chairman.

We have discussed the hearings and, as Dr. Terry knows, this committee is charged with most of the authorizing legislation having to do with the Public Health Service, and we feel, and I think the chairman will agree, that some of the criticism that has been leveled at the Institutes and at the Public Health Service may or may not be justified, but we believe that, if the hearings are thorough enough and we can give you an opportunity to answer some of the charges that are being made, we can be of service not only to our committee, but to the Public Health Service and to the country.

I certainly want you to feel, while we may consider that we are looking for all of the facts, that we do not approach it in a destructive vein. It is meant to be constructive, and it is my hope, with the help of the other members of the subcommittee, and with the staff, and with the cooperation of the Surgeon General and his staff, that we can do a good job with these hearings.

You may proceed with your statement.

Dr. TERRY. Thank you, Mr. Chairman and Mr. Harris.

I would like to say that I, personally, appreciate your comments. I am aware of your concern as you have expressed it in your statement, and I share that concern with you.

I, personally, am convinced that most of the criticism which has been leveled at the Public Health Service and at the Institutes of Health is unjustified. I think there is no better way for us to learn the facts and for the public to learn the facts than a hearing of this sort.

I would not contend that we have never made any mistakes. I think the only people who do not make mistakes, Mr. Harris, are people who are dead or doing nothing. I hope the Public Health Service is neither of these.

Nevertheless, I am convinced that the mistakes that we have made have been honest and have been minor. The implications that have been made in the press and otherwise to the public relating to these few errors, omissions or commissions, have been greatly exaggerated and I feel that, as this hearing evolves, we can demonstrate to this committee what a fine job the National Institutes of Health and the rest of the Public Health Service has done.

It is for this reason that I welcome this opportunity.

In my statement this morning I will try to cover two broad areas:

(1) A brief review of the origins and evolution of the Public Health Service; and

(2) A presentation of the major functions which the Service now performs in carrying out its missions. I will try to highlight some of the shifts in emphasis and approach which have characterized our programs in recent years.

Tomorrow, according to the schedule, Mr. Chairman, which you and your staff have prepared, we expect to have bureau representa-

tives, program representatives, here and to go into greater detail into particular areas. I shall be, and the members of my staff shall be, available to you and your committee at any time you want to go into whatever detail you feel is necessary to accomplish the purposes which we both share.

I. HISTORICAL HIGHLIGHTS

The Public Health Service had its origin 165 years ago. Then known as the U.S. Marine Hospital Service, its major function was to provide medical and hospital care for seamen of our merchant fleet, at that time the Nation's economic lifeline and a major element in its national defense.

For nearly a century this was the principal responsibility of the Service. Beginning in 1799, however, Congress authorized Federal officers to cooperate with State and local officials in the enforcement of their quarantine laws. In succeeding years many short-term laws were enacted that authorized our physicians to help communities curb unusually severe epidemics of cholera and yellow fever. In 1893 Congress gave the Service full responsibility for interstate and foreign quarantine, emphasizing cooperative relations with State health departments.

Science began to advance steadily during the last quarter of the 19th century. With the advent of bacteriology, precise knowledge about the causes and control of many diseases became possible. These circumstances demonstrated the value of a central organization for research, field studies, and practical assistance in the control of epidemics. The Service established its first laboratory about 75 years ago, that is, in 1887, at the Marine Hospital in Staten Island, N.Y., to apply new bacteriologic principles to the study of disease in this country.

This single-room laboratory, then called the Laboratory of Hygiene, quickly proved its worth. A modest research capability was developed, and before the turn of the century this activity was transferred to headquarters in Washington. Here it became the nucleus of the future National Institutes of Health.

At the turn of the century the production and interstate sale of vaccines, serums, and other biological products was increasing rapidly. In 1902, an act of Congress assigned to the Service a responsibility with respect to licensing and regulating the production and sale of biologics in interstate commerce.

An act of 1912 expanded the research program of the Service to include conditions other than communicable diseases, and specifically authorized studies of water pollution. This act also changed our name to the Public Health Service, reflecting the broadened functions for which the Service was responsible.

The act of 1912 also authorized the Service to assign health personnel to other Federal agencies on a reimbursable basis. The objective was to make highly trained professional workers available to agencies whose major responsibilities were not in medical and health fields, but who required some such work and support.

The next major development came with the passage of the Social Security Act of 1935 which authorized annual grants to the States for health purposes. This greatly stimulated development of the Nation's

health services. It also strengthened the partnership of the Federal Government with the States and territories to protect and promote the health of the people.

In 1937, Congress established the first of the special Institutes, the National Cancer Institute. The National Cancer Act authorized, for the first time, grants-in-aid to universities or individuals for research. and included authority to award fellowships.

The Venereal Disease Control Act of 1938 enabled the Service to launch the first comprehensive national control program against a specific group of diseases, principally syphilis and gonorrhea.

During World War II, the Service was given responsibility for a number of emergency health and sanitation activities. These were of appreciable importance to the Nation's total defense effort. The war emergency delayed the development of programs which health and medical leaders agreed were necessary. On the other hand, many new forces were set in motion during the war which were to have a profound effect on the work of the Service.

Two, in retrospect, seem the most significant. First, there was a pent-up popular demand for better health and better health services. Second, wartime health research—pursued on a scale never before attempted—opened new trails for peacetime exploration. The war experience showed what could be accomplished through research.

New health programs developed rapidly after the close of World War II. Pages 18 and 19 in the committee print list many of these developments. More than 38 new programs have been established by legislation, by transfer from other agencies or by administrative action. Their consequences—in terms of staff, budget and function—are shown in charts A and B.

(Charts A and B are as follows:)

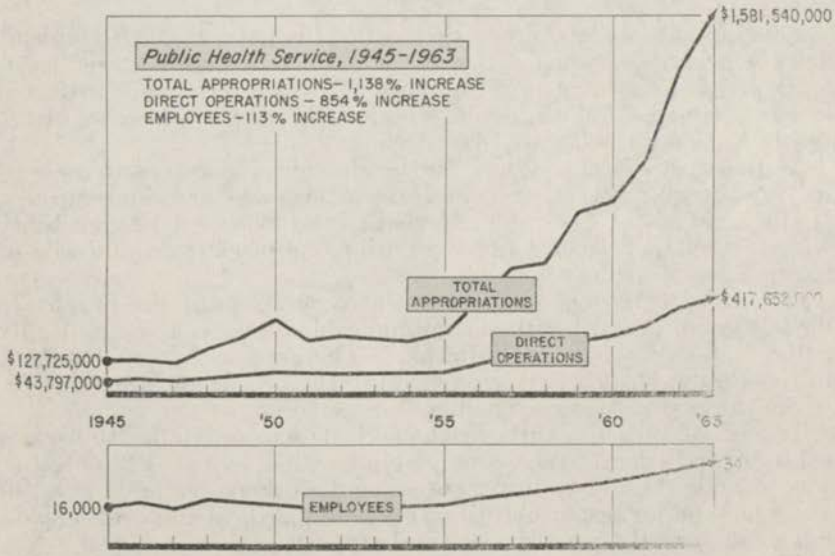

CHART A

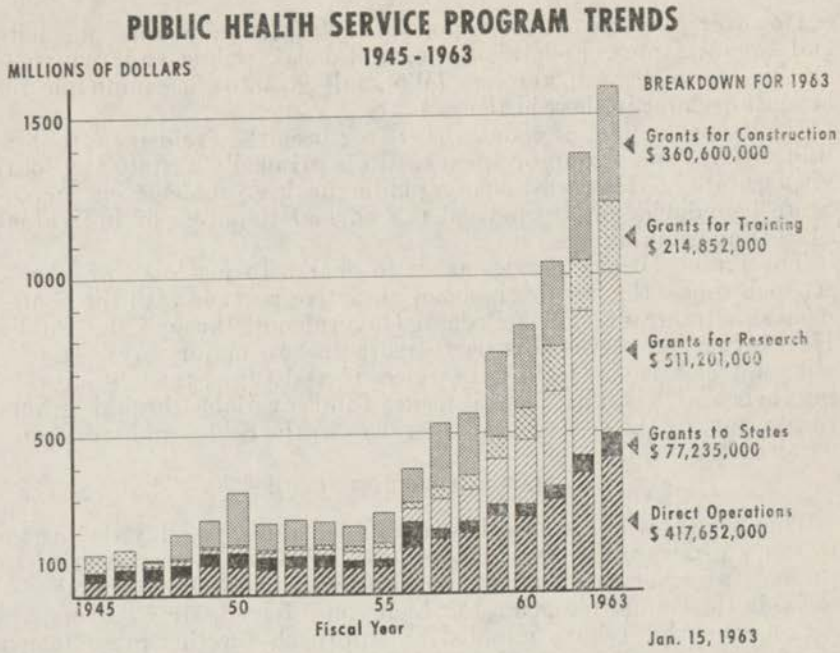

CHART B

Dr. TERRY. Many of these programs represented new functions and new approaches for the Service. Later in my remarks, and in the presentation that will follow, we will describe these programs in greater detail.

Even from this cursory review, I believe it is apparent that the history of the Service reflects the response of American society to the challenge of sickness and death in a constantly changing environment.

The programs of the Service are constantly being reoriented and revised; emphases change as health problems change—and as the environment changes. Fifty years ago, our preoccupation was with infectious diseases, their understanding and control. Today, they continue to have a major importance; however, a different set of diseases is now at the center of the health scene. Cancer, heart disease, mental illness, arthritis, accidents, and others, are now the major killers and cripplers.

The modern, technological, urbanized environment in which most of us now live also brings new health problems—air pollution, water pollution, pesticide hazards, radiological contaminants—with which we must be concerned. The activities of the Service must evolve, and we believe they have evolved to meet these challenges. In this modern age, the only thing that remains constant is change.

What, then, is the Public Health Service today—and what is its mission? In the simplest terms, the Public Health Service is the principal Federal health agency broadly concerned with the health of the Nation; it is a truly national health agency, and its mission is to protect and promote the health of the people.

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However, we share this responsibility with many other agencies and organizations, Federal, State, and local, public and private—as this committe well knows. (We shall go into these multiple relationships later in these hearings.)

Health protection, of course, has never been the exclusive responsibility of any one group or agency. It is primarily a State and local responsibility. However, many public health problems cut across State boundaries or are beyond the normal resources of individual States and communities.

The Public Health Service exists to deal with just such problems. At such times, the Service becomes an active partner with the States in health programs. The Federal Government, through the Public Health Service, serves this partnership in two major ways: It provides a wide array of technical services to assist the States in improving their health services, and it makes funds available through grants to pay part of the cost of health services in the States and local communities.

II. MAJOR SERVICE FUNCTIONS

This presentation, in the time available cannot possibly do justice to every program the Service operates. We have, however, tried to present information on all of our programs in the background material in the committee print, to which you referred, Mr. Chairman.

Consequently, I have adopted an approach for this presentation which we can call an "analysis of functions." This approach permits some basic groupings of activities which I hope will more readily inform the committee about what the Service is and what the Service does.

The two groupings I speak of are these: The means by which the Service carries out its responsibilities, and the objectives that it seeks to achieve.

Basically, there are only five means available to, and used by, the Service in carrying out its responsibilities:

(1) Direct operations. These are the things which our staff does directly: Medical care to certain beneficiarie sof the Government, research in our own laboratories, field studies and other investigations, and the executive and administrative tasks of operating the Service. Charts A and B previously provided will help you to assess their magnitude.

(2) Financial assistance. These are funds appropriated by the Congress to support activities outside the Service: To support research or training in educational institutions, to support operations in State and local health agencies, to support construction of health facilities, and to support disease control activities. It is in this area that our growth has been so rapid in recent years. About three-quarters of our annual budget goes to finance projects conducted by institutions and agencies outside the Federal Government.

(3) Setting standards. This means is useful in many areas; for example, standards for safe public water supplies, limits on pollutants in the air, and requirements for the safety, potency, and purity of biologicals. These standards may have the force of law, or they may

simply be guidelines which often are widely adopted by State and local governments or by other groups.

(4) Regulatory authority. We have this type of authority in biologicals for human use, in preventing the introduction of certain diseases into this country, in interstate quarantine, and in water pollution control. In the latter instance, this basic authority resides in the Secretary, Department of Health, Education, and Welfare, working through our staff.

(5) Leadership. The fifth and last means is more difficult to define. Leadership is many things, including how well the Service is operated, and how well it meets the objectives the Congress has set. Here, however, I refer particularly to our continuing assessment of the health needs of the Nation and how we devise ways of meeting those needs. Federal action may or may not be needed in solving individual health problems—but the problems must be identified, called to the attention of appropriate authorities, and action taken if warranted. A good example here might be our studies of present and future needs for health manpower. In some instances, this has led to Federal action, in other instances, it has not. We will hear more about this later.

The second way in which the functions of the Service can be grouped, as I said earlier, is by objectives, the end results to be achieved. This concept broadly stated, as it is in our research authorities in section 301 of the Public Health Service Act, is to investigate "* * * the causes, diagnosis, treatment, control, and prevention of physical and mental diseases and impairments of man."

Or, objectives can be more specifically defined—the control of air pollution, the prevention of accidents, the conquest of cancer, heart disease, mental illness, and so on.

The framework I shall now use to describe the Service is actually a combination of means and objectives.

A. PROVISION OF MEDICAL CARE

The law provides that certain groups in our population are eligible for medical and dental care, and for preventive health services at Federal expense. I would like to describe these functions first since they were the functions for which the Service was primarily created, and they still constitute an important part of our activities.

We estimate the population which is eligible for medical care to total about three-quarters of a million people. These fall into four distinct groups:

(1) Approximately 371,000 Federal beneficiaries as follows: 117,000 actively employed merchant seamen; 44,000 active and retired officers and enlisted personnel of the Coast Guard, Coast and Geodetic Survey, and commissioned personnel of the Public Health Service. The remaining 210,000 include persons afflicted with leprosy, Federal employees injured in the line of duty, and dependents of Coast Guard, Coast and Geodetic Survey, and Public Health Service commissioned officers.

(2) Three hundred eighty thousand American Indians and Alaska natives.

(3) Twenty-four thousand inmates in Federal prisons.

(4) Five thousand Peace Corps volunteers.

Each of these groups receives health services through systems that are largely separate, although Public Health Service personnel in each system are interchanged freely. This separation results because the health services must be provided where the beneficiaries are located, and the required services often differ among the various groups.

Group 1, merchant seamen, officers, and enlisted personnel of the Coast Guard, et cetera: This group receives service through 15 hospitals and about 135 outpatient facilities located in most instances at major port cities. The number of beds available totals 5,930.

One of these hospitals, at Carville, La., is the only facility in the continental United States devoted to leprosy. It will accept any patient within the United States who is afflicted with the disease.

Two hosiptals, at Lexington, Ky., and Fort Worth, Tex., were established primarily for treatment of Federal prisoners who are narcotic addicts, but voluntary patients are admitted on a bed-available basis.

The 12 remaining hospitals provide general medical, surgical, and dental care. During fiscal year 1962, the inpatient admissions totaled over 51,000; 948 babies were born; the daily inpatient census averaged 4,801; and outpatient visits approached the 1,300,000 mark.

Group 2, American Indians and Alaska natives: This responsibility was transferred from the Department of the Interior to the Public Health Service in 1955 by Public Law 568 of the 83d Congress. Medical care and preventive health services are provided through 50 hospitals, 26 health centers, 16 school health centers, and over 200 part-time clinics.

In addition, we provide a wide sectrum of preventive health services, including programs to improve water supply and sanitation facilities on the reservations and in Indian communities. This population has unique health problems. Their levels of health are considerably inferior to non-Indians. It is our objective to raise them—and much progress is being made.

Group 3, Federal prisoners: More than 30 years ago, the Congress directed the Service to assume responsibility for comprehensive medical services in the Federal prisons. There are 23 hospitals and 7 infirmaries for 24,000 prisoners.

Group 4, Peace Corps: By interagency agreement, the Service staffs and operates the medical program in the Peace Corps, including care of the volunteers who are assigned overseas. Forty-five professional people are currently assigned to this duty.

Chart C, which has been passed out to you, shows the location of the facilities we have just been discussing. It also shows the location of our quarantine stations, which will be discussed later.

(Chart C is as follows:)

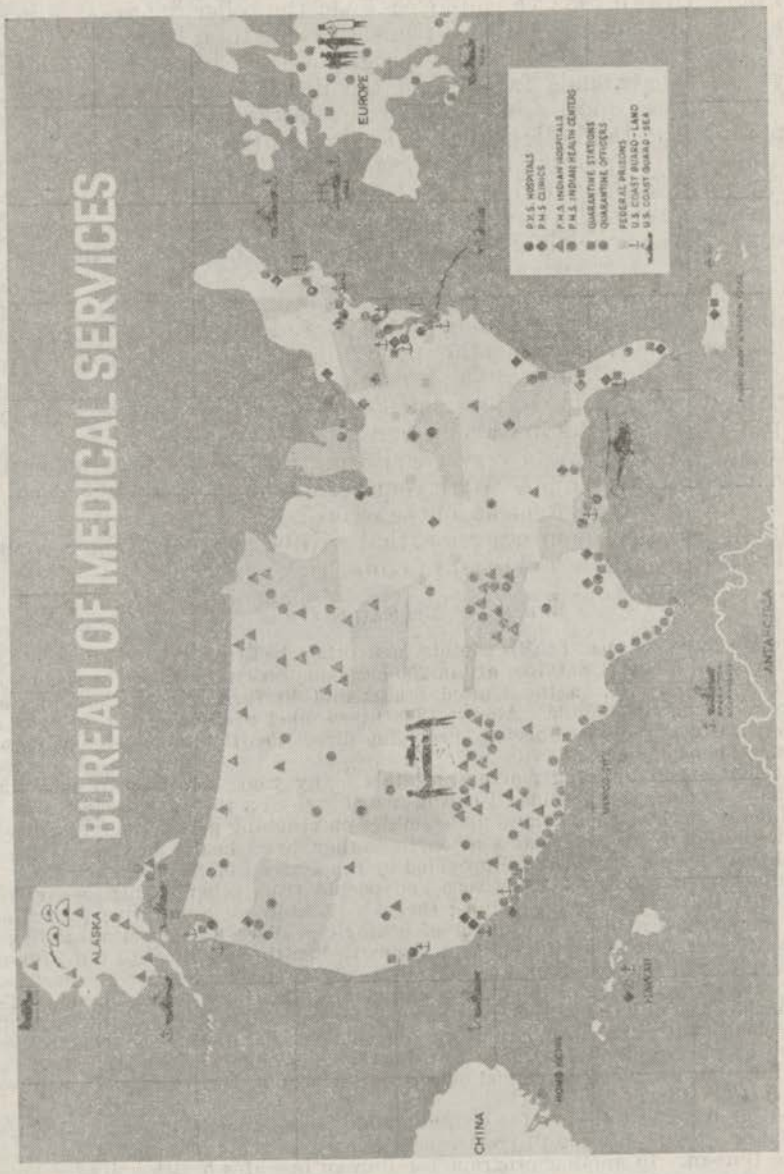

BUREAU OF MEDICAL SERVICES
ALASKA
CHINA
EUROPE
P.H.S. HOSPITALS
P.H.S. CLINICS
P.H.S. INDIAN HOSPITALS
P.H.S. INDIAN HEALTH CENTERS
QUARANTINE STATIONS
QUARANTINE OFFICES
FEDERAL PRISONS
U.S. COAST GUARD—LAND
U.S. COAST GUARD—SEA

CHART C

Dr. TERRY. The chart on page 29 in the committee print shows the budget involved in these activities. Roughly 13,000 of our staff are involved in the provision of medical care. This is nearly 40 percent of all Public Health Service employees. On the other hand, these programs account for only about 7 percent of our total budget.

I want to point out that these programs have importance for the Service which extends far beyond the direct services they render. They constitute a most significant device to attract young professional people into the Public Health Service, some of whom later go on to positions in other parts of the Service. I, myself, and many of our top staff, came into the Service through Public Health Service hospitals.

These programs also have major training activities, and a growing research function which benefits not only the Service but the Nation as well.

One of the most widely used methods of inducing anesthesia during childbirth was developed at our Staten Island hospital. At the same institution, it was first shown that penicillin would cure syphilis. This was a major breakthrough and revolutionized the attack against venereal disease. The sulfone method of treating leprosy was developed at our hospital in Carville and is being used worldwide today.

Mr. Chairman, this is a very sketchy and incomplete description of these important programs. With your permission, I would like to submit a more complete statement for the record.

Mr. ROBERTS. Without objection, that will be inserted in the record.

(The statement referred to is as folows:)

BUREAU OF MEDICAL SERVICES

The hospitals, clinics, health centers, and other health services operated by the Bureau of Medical Services are in 250 locations on land and on the sea—the Arctic and Antarctic, in the United States and in foreign countries, on the Atlantic and on the Pacific. Almost 13,000 personnel are engaged in activities of the Bureau of Medical Services, providing direct health services to a variety of Federal beneficiaries.

The purpose in building marine hospitals many years ago was to care for merchant seamen who became ill or suffered injuries on their long voyages and could not go back to their homes and families on reaching port. Today, medical and hospital care for American seamen, and other direct health services to safeguard the Nation's strength, are provided by the Bureau of Medical Services.

Millions of travelers—U.S. citizens and people from other countries—arrive here each year from foreign points; through the foreign quarantine program, they are checked against any doubt of contagious disease. American Indians and natives of Alaska are given comprehensive health care through the Indian health program because they are not yet ready to provide it for themselves. Protection of the health of the officers and men of the Coast Guard and the officers of the Coast and Geodetic Survey has long been a responsibility of the Bureau.

Members and retired members of the Armed Forces and their families receive care at hospitals and clinics of the Bureau where more convenient than military hospitals. In turn, commissioned officers of the Public Health Service may receive care in military facilities.

Medical and hospital care for civilian employees of the Government who are injured on duty or become ill from causes related to their jobs is administered by the Bureau. In another program, the Bureau operates health units for Federal departments and agencies that have requested this help in protecting the health of their employees.

A special hospital is devoted to treatment of leprosy. Treatment for narcotic addiction is offered in two neuropsychiatric hospitals. The Bureau is responsible for medical and hospital care in all the Federal prisons and correctional institutions throughout the country.

The Bureau conducts clinical research and carries on training programs for medical and health personnel. Most of the medical officers throughout the Public Health Service have received at least part of their training in the Service hospitals.

THE PUBLIC HEALTH SERVICE HOSPITALS

Development of hospitals

The Public Health Service traces its origin to the act signed by President John Adams on July 16, 1798, "for the relief of sick and disabled seamen." This original legislation was enacted with the following objectives in mind:

(1) To build a strong merchant marine as a means of defense.

(2) To promote economic prosperity through international commerce.

(3) To protect the health of American communities by providing hospital facilities for mariners suffering from contagious diseases.

This legislation founded the old Marine Hospital Service, forerunner of the Public Health Service. The following year, in Boston, a merchant seaman received the first treatment given under the act. Since then, there has not been a single break in the continuity of the Public Health Service medical care program. The number of beneficiary groups has steadily increased, and the scope of functions has extended far beyond the limits of furnishing medical care and treatment.

As the country grew, the marine hospitals increased in numbers and fanned out from the eastern seaboard. Four were authorized at the beginning of the 19th century. The Service hospital in New Orleans, founded in 1802, antedated the Federal Government there, and probably exemplified one of the Nation's earliest foreign aid efforts. By 1861, 27 marine hospitals had been established.

The act of June 29, 1870, put the Marine Hospital Service on a national basis under a supervising surgeon (later to be known as the Surgeon General). The first overall regulations were issued in 1872. In ensuing years, there followed the establishment of the Commissioned Corps of Public Health Service Officers, the setting up of examining boards for medical officers, and the appointment of the Surgeon General and medical officers by the President with the consent of the Senate.

The Service entered the 20th century operating 23 hospitals including 1 at Dutch Harbor, Alaska, and a tuberculosis sanitarium in Fort Stanton, N. Mex. In 1963, there are 15 USPHS hospitals and about 135 outpatient facilities located throughout the United States.

In time or war, the Marine hospitals opened their doors to casualties. They also participated in meeting needs arising from other national problems; for example, during the great depression of the 1930's, Civilian Conservation Corps enrollees qualified for PHS treatment. When leprosy and narcotic drug addiction were legally identified as being Federal responsibilities, the Service was directed to operate special hospitals for treating patients so afflicted. Today these institutions have the respect of the world for their competence in the clinical management of these illnesses.

Evolution of other service programs from the hospitals

During the 1800's, the Congress charged the Marine Hospital Service with implementing maritime and interstate quarantine regulations. Eventually, Federal programs were established, devoted solely to these activties. A bacteriological laboratory started in a room of the marine hospital on Staten Island was the beginning of today's National Institutes of Health. Early in the 1900's, the marine hospitals were called upon by State and local authorities for guidance and assistance in handling public health problems. Maintaining these relationships is now a major responsibility of the Bureau of State Services of the Public Health Service.

The marine hopsitals pioneered in providing care for war veterans. For several years following World War I, the Service treated war risk insurance beneficiaries, pending establishment of the Veterans' Bureau. Service doctors were also called upon to provide medical care for Federal prisoners. Health services for U.S. Coast Guard, for the Coast and Geodetic Survey, and for Federal employees injured at work began and still remain in the PHS hospital system.

In keeping with expanded, functions, the name of the Marine Hospital Service was changed to the Public Health and Marine Hospital Service in 1902. At that time, the President was empowered by Congress to utilize the Service in the

public interest during war emergencies, without hindering the discharge of the duties for which the Service was created. In 1912, the name was changed to the U.S. Public Health Service, but the hospitals retained the designation of U.S. Marine Hospitals.

From the earliest days, the Service hospitals have been conducting training programs for physicians and other health personnel and performing clinical investigations into the nature, cause, and treatment of various diseases. The marine hospital in Boston was the first teaching hospital of Harvard Medical School. Today's PHS hospitals offer accredited internships; residencies in a dozen medical and three dental specialties and in hospital administration; and numerous approved training programs in related fields, such as medical record library science.

The Public Health Service pioneered in recognizing the need for hospital internships for dentists. The first dental internship was established at the New Orleans Hospital in 1927—about 20 years before the American Dental Association formally recognized postgraduate hospital training by developing an accreditation program for dental internships.

In 1959, the Division of Hospitals established the first general practice dental residency program in the United States.

Medical care for beneficiaries designated by Congress

At present, an estimated 371,000 persons qualify for benefits at U.S. Public Health Service hospitals. The basic group consists of about 117,000 actively employed merchant seamen. Other beneficiaries include the 44,000 active and retired officers and enlisted personnel of the Coast Guard, officers and retired officers of the Coast and Geodetic Survey, and commissioned officers of the Public Health Service; persons addicted to narcotic drugs; persons afflicted with leprosy; Federal employees injured in line of duty; and dependents of Coast Guard, Coast and Geodetic Survey, and PHS commissioned officers. During fiscal 1962, inpatient admissions totaled more than 51,000; 948 babies were delivered; the daily inpatient census averaged 4,801; and outpatient visits approached 1,300.00.

Medical and dental care includes diagnostic, therapeutic, and preventive services.

There are 12 general medical and surgical hospitals, with a total of 3,518 beds. In addition, the 363-bed hospital in Carville, La., accepts any patient in the United States who has leprosy. The neuropsychiatric hospitals in Lexington, Ky., and Fort Worth, Tex., with a combined capacity of 2,049 beds, were established primarily for treatment of Federal prisoners who are narcotic addicts, but voluntary patients are admitted on a bed-available basis.

In the PHS general hospitals during the past few years there has been a steady reduction in average length of stay of patients. This trend reflects the fact that patients are receiving more efficient and more concentrated care and are ready to leave the hospital sooner. Outpatient treatment of patients has been rapidly increasing, while the number of inpatient days of hospital care has been declining each year.

The PHS hospitals range in age from 20 years to more than 50. When viewed in terms of present medical care concepts and practices, their space arrangements are antiquated and inadequate, and some of the facilities are approaching obsolescence.

Every effort has been made, within the meager resources provided in recent years, to keep pace with modern techniques. Space has been improvised on a makeshift basis in order to provide necessary ancillary treatment facilities. Comprehensive surveys by outside consultants and experts several years ago showed that the hospitals are in great need of modernization and alteration to bring them up to acceptable safety standards and to provide functional efficiency.

Advancement of new health knowledge

During their early years the marine hospitals initiated investigations that fathered the extensive research functions now recognized as being among the prime responsibilities of the Public Health Service. The work leading to discovery of the effectiveness of penicillin against syphilis and the development of caudal analgesia in childlbirth was done at the Staten Island Hospital. In the Savannah Marine Hospital, the Public Health Service performed its earliest work on pellagra. Successful trials of the sulfone drugs in treating leprosy at Carville has dramatically changed the traditional clinical management of this ancient medical problem.

The variety of diseases of patients in PHS hospitals provides one of the most important resources available in the Nation for teaching and the conduct of clinical research.

Important research is currently conducted in the PHS hospitals in relation to specific disease entities. Many of the studies are in collaboration with the universities or with the National Institutes of Health. In the Boston PHS Hospital, for example, there is a special research study relating to the treatment of particular types of cancer which can be studied quantitatively only when special-study patients are admitted for that purpose. In Seattle, researches in cardiovascular-pulmonary disease are conducted in collaboration with the University of Washington, as are studies in diseases of the endocrine system, the musculo-skeletal system, and in the effects and uses of the radioisotopes. In the New Orleans PHS Hospital, research on heart disease, as well as research on the parasitic diseases of the Mississippi Delta, is conducted in collaboration with Tulane University. In Baltimore, studies on cancer etiology and chemotherapy are conducted in collaboration with the National Cancer Institute. The NIH also is cooperating with the Boston, New Orleans, and Baltimore PHS Hospitals in cancer research, and with the San Francisco PHS Hospital in dental and epidemiological studies.

Important also is intensive basic research in leprosy at the Carville PHS Hospital. Clinical research continues in the utilization of new drugs for treatment of leprosy as well as the continued advance of reparative surgery and rehabilitation.

Studies in drug addiction, both sociological and biochemical, are continuing in the Lexington PHS Hospital.

One field in which PHS hospitals can serve well is in the clinical trials of new drugs. As has been brought out in the recent Kefauver hearings on drugs, the need for objective trials of drugs on a large scale is considered one of the major problems in medical research today. This type of research requires large numbers of patients. The system for testing has been established within the Division of Hospitals, through a cooperative study on hypertension which is going on in seven PHS hospitals.

Recruitment and training of professional health personnel

The Public Health Service hospitals serve an extremely important function in the recruitment, orientation, training, and retention of physicians, dentists, nurses, and other health personnel for the many and varied activities of the entire Service. Every year, more than 100 high-ranking new graduates of medical schools enter PHS hospitals to serve internships. Clinical training and practice are essential in preparation for work in all PHS programs. PHS hospitals offer this opportunity. They have male and female patients of all ages in sufficient numbers to provide physicians with valuable experience in clinical medicine, teaching, and research.

The examples given here are for physicians. They apply equally well to the other professional personnel. Young medical personnel are usually first attracted to the Service because of its hospitals and the opportunities for professional development offered in them. Three-fourths of the physicians applying to the Public Health Service indicate preference for clinical work, and the majority of those who prefer research or public health assignments lack the necessary training qualifications.

Through the commissioned officer residency deferment (CORD) program, the Public Health Service supplements in-service clinical specialty training with training in civilian hospitals. In addition, the Service provides officers with training in civilian facilities in nonclinical areas such as hospital administration, research, and teaching methodology.

More than 80 percent of residents who complete specialty training in PHS hospitals remain on duty thereafter, and 54 percent remain more than 3 years. Fifty-three percent of the Regular Corps medical officers in other than the 12 general hospitals, and 78 percent of the top medical personnel of the entire Public Health Service received their early training or experience in the Division of Hospitals. The latter group includes the Surgeon General; the Deputy Surgeon General; the Assistant Surgeon General for Plans; the Chief and Deputy Chief of the Bureau of State Services; the Chief and Deputy Chief of the Bureau of Medical Services; the Chief Dental Officer; and the Superintendent of Saint Elizabeths Hospital.

In the training of manpower in dental health, the Public Health Service has seven student training programs in affiliation with six universities. These

provide hospital training for students of dentistry, dental hygiene, dental laboratory technology, and dental assisting. Approximately 200 students receive hospital training each year. Eight dentists of the Service are part-time clinical teachers in five dental schools.

The dental intern training program of the Division of Hospitals is the main source of recruitment and training of highly qualified dentists for all Service programs. The majority of all dental officers currently on duty were recruited and trained in the Division of Hospitals.

Because of the critical shortage of medical record librarians it was necessary to provide training in this specialty in order to staff the PHS hospitals and clinics. The school for medical record librarians at the Service Hospital in Baltimore is in its 12th year and is recognized nationally as one of the finest in the Nation. Eighty-three students have been graduated. Thirty-one graduates accepted employment with the Public Health Service. A number of students from abroad have been enrolled, and have returned to their own countries to work in medical care programs.

The Division of Hospitals recognized the need for developing a training program for pharmacists wishing to practice in the hospitals and started a program in 1952. Seven of the hospitals have pharmacy internships. Graduates of 33 schools of pharmacy have participated. Fifty-six pharmacists have completed their training to be specialists in hospital pharmacy practice; 40 remain with the Service. Trained pharmacy officers, supplied by the Division of Hospitals, are serving as hospital pharmacists in PHS hospitals and PHS Indian hospitals; at the U.S. Coast Guard Academy, New London, Conn.; the Medical Center for Federal Prisoners, Springfield, Mo.; and the Clinical Center of NIH in Bethesda, Md. Other pharmacist officers are on active duty in the National Cancer Institute, the National Heart Institute, and the Division of Biologics Standards; also with the Divisions of International Health, Administrative Services, Personnel, Engineering Services, and Health Mobilization, and with the National Clearinghouse for Poison Control Centers.

Training for nursing personnel in PHS hospitals and outpatient clinics is continuous. The major purpose is to improve the quality of patient care through training to keep pace with new developments in medical practice, advances in therapy and rehabilitation, and the prevention of disease; advanced training in the clinical specialties; and advanced training in nursing service administration, teaching, operating room supervision and training, unit management, and supervision, teaching, and guidance at the head nurse level. Other purposes are to provide career incentives, to develop nursing personnel for other PHS programs, and to develop nurses for research in nursing.

Changes in nursing education resulted in requiring psychiatric nursing education and experience in the basic professional nurse education programs. This led to the establishment of affiliations at the Fort Worth Hospital; three Fort Worth schools of nursing train 50 to 60 students each year.

In the New Orleans Hospital, affiliations were established with two schools of nursing for training and experience in tuberculosis nursing.

The expansion of schools for practical nurses to meet the increasing demands for this category of employee led to establishment of an affiliation in the New Orleans Hospital with two vocational schools. An 8-month clinical practice program is provided.

Several PHS hospitals and outpatient clinics are used for training and experience for professional nurses enrolled in graduate education programs in colleges and universities; professional nurses in the Division of Indian Health; professional nurses from foreign countries here on scholarships and fellowships.

A program for training hospital attendants has been developed at the Federal Reformatory for Women in Alderson, W. Va., as a vocational training program for inmates.

At the Medical Center for Federal Prisoners at Springfield, Mo., a program was developed for the training of inmates who serve as hospital attendants in the care of the patients.

International health functions

Leprosy research and treatment.—There are about 3 billion people in the world; 1 billion of them live in North America, Europe, and the U.S.S.R. These three areas, which have most of the world's resources for medical research, have a low incidence of leprosy. In the United States the number of known leprosy cases is more than 2,000; the number of estimated cases is more than 5,000.

The World Health Organization estimates that among the 2 billion people in other parts of the world there are more than 12 million who have leprosy. Since each person's health and welfare can be assumed to affect that of at least 10 others—relatives, employers, coworkers, and neighbors—leprosy thus affects about 120 million persons in southern Asia, Africa, South America and Central America, and the islands of the Pacific and Indian Oceans.

Thus contributions made by research on leprosy are of international significance, wherever the research is conducted.

The PHS hospital in Carville is the only leprosarium in the continental United States and provides the only resource for studying the progress of leprosy which is a human disease not reproducible in animals. Leprosy is associated with an organism that has not been grown on laboratory media; the only means of observing leprosy is in the patients. The opportunity to study leprosy patients exists at Carville.

The Carville PHS Hospital has gradually acquired the role of an international center for leprosy treatment and study because the facilities and resources for treatment and rehabilitation of patients and for research and teaching on the subject are better there than in most of the areas where leprosy is prevalent. Further, all leprologists know that the modern sulfone treatment for leprosy was initiated in Carville in 1941. That achievement alone gave the Carville hospital a worldwide reputation as a contributor to leprosy control.

To exploit effectively the full potential international role of the Carville hospital in leprosy research and treatment, legislative authority and funds for the following program expansion could make a significant contribution to world health:

(1) Establish an international treatment and research unit of not less than 50 beds for special study cases at the Carville hospital and provide all ancillary facilities and services necessary to support it.

(2) Authorize necessary additional trained staff (with adequate supporting budgetary resources for other expenses), at the hospital so that research teams could be dispatched anywhere in the world to assist and advise other countries on leprosy problems and to conduct special clinical investigations when situations afford the opportunities.

Medical advice to ships at sea.—Although U.S. merchant ships sail the seven seas and are usually hundreds of miles from land, they always are able to get expert medical advice in a few minutes through the "deadhead Medico" program.

Medico, which means "medical advice by radio," is a service furnished on a 24-hour basis by PHS physicians to ships requesting advice, regardless of whether their registry is American or foreign. "DH" stands for deadhead, denoting that the emergency messages are transmitted free of charge over Government or commercial radio networks.

This service was begun in the United States in 1921 and has furnished medical advice in thousands of cases. It has saved hundreds of lives of American and foreign seamen. The system was soon adopted by other nations and is now international in scope. The Public Health Service gives medical advice to foreign vessels when requested, and U.S. vessels can obtain similar assistance from foreign countries.

When the master of a vessel needs medical advice regarding illness aboard the ship, whether for acute abdominal pain, hemorrhage, fracture, sedation of a mild psychosis, or any medical problem he is not competent to handle, he sends a message headed with the code XXX XXX XXX DH Medico. Under international maritime agreements, the signal instantly clears the airways of all messages except SOS. When the message is received by a Government or commercial control receiving station, it is relayed immediately to a PHS hospital or outpatient clinic in the area. The physician, after consulting with specialists, as may be indicated, dispatches his reply over the same network. Often the assistance of U.S. Coast Guard is necessary to determine the proximity of a "doctor ship" and the distance from the ship's location to a shore installation. With this information, the physician, using his own best judgment and that of his colleagues, sends the advice. The seaman's progress is routinely followed by later messages until the patient has been taken off the ship or the sickness or injury has been completely relieved by adequate medical treatment.

Medico is an immense source of assurance both to seamen and to travelers because they know a means exists to cope successfully with nearly any medical emergency likely to arise at sea.

Federal employee health program

The Federal employee health program is administered by the Division of Hospitals. It was authorized by Public Law 658, 79th Congress, as amended, which was permissive legislation authorizing the heads of departments and agencies, within the limits of appropriations available, to provide health services for their employees.

Health services authorized are treatment of on-the-job illness requiring emergency attention; preemployment and other examinations; referral of employees to private physicians and dentists; preventive programs relating to health.

Under the law, the PHS has two primary functions and responsibilities:

(1) When requested, the PHS reviews the health service program conducted by a Federal department or agency and submits comments and recommendations. Consideration is given by the departments to these recommendations. Most agencies which have sought advice have considered it very valuable.

(2) The PHS operates 39 health units for 189 participating agencies on a contractual and reimbursable basis, serving about 60,000 Federal employees. More than 250,000 visits are made to the health units each year. There have been 3,800 thorough physical examinations of employees 40 years old and older. Fifty percent of those examined were found to have conditions necessitating, in the great majority of cases, referral to a physician. Immunization and disease detection are also included in the program.

Although thousands of Federal employees have available some kind of health service or program under Public Law 658, there are also many thousands throughout the country who have no employee health services at all even though the permissive legislation in effect for the past 17 years allows these services. There have been particular problems encountered in fully implementing the provisions of the legislation that authorize establishment of preventive health programs for Federal employees.

THE FOREIGN QUARANTINE SERVICE

In August 1962, the Division of Foreign Quarantine received a call from a Canadian health official reporting that a 15-year-old boy who had recently passed through New York City en route to Canada was ill with smallpox. The boy had arrived at Idlewild International Airport aboard a plane from Brazil and had taken a train out of New York City for Toronto. U.S. quarantine officials began a search for the other passengers aboard the plane. The New York City Health Department set up vaccination centers and urged all possible contacts to be immunized. About 10,000 persons received vaccination. Most of the plane passengers were located and vaccinated. No additional cases developed.

In March 1963, typhoid fever was reported in Zermatt, Switzerland, a major ski resort. More than 250 cases developed, including 10 in the United States. Any travelers who were ill when they arrived in this country from the Zermatt area were detained by the U.S. Quarantine Service for medical observation. The Quarantine Service notified local health officials of the name and U.S. address of any person arriving from the Zermatt area, and urged that all possible measures be taken to prevent the spread of typhoid fever.

Milestones in history of Division of Foreign Quarantine

Both the quarantine inspection of persons entering the United States and the medical examination of aliens are old, established functions of the Public Health Service. By acts of 1878 and 1893, Congress authorized the Public Health Service, then known as the Marine Hospital Service, to begin operation of a Federal quarantine system. The Immigration Act of 1891 assigned to the Service the responsibility of performing medical examinations of aliens at ports of entry.

Changes in emphasis since World War II

The expansion in international travel since World War II, and in particular the increase in the volume and speed of air travel, have intensified quarantine problems. In addition, medical inspections of aliens entering the United States have increased since the 1940's as a result of expanded tourism, new exchange programs, increased immigration from unrestricted areas, and immigration under special legislation such as that covering refugees and escapees.

Advancement of new health knowledge

The entomology program of the Division of Foreign Quarantine, which is conducted in international traffic areas and at farm placement program examination

centers, includes research to detect insecticide resistance in mosquitoes and lice and to improve insect survey methods and control techniques. New information is made available to scientists, the World Health Organization, airlines, and other interested persons and organizations.

Extension of health services for the public

The Division designates and supervises yellow fever vaccination centers throughout the country. These centers provide shots for persons who plan to travel to areas infected with yellow fever.

Control of, or protection against, particular health hazards

Quarantine.—The Division is on guard at 380 seaports, airports, and land border ports of entry in the United States, its possessions, and Puerto Rico. It applies health controls to international sea, air, and land traffic in order to prevent the introduction into the United States of: (1) Quarantinable diseases: namely, smallpox, cholera, plague, yellow fever, louse-borne typhus, and louse-born relapsing fever—which are prevalent in many parts of the world; (2) rabies and other human diseases transmitted by dogs, cats, and monkeys; (3) psittacosis, through restrictions on the importation of parrot-family birds; (4) anthrax, through laboratory check on imported lather brushes; (5) other serious communicable diseases, through controls applied in cooperation with local health departments; (6) disease-transmitting insects, by spraying of airplanes and ships and by entomological surveillance of airport and seaport areas; (7) unauthorized shipments of disease organisms or transmitting agents.

The Division also applies measures to prevent the immediate spread of quarantinable and other dangerous communicable diseases in the event they are introduced into the country. These measures are: (1) Application of health controls, including vaccination, surveillance, or isolation, to travelers; (2) stimulation of immunization of persons working in and around ports of entry who come into contact with international travelers; (3) insect vector control in international traffic areas; and (4) rodent control on ships and in dock areas.

Medical examination of aliens.—The Division examines aliens at major U.S. consulates and at ports of entry to detect excludable conditions specified in immigration law. These include: (1) Dangerous communicable diseases; (2) feeblemindedness, insanity, psychopathic personality, epilepsy, narcotic drug addiction, chronic alocholism, and other mental defects; and (3) physical defects that may limit the alien's ability to earn a living.

Sanitation.—Division personnel inspect foreign-flag passenger liners to insure that the vessels have adequate rat and insect control, that their food sanitation is satisfactory, and that their water supply and waste disposal systems do not present any hazard to health. Water samples are collected for analysis as a part of the inspection. The Division has asked the World Health Organization to establish international standards of sanitation for ships.

Health education and information.—The Division serves as the official source in the United States of health information for international travel. To inform the traveling public about health hazards and immunization requirements, the Division issues leaflets, booklets, and other publications, and disseminates information to transportation companies; to travel agencies; to newspapers and magazines; to other Federal agencies, such as the Defense Department, the Passport Division of the State Department, and the U.S. Travel Service of the Commerce Department; to local and State health departments; to the national health departments of other governments; and to the World Health Organization and its regional offices.

Recruitment and training

The Division recruits and trains inspectors for duty at quarantine stations throughout the country. After appointment, recruits receive a year of train-in in the details of quarantine inspection. The training program includes 2 months of instruction and 10 months of field experience under close supervision.

Collection and dissemination of health statistics

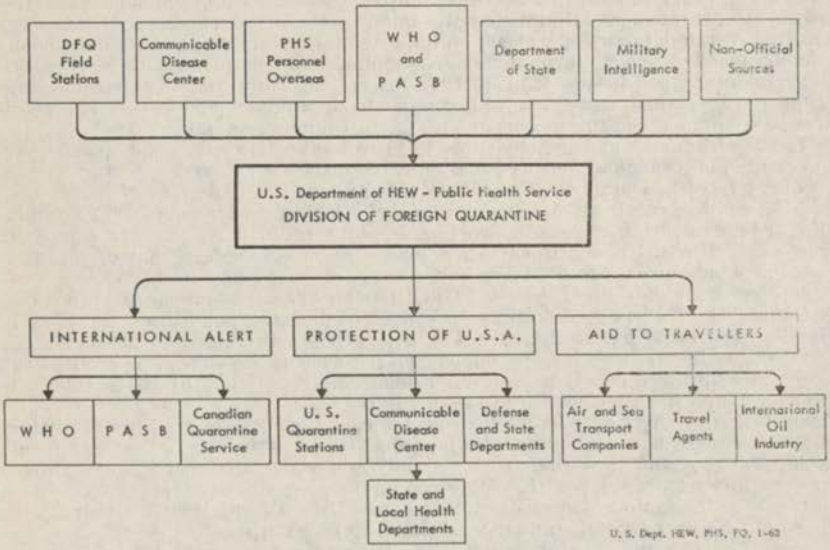
The Division collects, analyzes, and disseminates international epidemiological information on quarantinable and other dangerous communicable diseases. Particular attention is paid to endemic and epidemic occurrences of the quarantinable diseases in any country. Such occurrences are followed closely from day to day to determine their prevalence and incidence, their geographical dis-

tribution, and the chances of their being brought into the United States by travelers. The flow of epidemiological intelligence is shown in the attached chart.

International health functions

The Division implements the international sanitary regulations issued by the World Health Organization. It also furnishes other governments with technical assistance in the development of quarantine programs and the training of quarantine personnel. The Chief of the Division serves on the Committee on International Quarantine of the World Health Organization, and is a member of the WHO Expert Advisory Panel on International Quarantine. In addition, headquarters and field personnel participate in international conferences dealing with the control of quarantinable diseases, the facilitation of international travel, and related matters.

FLOW OF EPIDEMIOLOGICAL INTELLIGENCE



Shifts in recent years

The foreign quarantine operation of the Public Health Service has been marked in recent years by the following shifts: (1) Increased emphasis on quarantine inspection of aircraft and aircraft passengers, without any decrease in maritime inspections; (2) initiation of preclearance of conveyances and passengers outside the United States, such as in Bermuda and on the St. Lawrance Seaway; (3) shift to use of quarantine inspectors who are not physicians; (4) introduction of a fee for alien medical examinations; (5) trial at some Mexican border stations of joint use of personnel of four inspectional agencies (Quarantine, Customs, Immigration, and Agriculture) which clear persons crossing into the United States; and (6) increased use of worldwide epidemiological intelligence in the application of quarantine measures.

In fiscal year 1962, Division quarantine officers inspected 32,980 ships, 65,187 aircraft, and 16,782,531 travelers, including 10,670,199 local Mexican border crossers.

HEALTH SERVICES FOR INDIANS AND ALASKA NATIVES

An emergency radio call to the Public Health Service Alaska native hospital in Anchorage startled even the most seasoned members of the Indian health

staff. A bush pilot 4,000 feet over the frozen land was calling for help because a baby was about to be born on the plane. He asked Dr. Gloria Park at the hospital what to do.

Dr. Park quickly gave instructions. The pilot carried them out, at the same time flying his plane. When the baby arrived, the air waves crackled with this bulletin: "He's kicking around and doing great."

Medical advice by radio has been increasing in Alaska as the Division of Indian Health, in cooperation with the State health department, continues to improve health services in the hundreds of remote villages.

Responsibility for the health needs of American Indians and Alaska natives has provided the Public Health Service with a unique opportunity of being the only agency in this country responsible for planning and implementing a complete, comprehensive community health care program.

The more than 380,000 beneficiaries receive the widest range of health services in an integrated system of hospitals and clinics, public health and environmental health services.

Sanitation facilities and water supply systems are constructed, and the Indian families and communities are trained to use and maintain them and ultimately assume full responsibility for operating them.

Methods developed in the Indian health program will prove of value to non-Indian communities in achieving the most sufficient use of available health resources.

Provision of medical care for Indians

Public Law 568 of the 83d Congress states that "all functions, responsibilities, authorities, and duties * * * relating to the maintenance and operation of hospital and health facilities for Indians, and the conservation of the health of the Indians are hereby transferred to, and shall be administered by, the Surgeon General of the U.S. Public Health Service * * *."

In carrying out that responsibility, the Public Health Service provides a community-type health program for Indians and Alaska natives. This covers curative, preventive, and environmental aspects of health. Medical diagnostic and treatment services are provided for 380,000 Indians and Alaska natives in 50 hospitals, 26 health centers, 16 school health centers, and more than 200 part-time clinics. In addition, there are contracts with community hospitals and private physicians, dentists, and pharmacists. In the public health and the preventive aspects of medicine, the Service provides prenatal, postnatal, maternal and child health, school health, and immunization clinics at every health facility. In environmental health, the Service is steadily improving the water supply and sanitation facilities on the reservations and in Indian communities.

Examples of the care and services provided are:

General medical and surgical hospitalization.
Tuberculosis case finding, hospitalization, and followup.
Medical and surgical outpatient clinics.
Specialty clinics:
- Prenatal and postnatal.
- Well baby and well child.
- Immunization.
- Dental.
- Diabetic.

Environmental health:
- Water.
- Waste disposal.

Within the program for inpatients and outpatients:
- Health education services.
- Medical social services.
- Pharmacy services.
- Medical records.

Advancement of health knowledge

There are communicable diseases among the Indians that are practically nonexistent in the rest of the population of the United States. As a result the diagnosis and treatment of these diseases is mainly a textbook procedure except in the Indian health program.

An illustration is trachoma, a virus infection of the eye. It was thought that trachoma, which causes blindness if left untreated, was nonexistent in the United States; as a result it was not being properly diagnosed. When several

cases were properly diagnosed, Dr. Phillips Thygeson of the University of California was brought in to verify the diagnosis. He prepared a program to train physicians to diagnose and treat this infection. A manual describing trachoma, with pictures, was published. A vaccine against trachoma is being tested and studied among Indians in Arizona.

Many studies on the effectiveness of tuberculosis drugs have been made. In the Indian pueblos around Albuquerque, a study was made of the effectiveness of isoniazed as a prophylactic agent against tuberculosis.

Extension and improvement of health services for the public

To be close to the Indian population, most of the Indian hospitals are small; this makes for a large number of hospitals. Thus the program gives many physicians invaluable experience in administration of a hospital. Their experience will benefit the whole community if they return to private practice.

In the program, professional health workers learn first-hand the public health perspective of looking at community health as a whole as opposed to looking at individual health as an end in itself. This broader outlook is invaluable for those who return to private practice.

Dentists in the Indian health program are usually young men recently out of dental school. Since most dental schools do not teach students to utilize dental assistants effectively, the Division of Indian Health has a program for dentists and their assistants in which they are taught how dental assistants can be utilized to maximum effectiveness. This has been successful in increasing the productivity of dentists. Since most Division dentists eventually return to private practice, the training they have received enables them to serve more patients.

Professional health workers in the Division ofen receive short- or long-term training which upon their return to private life enables them to render better service to patients and community.

Nurses' aids are trained in the Division. Many later find employment in private hospitals.

The health of the Indians has been, and still is, inferior to that of other people in the United States. As long as this is true, the Indian community is a potential reservoir of infection. Immunization, health education, sanitation, rabies control, in addition to the more conventional medical programs, have as a corollary goal the elimination of any potential Indian reservoir of infection for the whole population.

The Division of Indian Health has always cooperated with other Government agencies and private institutions in research, if tribal councils agree. Knowledge gained from research projects has benefited the public at large as well as the Indian.

Emergency care on a reimbursable basis is available at DIH installations to all persons who need it, whether or not they are Indians. This is especially important in remote areas of the West and Alaska.

Control of and protection against health hazards

The Division of Indian Health provides a total preventive health program for Indian beneficiaries through its organization of areas and service units. The field units comprise medical, dental, nursing, sanitation, and health education components. The preventive health program includes field clinics, home visits, community demonstrations, promotional and educational activities, and construction of domestic water supply and other sanitation facilities.

There are three significant differences between this program and the usual preventive health programs. First, to meet staffing requirements in remote areas and to reckon with cultural factors, Indians have been employed in the preventive health units and trained to work as dental assistants, practical nurses, sanitarian aids, and community workers. Second, the program emphasizes a house-to-house and worker-to-family concept. Third, the actual design and construction of sanitation facilities needed to correct environmental deficiencies is undertaken by a public health agency.

Recruitment and training of professional health personnel

Personnel are recruited by the Division of Personnel, directly by DIH headquarters, by area offices, by area recruiting teams, and by the Bureau of Medical Services.

Turnover varies among the professions. The medical category averages between 40 and 50 percent; pharmacists, nutritionists, and dentists, about 30 percent; nurses 40 to 45 percent; medical record librarians 20 percent; health

educators about 15 percent; and social workers and sanitary engineers about 10 percent.

Training is conducted both within and outside the Service through long-term and short-term courses. The Division conducts a career development program with a number of assignments reserved for such training. Training schools are operated by the Division for dental assistants, practical nurses, and sanitary aids; almost all the students are Indians.

Collection and dissemination of health statistics

To measure the magnitude of, evaluate trends, and develop measures for the control of the infectious diseases which are significantly more prevalent among Indians than in the population as a whole, or which are unique among Indians, the Division of Indian Health has a reporting system for collection of specific data. Besides the usual notifiable diseases, reports and trend data cover gastroenteritis and diarrhea, trachoma, pneumonia, and influenza.

In addition to use in program planning and development, these reports are made available on request to university groups making special studies, to State health departments, and to investigators conducting research.

International health functions

The Division of Indian Health exchanges information on program operations with other nations working with indigenous populations under similar climatic conditions.

This is accomplished by: (1) Periodic assignments of foreign nationals who work on Indian health and sanitation facility construction programs; (2) reciprocal visits to foreign countries, such as Canada and Greenland, to review operations; (3) participation at multination conferences such as the World Health Organization-sponsored Conference on Medicine and Public Health in Arctic and Antarctic Areas, at Geneva, Switzerland, in 1962; and (4) furnishing other nations in the World Health Organization with program material developed by the Division.

Factors affecting health needs and activities for the future

Population trends.—Upward of 550,000 American Indians and Alaska natives were counted in the 1960 census. Not all are beneficiaries of the Federal health program. Some 380,000 Indians, Eskimos, and Aleuts depend in varying degrees on the PHS Indian health program for health services. They are increasing in numbers over the years (nearly 2 percent annually in the last decade) and have a birth rate which is almost twice the rate in the country as a whole.

Notable in the decade 1950–60 was the mobility of the Indian population and migration away from reservations to adjacent communities and other cities where employment opportunities were more plentiful. Although the total Indian population is increasing, projected estimates for the 23 States with Federal reservations reflect a proportionately lower increase for the "service population."

The American Indian and Alaska native populations are young. Nearly 57 percent of the people are under 20, in contrast to about 38 percent of the general population. The median age for Indians and Alaska natives is about 16.5 years, compared with 29.5 years for all races in the general population.

Illness and death rates.—Health problems among Indians and Alaska natives in many respects resemble those found in the rest of the Nation a generation ago. Most illnesses and about one-sixth of the deaths are due to infectious diseases. Death rates for influenza and pneumonia, tuberculosis, and gastroenteric diseases are two to seven times greater than in the general population. Accidents lead as a cause of death. Heart disease ranks second, and influenza and pneumonia, third.

The American Indian's life expectancy from time of birth is about 62 years in contrast to almost 70 years for all races in the general population. The average age at death for Indians is about 42, compared with an average of 62 years for all races in the population.

Although the Indian infant mortality rate has dropped about 30 percent since 1954, it is nearly twice the rate for the general population. The Indian death rate for babies aged 28 days through 11 months stands in sharper contrast—about four times higher. Leading causes of infant deaths are influenza, pneumonia, and other respiratory infections, and diarrhea and dysentery—diseases which are in large measure associated with environment. Lack of basic sanitary facilities, gross insanitary practices, unavailability of safe water supplies nearby, and crowded living conditions are major factors.

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In anticipation of the continuing reduction in premature deaths and mortality from infectious diseases, program emphasis, and resources management are gradually being reoriented to meet the changing characteristics in mortality patterns and illnesses.

Progress against tuberculosis

Advances in medical techniques and modern drugs have had particular impact on Indian health. An 80-percent reduction in mortality from and incidence of tuberculosis—the "scourge" of Alaska—has been among the most dramatic gains in Indian health. Through the ambulatory chemotherapy crash program initiated in 1954 (use of isoniazid in combination with sodium para-aminosalicylic acid-PAS) remote native villages were reached and thousands of tuberculous patients or suspects were treated while awaiting admission to hospitals. Ambulatory chemotherapy became a major element in tuberculosis control. The severity of tuberculosis has been lessened, premature deaths have been prevented, and the length of stay in hospitals has been reduced from well over a year to an average of 6 to 9 months.

Chemotherapy has been equally successful among hospitalized and nonhospitalized Indians in the "lower 48 States." The hospital tuberculosis patient census has dropped about 70 percent in 7 years. Today the health resources released are being brought to bear on other major health problems of Indians.

Control of trachoma.—Trachoma is rarely found in the United States today except among Indians. Thought to have been brought under control in the 1930's, recrudescence was revealed in the 1950's. Differential diagnosis and treatment procedures were developed for the Indian health program under direction of an internationally recognized ophthalmologist.

Because of frequent surveys, close surveillance, and an effective ambulatory treatment program, the cure rate is high, and the disease is being brought under control. The trachoma manual developed by a PHS consultant primarily for Indian health staff is the most definitive work of its kind published in the United States. It has been widely used in other regions of the world for training of health staff in recognizing trachoma and in treating it.

OTHER FEDERAL AGENCIES

Federal prisons medical service

In January 1963, in the Medical Center for Federal Prisoners in Springfield, Mo., a 21-year-old prisoner underwent major chest surgery for tuberculosis. He is serving an indeterminate sentence for auto theft. This was the first big step in the long process of attempting to lead the young prisoner toward a useful and constructive life as a citizen. A Public Health Service surgeon performed the operation and the patient has now recovered.

More than 30 years ago the Congress directed the Public Health Service to assume the responsibility for conducting comprehensive medical services in the Federal prisons. There are 23 hospitals and 7 infirmaries in the prison institutions for the 23,689 prisoners. The Public Health Service staff includes 281 full-time employees, assigned by the Bureau of Medical Services. About 900 prisoners are assigned to assist with health services. Many of them are being taught skills in medical technical fields which will give them a means of employment after they have served their sentences.

Medical research is being conducted in several of the prison hospitals. Current research includes a study of cold virus, investigations on malaria, and a project on muscle tone related to space travel.

U.S. Coast Guard

The Revenue Cutter Service became a beneficiary of the Public Health Service by the act of 1798 authorizing medical care for sick and disabled seamen. Over the years the Revenue Cutter Service Service became the U.S. Coast Guard, and the Marine Hospital Service became the Public Health Service.

Today nearly 100 Public Health Service officers and other staff members are conducting medical and dental care for Coast Guard personnel who man the indispensable services to seagoing and airborne commerce—weather ships in the Atlantic and Pacific; icebreakers on duty in the Arctic and Antarctic; and long-range navigation aids placed strategically throughout most of the non-Communist world—in the Atlantic and Pacific, the Mediterranean, Caribbean, Japan, and India. PHS physicians alos assist the air-sea rescue operations of the Coast Guard.

Bureau of Employees' Compensation

A Government employee was critically injured by electrical burns when he was helping to unload a 20-ton transformer and a crane struck a high-tension wire. He lost both legs and his right arm. His left arm was disabled.

The Bureau of Employees' Compensation, in the Department of Labor, arranged a closely coordinated program of rehabilitation services for the man. After months of training he learned to walk again with artificial legs; he learned to write and was taught a new skill. Today he is working for the Government as a radio dispatcher.

This case illustrates the value of the medical program of the Bureau of Employees' Compensation which is conducted by medical officers of the Public Health Service at the request of the Department of Labor.

There are about 125,000 new injury claims among Federal employees each year.

Maritime Administration

A Public Health Service officer is detailed as Chief Medical Officer of the Maritime Administration in the Department of Commerce to advise on health and safety.

The Service also furnishes the medical and dental staff for the U.S. Merchant Marine Academy in Kings Point, N.Y., to conduct the health program for the 700 cadet midshipmen. This includes operation of the Academy's Patten Hospital where there are more than 500 admissions each year; examinations and outpatient treatments; and a dental health program.

B. EXTENSION AND IMPROVEMENT OF HEALTH SERVICES FOR THE PUBLIC

Dr. TERRY. The second major area which I would like to cover is our role in extending and improving services for the public. This will be covered in more detail in the hearings tomorrow. Consequently, I will direct my remarks toward providing some general perspective.

Our role in this area is very different from the programs I have just described. First, our role is national in scope in contrast to limited beneficiary groups. Second, our role is generally indirect.

In the hospital system, our own staff provides care for the patient. In the area we are now talking about, we bring about the desired result by working through others who deliver the service—or by making it possible for others to deliver the service. The recipient of the service seldom is aware that the Public Health Service had anything to do with the service he receives. Our role is to see that within our authority the means for health are made available to the people.

It is important to make a distinction between two interrelated but different aspects of health services to the public.

First, there are the preventive health services—those services often referred to as public health services delivered mainly through governmental tax supported health agencies. In this area, the Public Health Service has a fundamental and broad role.

Second, there are what we call personal health services—those services rendered primarily in the doctor's office or in the hospital. In the main, this is a private, non-tax-supported system based on fees for service. In this area, the role of the Service is to assist communities and States in developing better organized health services designed to make health care available to people where and when they need it.

We like to think that everything we do benefits the public in one way or another—and, frankly, I believe this is true. However, the

means by which we pursue this objective vary considerably, as I shall try to describe.

The first area I will describe is related primarily to preventive or public health services.

1. The Federal-State system: Our approach from the beginning has been to support and strengthen a nationwide network of State and local agencies through which public services are rendered. This is accomplished in various ways:

(*a*) The first way is through general or special purpose grants to the States. In fiscal 1963, $77 million was available for such purposes.

Some of these grants are made on a formula basis, specified in law, and require matching by the States. Fifteen million dollars is for the so-called general health grant. This has the purpose of strengthening and improving basic local public health organizations, staff, and services through which the more specialized disease control programs can operate effectively.

The remainder of these grants are directed toward specific health problems: Tuberculosis control ($3,250,000), cancer demonstration and control ($3,500,000), heart disease control ($7 million), chronic illness and aging ($13 million), mental health services ($10,950,000), radiological health ($1,500,000), and water pollution control ($4,700,000). Formula grant funds are awarded to the States on the basis of a State plan which must be approved by the Surgeon General.

Project grants constitute another and more flexible means of supporting specific health activities in State or local health agencies, or in other nonprofit agencies or organizations. These are generally awarded on the basis of a specific application. The law requires no State or local matching. In practice, however, all such projects have some local participation.

Preference is usually given to those projects with substantial local financial and other participation because experience has shown they are more likely to be successful and have an enduring effect. These projects are also categorically oriented and are available for activities in the following areas: Chronic illness and aging ($6 million); tuberculosis ($1,250,000); cancer demonstration ($4,750,000); venereal disease ($4,335,000) (all fiscal 1963 data).

(*b*) Technical assistance: Upon request, the Service will supply experts to help States, or through States help local agencies in problem solving, in devising more effective programs, and in studies and investigations. At times, the Service may undertake cooperative projects with State or local agencies. The Service may assign personnel to work full time in State or local agencies, upon request. Technical assistance is a major activity, which in fiscal 1963 accounted for $53 million in our budget.

(*c*) Specialized services: A number of devices are available which, in effect, supplement the capability of State and local agencies. These are actually another form of technical assistance. For example, the Service maintains special laboratories that have a high degree of capability in diagnosis of communicable diseases, in water pollution, air pollution, milk and food, and other areas. The States can take advantage of these for special analyses, for improvements in their own laboratories.

Health education materials are produced and made available. The States receive regular and special reports on communicable disease

prevalence, mortality, morbidity, and other vital statistics. The Service conducts many types of field studies which have direct applicability to State and local health problems.

(*d*) Training: The Service regularly conducts short-term training courses for many types of State and local health personnel. In addition, funds are available for formal academic training of public health personnel. Awards may be made directly to individuals or through training grants to institutions to provide a year or more of postprofessional academic training. Four million dollars were available for these programs in fiscal 1963.

The Service also makes grants to schools of public health and to certain schools of nursing and engineering to enable them to expand and improve the training they offer, and to enable them to increase enrollments; $3.9 million was available in fiscal 1963 for these programs.

Training funds are also provided for certain special categories of public health personel that are in critically short supply, e.g., air pollution ($450,000), water pollution control ($1.1 million), and radiological health ($2 million). These funds are available as individual awards or as institutional training grants.

2. Facilities construction: The second major role which the Service has is to make better health services possible for the public by the support of health facility construction, i.e., Federal support in constructing the hospitals and other facilities through which the public receives service. These activities have impact on both preventive and personal health services. There are three programs in this area:

(*a*) The Hill-Burton program. This is the largest program of this type. It was authorized by Congress in August of 1946. Since it will be discussed tomorrow, suffice it to say here that the program has had a tremendous beneficial impact in increasing the number, the quality and the distribution of general hospitals, as well as other types of health facilities.

More than 216,000 general hospital beds and 2,600 health centers, nursing homes, and other health facilities have been added to the Nation's resources through this program. Dollarwise, it is our largest program with $220 million available in 1963, not including the extra impact of the accelerated public works program (more than $44 million).

(*b*) Waste treatment works construction grants: This program supports municipal sewage treatment plant construction. It was authorized in 1956. Ninety million dollars was available for this program in 1963, and an additional $44,150,000 has been made available thus far through the Accelerated Public Works Act.

In the 6 years, 1957–62, grants have been made to 4,178 communities to help them invest more than $2 billion in sewage treatment works. These facilities serve 40 million people and improve water quality in over 42,000 miles of our streams.

(*c*) Health research facility construction: This program also was authorized in 1956. Fifty million dollars was available in fiscal 1963. The Service also has had several smaller and more specialized programs which involve research facility construction. These, Mr. Chairman, also will be discussed tomorrow.

(*d*) I would like to mention in this connection, and I guess what one might say in a hopeful manner, health professions educational assist-

ance: This committee has already been involved in H.R. 12, which, if enacted, would add a fourth major facility construction program with great benefits to health services for the public. Additional teaching facilities must be created if we are to meet foreseeable needs for health manpower.

3. Setting standards: Earlier in my testimony, I mentioned standards as one of the means we use to carry out our tasks. Since we have just been discussing health facilities this may be a convenient place to mention a third role the Service plays in improving health services.

It has been necessary for us to develop a number of standards for use in the Hill-Burton program. Others have been developed simply as a service and because they seem to be needed. These have been most useful in improving the quality and utility of new health facilities. They also serve a useful purpose as guides for the States in licensing and attempting to upgrade the quality of care in nursing homes, for example.

Other types of standards activity exist for safe milk, water, and food. We need such standards in carrying out our responsibilities in certifying interstate carriers—trains, airplanes, buses, and ships. We have power to enforce compliance only with respect to interstate transmission of communicable diseases. However, once the standards are developed, they are more widely useful to State and local agencies. Often they are incorporated by States or municipalities into their own laws.

4. Research. The fourth major role of the Service is in the conduct and support of research. The rising levels of health which this country has enjoyed over many decades are directly related to new knowledge generated through research. This is a familiar story and need not be repeated here.

The role which the Service plays in this area has, however, changed dramatically. Prior to World War II, our role was comparatively minor. The National Institutes of Health had just been established on its present location in Bethesda. Although we had a very active research program, it was small and largely confined to what we did in our own laboratories or in the field. We were just another one of the Nation's research laboratories.

The fundamental fact which changed this picture after World War II was that the Federal Government assumed a role in support of a nationwide expansion of our research capabilities. This happened in many fields.

In the field of health, the Service, largely through the National Institutes of Health, became the main instrument of the Government in carrying out this development. Some of this expansion took place in our own laboratories. But the major instrument was what we now call our extramural program—grants to support research in medical schools and other educational institutions, in hospitals, and other facilities.

The National Institutes of Health alone now supports about 40 percent of the Nation's medical research effort. The Federal Government as a whole supports about 62 percent. Industry accounts for 25 percent, and 13 percent comes from other non-Federal sources. Charts A and B, which I have already provided, or, if you prefer to deal with figures, the charts on pages 29 and 30 in the committee print, show clearly what has happened so far as the Service is concerned.

The second major development is the growing necessity for research in aspects of health that are not solely medical research. For instance, we need more research in better methods of delivering health services. We need more research in the environmental health sciences, and in the sociological factors involved in urbanization.

Research is now an essential tool in almost every major program in the Public Health Service.

The third major development is more recent. That is the development of specialized research centers to study health problems where they exist. This is particularly important for water pollution, shellfish sanitation, radiological health, certain aspects of communicable diseases, and certain types of community health problems.

Research now accounts for about half of our annual budget. The witnesses tomorrow will go into more detail on this subject.

5. Training. This is the fifth way in which the Service improves and extends health services. I have already described our involvment in training public health personnel for work in State and local health agencies.

The Service also plays a national role in training for research. Through fellowships and training grants, the personnel needed to man the increasingly complex research activities of the Nation are developed. Our investment in research training constitutes about 12 percent of our annual budget. (In fiscal 1962, the National Institutes of Health alone supported approximately 14,000 trainees and fellows.) The Nation's rapidly expanding research effort has made a Federal training role mandatory.

The Service thus far has played a more limited role in training for service, that is, training for personal health services—doctors, dentists, nurses, and so on. We do, however, have a number of programs where particularly acute shortages exist:

Our professional nurse traineeships program seeks to increase the number of graduate nurses prepared for positions as administrators, supervisors, and teachers in all fields of nursing. Nurses like these are in exceedingly short supply. Seven million, three hundred and twenty-five thousand dollars was available in 1963 which will give full academic training to approximately 2,000 nurses in this category, and short courses to approximately 7,000 nurses.

The Mental Health Institute has a major program to train the psychiatrists, psychiatric social workers, psychiatric nurses, and clinical psychologists needed to provide mental health services to the Nation; $49,375,000 was available in 1963 for this purpose.

We also have training activities directed toward developing highly specialized professional personnel for combined teaching and research careers—neurologists and ophthalmologists, for example. Again, these men are in very short supply. Some States do not have a single practicing neurologist.

Overall, about one-eighth of the total Public Health Service budget is directed toward various types of personnel.

6. Planning. Another way in which we support improved health services for the public is through planning. Planning, of course, is an integral part of all our programs. We have long required the States to prepare plans as a basis for receiving Federal matching grants. However, planning is now assuming a broader dimension.

Health problems transcend political boundaries. Many of our larger metropolitan complexes sprawl out into several political jurisdictions. Increasingly, it is evident that comprehensive planning on a metropolitan area, or on a regional basis, will be required to develop sound integrated plans and programs.

The principle of areawide planning is now gaining acceptance in the construction of medical facilities and the development of programs to control environmental health hazards. Notably water pollution. Certainly, the areawide planning concept deserves to be extended to other areas of public health activity.

7. Health communications. New research findings have little utility until they are communicated to those who want and need them—to scientists, to physicians, and other health practitioners, and to the general public.

Such new knowledge must be communicated in a form which is understandable and usable. Consequently, health communications assume many forms, through many different media, tailored to fit the particular audience and the purpose of the communication.

All of us have heard about the so-called information explosion—the rapidly mounting body of new knowledge arising from the Nation's expanding effort in research. The inference is that this new knowledge is not reaching those who want and need it. There is no doubt that there is a gap—much wider than we would like—between what is known and what is being applied to prevent and relieve illness and suffering.

Responsibility for health communications is shared by many groups, governmental and nongovernmental, public and private. The Service, however, has responsibilities which are both general and specific. Section 301 of the Public Health Service Act authorizes the Surgeon General—

> to collect and make available through publications and other appropriate means, information as to, and the practical application of, such research and other activities.

Section 315 of the act says that—

> the Surgeon General shall issue information related to the public health, in the form of publications or otherwise, for the use of the public, and shall publish weekly reports of health conditions in the United States and other countries and other pertinent health information for the use of persons and institutions engaged in work related to the functions of the Service.

Responsibility for communications is written into our laws in a number of other places.

We do publish weekly reports of health conditions. But our efforts extend far beyond this. Health information is made available through newspapers, magazines, radio, television, through scientific journals, through pamphlets, brochures, and other devices. In spite of a rather substantial effort, we feel that we are not doing enough, or doing it well enough. We are actively seeking to extend and improve our efforts.

This constitutes the eighth way in which we quite directly act to improve and extend health services for the public.

In addition, the Service supports another program—which is little known to the public—but which ,again indirectly, plays a national role in improving health services: the National Library of Medicine.

The National Library of Medicine (NLM as we call it) was founded in 1836 as the library of the Surgeon General's Office, U.S. Army. In 1956, the National Library of Medicine Act (Public Law 941, 84th Congress) transferred the library to the Public Health Service. Just about a year ago it occupied its new building in Bethesda.

In essence NLM is the Nation's central medical library. Anything that is published in the field of medicine and the medical sciences in this country or abroad can be obtained through the library.

It has the largest assemblage of medical literature in the world—as of July 1, 1962, it totaled 1,084,256 pieces, including books, journals, theses, pamphlets, et cetera—and it is all indexed so that information can be located easily. Individual scientists and scholars may use the library. Its services, however, are extended primarily through other libraries.

We often refer to it as the library's library. Each year the library responds to about 125,000 requests from other libraries. Last year some 2,000 libraries around the world received 2,250,000 pages of material, largely in the form of microfilm. To meet this volume of demand, NLM has one of the largest microfilming operations in the Federal Government.

The library also prepares Index Medicus which is the standard index used all over the world to search the medical literature. NLM is converting many aspects of its work to computer operation. In fact, it is pioneering in new directions which will do much to make the medical literature more manageable and useful.

Its project medlars (Medical Literature Analysis and Retrieval System) is now being installed and will be operational later this year. It is being watched by libraries all over the world as one of the basic solutions to the information explosion.

Mr. Chairman, I have touched very lightly on a very complex and important area of our operations. With your permission, I would like to submit a more detailed report for the record.

It is being prepared at the present time especially for this hearing.

Mr. ROBERTS. Without objection it may be included in the record.

(The report referred to is as follows:)

COMMUNICATION OF SCIENCE INFORMATION—PRESENT STATUS, PROBLEMS, TRENDS (INCLUDING THE NATIONAL LIBRARY OF MEDICINE)

I. COMMUNICATION AS BASIC TO THE PUBLIC HEALTH SERVICE MISSION

All programs of the Public Health Service rely upon communication for their effectiveness. Although the audiences, the subject matter, and the techniques of communication may vary from one program area to another, communication activities are essential to all.

Communications responsibility is, in fact, written into the basic legislation of the Public Health Service. The Surgeon General is required to meet at least one each year with all the State health officers to exchange information as well as to chart new policies, to "publish weekly reports of health conditions," and "to collect and make available the results of research." The responsibility to communicate is written into the law in a half dozen other legislative authorizations.

In addition, developing naturally as part of program operations, are communication activities which are shaped by the programs they serve, whether those programs emphasize research, community health service, or direct medical attention for patients.

Research activities of the Service

Research findings are of small value unless the results are passed out of the laboratory and, in the biomedical field, put to use to reduce illness and suffering.

Communicating the results of a research project is increasingly accepted, and emphasized, as an integral step in the research process.

The Public Health Service has a responsibility to distribute appropriately the information emanating from its own laboratories and a further responsibility, as a granting agency, to make certain that information flows freely from the laboratories of its grantees.

As the major sponsor of health research in the United States and as a research agency in its own right, the Public Health Service is concerned with the "information explosion," as both a producer and a user of science information.

Health programs involving community activity

A primary mission of the Public Health Service is to expedite the effective application of medical knowledge to the needs of the American people. The Service thus acts as a middleman between the producers and consumers of medical information: that is, between the research institutions, on the one hand, and the practitioners and the rest of the public, on the other.

Effective communication in the development of community health programs, which are the means for transmitting information from the producers to the consumers, is complex and difficult. The clientele with which the Public Health Service works in developing community health programs consists of many highly diversified groups. Making information available to these different audiences, at varying levels of scientific sophistication, depends on a wide range of techniques.

Communication to the practitioner and the public of new biomedical information must result in changes in attitudes and behavior if benefits to the health of the individual are to result. This sometimes slow process involves both teaching and learning. Continuing education is an essential part of communicating science information.

Medical service to patients

The Public Health Service is a source of medical services for more than 1 million patients. These patients include American Indians, Alaska natives, merchant seamen, Federal prisoners, the U.S. Coast Guard, and others designated by Congress. Some of them, including people who do not read or speak English, pose unique problems in communication. Health information must be given to them in the simplest terms, whether in English or in their own language. Some are geographically isolated. In Alaska, for example, are patients who live in villages that can be reached only by plane or dogsled, and in the winter only by shortwave radio. At several of the hospitals in Alaska, Public Health Service physicians hold clinics nightly by radio with their patients in isolated villages.

Within the Public Health Service are physicians and their staffs, confronted by the many information problems facing all medical practitioners. Physicians in the hospitals and clinics of the Public Health Service include interns and residents. All need the best possible sources of scientific information to help complete their training. Public Health Service physicians with years of experience are concerned with obtaining the latest information in their specialties. It is essential to provide the best possible resources for continuing their medical education.

Service concern with communication

The Public Health Service represents a microcosm of the scientific community. Within the Service are scientists at their laboratory benches, physicians and nurses working in hospital settings, health educators, science writers, librarians. These employees have the same needs for information, and similar frustrations in obtaining it, as are experienced by their counterparts in other agencies of the Government or outside the Government.

It is in the interest of its own maximum contribution and with concern for the Nation's health that the Public Health Service seeks better ways of communicating science information.

II. THE NATURE OF THE COMMUNICATION PROBLEM

There appears to be agreement that a science information problem exists. Increasing attention is concentrated on coping with it.

In the executive branch high level attention has been focused on science information by the President's Special Assistant for Science and Technology, the President's Science Advisory Committee, and the Federal Council for Science

and Technology. In the legislative branch communication of scientific information has been under intensive study by a number of House and Senate committees and subcommittees.

In reports on the communication problem, there have been references to apparent need for an increase of efforts in the area of communications, based on certain premises:

1. Present biomedical research is slower and more wasteful than necessary because of needless and unplanned duplication of effort. This, in turn, is due to the inadequate awareness of scientists of past and current scientific information. Communication between scientists is thought to be relatively weak and steadily deteriorating.
2. Facts exist which are not brought to the attention of potential users at a time when they would be useful.
3. The results of research are not being applied by the health practitioners fast enough, principally because communications from scientists to health practitioners are not as effective as they should be.
4. The general public is not sufficiently aware of new knowledge about health. An informed public is essential to public acceptance of improved health measures as they are discovered. Also the public needs health information as a basis for insisting on the best available facilities and health care, whether from private or public sources.

Methods of handling information have not kept pace with the acceleration in research, in publication, or in population. It is being suggested that biomedical research could be made much more valuable if for every dollar paid into research, a significant amount could be invested in efforts to manage the information obtained from research.

Improving communication will probably take two directions, pursued concurrently. One will be the development and expansion of conventional, time-tested methods. The other will be experimental use of novel techniques.

We are in a period of rapid transition in the rate and accuracy with which information can be transmitted, with new methods, machines, and knowledge of human behavior becoming available for use.

Pursuit of improvement through using new techniques or by the conventional methods will require removing some limitations now hampering development of communication programs: lack of facilities, shortage of personnel, inadequate financial support, and lack of imaginative solution to significant problems.

III. WHERE DOES THE PUBLIC HEALTH SERVICE STAND AT PRESENT?

During the spring of 1962 the Surgeon General, addressing the House Appropriations Committee, stated the interest which the Public Health Service has in health communications and suggested that the Service intended to convene a working conference on health communications before the end of the year.

In June 1962 the Surgeon General appointed Dr. F. Ellis Kelsey his special assistant to prepare for such a conference. Thereupon the Office of the Surgeon General began a review of the communication activities of each component of the Service.

As a result of this survey and continuing attention to communication activities, the Public Health Service is now well equipped to evaluate its current science information programs in detail.

The information collected about each Bureau is extensive and no attempt is made here to transmit that information. Comprehensive reports have been prepared on the communication programs of each of the following major components of the Public Health Service.

The Office of the Surgeon General, through the Office of Information and Publications, provides overall direction for the Service's information activities. This office also develops and manages its own information programs to inform the general public about advances in our knowledge about health. The nine regional offices of the Service bring new information to State, county, and municipal health departments as well as to various public and voluntary groups. The Division of International Health has a variety of activities designed to facilitate international exchange of information.

The Bureau of State Services has as one of its major activities the packaging and distribution of scientific information to health practitioners.

The Bureau of Medical Services facilitates the use of scientific information by projects designed to inform its own health personnel, and others, of new advances.

The National Institutes of Health scientific information activities have a specific statutory base in the categorical areas of cancer, heart, dental, and mental health research. Other communication activities derive from and are subordinate to the primary NIH mission for the conduct and support of biomedical research.

The National Library of Medicine collects the literature of medicine on a global scale, prepares and distributes a variety of indexes to the literature, and lends or provides facsimile copies of otherwise unobtainable materials to libraries on request.

IV. ORGANIZATIONAL ROLES IN COMMUNICATION

As with most institution, the Public Health Service plays a variety of roles in communication.

The Service must manage its own operations competently. At the same time the Service, as a component of the Department of Health, Education, and Welfare, has concern for the Department's communication efforts, makes a contribution to them, and relates its own programs to others in the Department.

The Service also has functions which involve Government agencies outside its own Department. Finally and concurrently, the Service works with groups outside the Government and makes its own unique contribution to the scientific community.

Interagency committee on scientific information

Through Department membership on the Committee on Scientific and Technical Information of the Federal Council for Science and Technology, the Public Health Service makes its contribution to the Council's mission; "to promote coordination and improve planning and management of Federal programs in science and technology." This committee serves as a channel for ideas to and from the separate agencies. It is a valuable means of information exchange in its own operations.

HEW Committee on Science Information

The Public Health Service is represented, along with all other major components, on the Department Committee on Science Information. The Committee's aim is to help provide clear-cut demarcation of responsibility among subdivisions of the parent body, The HEW Committee also acts as a communicating device linking components of the Department with the Office of Science and Technology.

The need for cooperation between components of the Department varies considerably, from close cooperation on projects of joint interest to a clear-cut separation of responsibilities and fuctions. Providing compatibility in computer operations, in indexing, in abstracting, and in other aspects of communication may require closer association among components of the Department as communication activities increase.

Public Health Service focus on science information.

The recently established Public Health Service Committee on Science Information will serve the agency in the same manner as the HEW Committee on Science Information serves the Department.

The Committee was established by the Surgeon General, to "develop a sound plan of organization for effective stimulation coordination, and direction of scientific communication." Its membership consists of representatives from each bureau, the National Center for Health Statistics, and the National Library of Medicine.

A focus for science information within the Service was established shortly after the Surgeon General's Conference on Health Communications, thus permitting continuation of the efforts to improve scientific communication which were initiated in preparation for the Conference.

V. THE CONFERENCE ON HEALTH COMMUNICATIONS

As the Public Health Service gave increasing attention to information and its handling, it became more and more evident that solutions to the problem were not the responsibility of the Federal Government alone.

Since solutions would call for the combined effort of many people, the Surgeon General invited representatives of the broad interests involved in improving the Nation's health to meet with staff members of the Public Health Service

most intimately concerned in handling health information in a conference to consider some recommendations for improvement.

The working sessions, November 5 through 8, 1962

The Conference was held in Warrenton, Va., at Airlie House for 4 days, November 5 through 8, 1962.

The participants included 39 special consultants from all parts of the country with staff members of the Public Health Service serving primarily as resource personnel.

The Conference opened November 5 with a general session consisting of reports from the major bureaus of the Service and addresses by Dr. Jerome Wiesner, Special Assistant to the President for Science and Technology, and by Dr. Alan T. Waterman, Director of the National Science Foundation.

Four panels, to which consultants were assigned, met concurrently the following 2 days, with their chairmen reporting to the plenary session on the final morning of the Conference.

For working convenience each panel concentrated on a specific subdivision of communication:

Panel 1. Communication among scientists.
Panel 2. Communication to practitioners.
Panel 3. Communication to the public.
Panel 4. Communications research.

The Public Health Service now has the detailed reports from each of these panels as well as comments and recommendations from many of the participants sent in as followup to the Conference. The Conference record provides a valuable source of ideas and cautions regarding Public Health Service activity.

It may also be of value to other agencies faced with similar and related problems.

The recommendations of the Conference

The Conference report is available as Public Health Service Publication No. 998.

The National Library of Medicine and the Library Component in Communication

I. NLM organization and programs

The National Library of Medicine was founded in 1836 as the library of the Surgeon General's Office, U.S. Army. It enjoyed a period of great growth, and acquired an international reputation as a scholarly library, during the last half of the 19th century, under the leadership of its great Director, John Shaw Billings. In 1956 the National Library of Medicine Act (Public Law 941, 84th Cong.) was passed, transferring the institution to the jurisdiction of the Public Health Service. The library's new $7 million building in Bethesda was occupied in April 1962.

The overall management and policy guidance of the library is subject to the scrutiny and review of the NLM Board of Regents, advisory to the Surgeon General, PHS. The Board consists of 7 ex officio members, including the 4 Surgeons General of the uniformed services, the Chief Medical Director of the Veterans 'Administration, an Assistant Director of the National Sicence Foundation, and the Librarian of Congress, and 10 members appointed by the President, for terms of 4 years each, chosen from persons prominent in the various fields of medicine. The operations of the library are carried out by a staff of 237, all in Washington, organized in 5 operating divisions.

Library objectives.—As a national institution, the library has for years conducted its programs with two general objectives: the provision of bibliographic access to the literature of medicine, and the provision of physical access to that literature. Bibliographic access embraces the areas of cataloging, indexing, and bibliographical listing, and the publication and dissemination of the resulting products. It responds to the question, "What materials exist that are directly pertinent to the subject of my inquiry?" The nature of the problems of bibliographic access and the means available for their solution lend themselves readily to centralization. This is what the library is attempting to do—to compile centrally, and distribute widely, the bibliographic record of medicine, so that all members of the health professions, wherever they may be, may have knowledge

of what of interest to them is appearing in the world literature. Physical access embraces the area of acquisitions, at one end of the line, and as a representative area at the other end, the provision of interlibrary loans. Only a universal acquisition program such as NLM's can at once provide the base for a universal bibliographic record, and at the same time provide the rich and broad store of materials on which lesser libraries may rely for the provision of works which lie on the more exotic side. Provisions for physical access respond to the question, "How can I put my hands on these items known to be pertinent?" Here the problem can be suitably fitted only to a decentralized arrangement of facilities. The fundamental characteristic of the printing press is that it provides multiple copies, which may be stored in multiple locations, convenient to the needs of users spread over wide geographical areas. The interlibrary loan program of the library, enormous as it is, can properly be conceived of as a central facility which functions only as a very necessary supplement to the basic decentralized stores of the medical library network.

Bibliographic access.—The chief instrument in the Library's program is the Index Medicus. This publication and its predecessors have had a continuous history back to 1876, and together they have provided the medical sciences with a better control over their published record than exists in any other scientific area. The Index Medicus is prepared by a semiautomated system employing Justowriters for typography, IBM equipment for sorting and merging, and a Listomatic camera for rapid-fire photographic composition. During this fiscal year the publication will carry citations for over 150,000 journal articles from 2,000 journals, listed under multiple author and subject rubrics. The publication appears monthly, in a print order of 7,500 copies. Approximately 900 copies are distributed free to Federal medical installations; another 900 copies are used for exchange purposes, to insure receipt of foreign publications; the balance of the copies are subscribed to through the Superintendent of Documents at a price of $26 per year. The Library invests 20 percent of its manpower and 20 percent of its funds in this one operation.

Besides the Index Medicus, the Library publishes two major annual lists, the Bibliograhpy of Medical Reviews, and the National Library of Medicine Catalog. The Library also brings out occasional publications, as, for example, the recent

Biomedical Serials, 1950–1960.
Early American Medical Imprints.
Russian Surgical Staplers.

The Library's newest bibliographic project is called MEDLARS, for medical literature analysis and retrieval system. MEDLARS has been under development for 2 years, and will become operational at the end of 1963. At the heart of MEDLARS will be a digital computer. Information will be fed into the system through punched paper tape, representing the indexing done by the Library staff. This information is converted to magnetic tape and manipulated in the computer. The magnetic tape so processed is used to activate a very high-speed composing device capable of producing photographic masters for printing. Three types of products will be derived from MEDLARS. First, it will provide increased high-speed composition capacity for the production of the Index Medicus. Second, it will provide recurring bibliographic listings of references selected in accordance with the predetermined requirements of particular research fields; for example, it will supply a weekly listing of the world's medical literature on cardiovascular disease to that research group for its dissemination. Third, it will provide search and retrieval capacity to answer on demand queries from individual research installations concerning newly published information bearing on their immediate problems. In its first year of operation MEDLARS will contain 180,000 references; this will increase by annual increments up to the point where over a million references will be stored on magnetic tape for searching. MEDLARS will turn out 50 recurring bibliographies of varying periodicity, and it will accept up to 90 complex demand search questions daily. On successful completion of this project, the medical sciences in the United States will have access to a powerful bibliographic search tool equaled by none in the world.

Physical access.—Since the 1860's, the library has been engaged in collecting the literature of medicine on a global scale. This means all medical writing, from all countries, and of all times. Currently it operates under a formalized "scope and coverage policy," which surveys in terms of a general classification the entire domain of human knowledge, and establishes four levels of library collecting: (1) exhaustive (in the medical sciences), (2) research (in the basic supportive sciences), (3) reference (in pertinent and related areas), and (4)

skeletal (in fringe areas). This attempt to rationalize the medicocentric universe of the world's literature is unique, and results in a planned and controlled expansion of the library's collections. The NLM constitutes the largest assemblage of medical literature in the world. As of July 1, 1962, this collection totals 1,084,256 units including 1,009,228 books, journals, theses, and pamphlets. The collection is a national resource of great extent and depth. By law, it is accessible to researchers and scholars for use. This use takes two principal forms: (1) consultation and reference; (2) interlibrary loans, accomplished mainly through photoduplication.

Among the researchers using the library in person are scientists and scholars engaged in the writing of books, review papers, historical treatises and the like. A phenomenon of recent years has been the systematic use by teams of researchers; for example the Surgeon General's Committee on Smoking and Health is currently quartered in the library. Other agencies establish continuing work groups for the purpose of reviewing and monitoring the literature bearing on research topics. Over 10,000 reference requests are received at the library each year; the bulk of this load originates from a service population outside the library rather than from the library's visitors.

To respond to requests for literature coming in from all over the country, the library has developed a photoduplication service which embraces as one of its parts one of the largest microfilming operations in the Federal Government. Using six mobile cameras, which roam the book stacks, and a continuous xerographic printer capable of producing 20 feet of paper print a minute, the library each year responds to over 125,000 requests. This amounts to the filling of requests at the rate of one every minute of every working day throughout the year. Last year some 2,000 libraries around the world received 2,250,000 pages of material; 1 in 8 of these requests went to libraries overseas to whom the NLM represents a primary international resource. About 12 percent of the library's funds are committed to this activity.

Extramural programs.—The library's extramural programs seek to reinforce both the functions of bibliographic access and physical access but through agencies and institutions outside the library's walls. Under existing authorities and appropriations, the only activity currently conducted is a program to strengthen channels of international communication to the benefit of American scientists—the NLM science translation program.

This program serves as a principal focus within the PHS for meeting the needs of the American medical research community for access to the reports of foreign medical research published in infrequently read languages. The program includes, for example, a project carried out by the Federation of American Societies for Experimental Biology, which monitors Soviet experimental science, selecting those papers considered by American scientists to be of particular significance, and publishing them in translation as a supplement to the journal Federation Proceedings, which reaches 11,000 scientists. Under Public Law 480, the library conducts program for translation in Israel, Yugoslavia, and Poland. A part of this effort has resulted in five Polish medical research journals being published in the English language originally, instead of in Polish.

II. SIGNIFICANCE OF NLM FUNCTIONS

Alone among the Federal libraries, the National Library of Medicine by statute is a national library of the United States, the first so designated by the Congress. While it shares certain nationwide functions with the Library of Congress and the National Agricultural Library, NLM has by law unique responsibilities in the public interest. These are, in the words of the act, "to assist the advancement of medical and related sciences, and to aid in the dissemination and exchange of scientific and other information important to the progress of medicine and to public health."

Service to the national medical community.—The library subserves the needs of the entire medical and health-related community of the country. While established and maintained within the Public Health Service, its service public includes not only the totality of Public Health Service program interests, and those of all medically oriented agencies of the Federal establishment as well, but the entire complex of public and private institutions and agencies, which, taken together, constitute the medical establishment of the United States. In the interests of maximizing its benefits, the library customarily works with and on behalf of organized groups, established agencies, and institutions of great variety. A recent survey of the library's interlibrary loan operation illustrates

the scope and variety of the library's institutional public. The following types of institutions extend their local resources by borrowing from NLM:

Medical school libraries: Libraries of medical schools, colleges of medicine, schools of pharmacy, dentistry, nursing, osteopathy, veterinary medicine, public health, etc.

Medical society libraries: Medical and allied science association, society and academy libraries whether organized on a National, State, or municipal basis or by subject fields such as cancer, heart, etc.

Federal Government medical libraries: Medical libraries of any branch of the Federal Government.

Hospital libraries: Libraries for both professional staff use and patients' use in hospitals.

Industrial, research, and foundation libraries, medical and nonmedical: Libraries in both profit and nonprofit organizations in any field.

Other medical libraries: Libraries of State boards of health, city boards, etc.

International organization, medical or nonmedical.

For these libraries, the NLM constitutes a national resource, on which they can depend, and which they can use to augment their smaller collections, thereby guaranteeing to their users the availability of the scientific references desired. An anology to the Federal Reserve System is appropriate. Like the Federal Reserve Bank, the NLM is at the pinnacle of a national complex of local components. The Federal Reserve guarantees to local banks the security of their resources; the National Library of Medicine guarantees to local medical libraries ultimate access to the total resources of medical information.

These are the conventional channels through which the library conducts its national supportive mission. Each of these agencies, in turn, is concerned with one or more aspects of improving the Nation's health: the discovery of new medical knowledge through research, the improvement of health practices through the application of this knowledge, and education for the health professions. Only infrequently can any one of these objectives be isolated in terms of library functions. Usually, as in a medical school library, it is a question of degree of orientation of a library's loan, reference, and bibliographic activities to one of the several purposes. This is certainly true of the NLM, which, by virtue of the universality of its collections and services, provides national support for all three objectives.

The research process.—Scientific knowledge is accretional. Its records are built of reports of original investigations, the verifications, disproofs, and reverifications of these reports, their integration and consolidation into the preexisting body of knowledge. The published record of scientific research is voluminous, and of great complexity. In the case of biology and medicine, research is probabilistic in its methodology; this results in more attempts at verification employing differing methodologies, a process which swells the published record of the biomedical sciences to a greater volume than that existing in any other broad scientific field.

Three ingredients exist in the research process: the scientist himself, with his experience, his professional skills, and his curiosity; the laboratory, with its tools, facilities and resources; and the library, the custodian of the scientific record. The scientist uses the library's bibliographical tools for access to the scientific record, and its collections to consult the record itself. He needs to do this to see whether anything like his proposed study has ever been done, and if so, by what methods and with what results. He then conducts the investigation, using his personal skills and laboratory resources, and on completion of his work, publishes to disseminate his findings, to contribute to the record, and to deposit copies in the library. The library function is an essential part of the research cycle, without which the scientists cannot function, nor scientific knowledge advance.

NLM support activities.—The NLM functions to strengthen these processes through its various programs. For over 80 years the library has published the principal indexes for access to the research record of the medical sciences. In addition, specialized bibliographies, such as the definitive bibliography on Psychopharmaca, are published by the library to provide underpinning for emergent research fields. The Bibliography of Medical Reviews facilitates the access of researchers to that part of the published record which consolidates advances and developments on the frontiers of science.

Through its loan and photoduplication activities, the library acts to extend the resources of all other medical libraries. About 40 percent of the library's

loans goes to Federal medical institutions and other Federal agencies, 20 percent goes to medical schools and societies, 20 percent goes to hospitals, and 20 percent goes to industrial, independent research, and other libraries. The significance of this activity is that it permits the alert scientist, practitioner, and educator, wherever he may be, to follow, study, and evaluate developments in his special field wherever they may occur throughout the world.

The library's translation activities are performed on behalf of large segments of the medical community. They aim, not at the researcher's ability to locate and acquire an obscure publication which may contain a highly significant finding, but rather at overcoming the serious inhibitory factor of his inability to read it, once found. After all, only 2 percent of all American scientists read Russian, and only one-half of 1 percent read Japanese. The distribution of selected translated papers helps to alleviate this problem.

III. TRENDS AND NEEDS

Science functions in an evolving society, and its institutional directions, practices, and forms are molded by the requirements of that society. Two major trends are dominant in our time. While observable in all developed countries, they are particularly marked in the United States.

The publication explosion.—The first has to do with growth. Conscious of the success and benefits of research, society has increased its support a hundredfold. The great increases of dollars, of manpower, of facilities, and of research projects have been frequently reported to the Congress. Less well known is the effect of these increases on the scientific record, and on libraries. According to NIH data,[1] each project grant generates one and one-tenth published papers; since 1945 NIH grants alone have swollen the scientific record by 50,000 articles. Comparable increases have occurred in all countries, resulting in what has been called the publication explosion, a phenomenon which has overburdened scientific publication media and libraries equally.

The interdisciplinary revolution.—The second has to do with a change in the organization of scientific research. Its 19th century form followed academic lines; institutes, laboratories, and careers alike were cast in the mold of disciplines: e.g., microbiology, physiology, biochemistry. World War II demonstrated dramatically to the supporters of research that society could achieve scientific breakthroughs through interdisciplinary combinations, through the assemblage of research teams representative of multiple related disciplines.

Common now are areas of science comprising 20 or more disciplines, associated for work on a problem complex, or a specific disease (e.g., space biology, diabetes, molecular biology).

This interdisciplinary revolution in the sciences has been accelerated by large-scale funding; it has changed the organization of research drastically within a generation. In terms of the scientific record, its effects are profound. Each new interdisciplinary field, for example, has it own communication requirements: journals, abstracting services, bibliographies, critical reviews. Since the organization of the traditional scientific record followed discipline lines, the need to repackage the record has resulted in great dislocation: the fields staked out by journals overlap, new abstract services are generated to supplant time-honored ones, and there is a general insecurity about the adequacy and the permanence of the scientific record.

It is these two forces, taken together, with underlie the "crisis in scientific communication." The national research effort is generating vast amounts of new published information, and the traditional forms of organizing it for furthering the effort appear to be inadequate.

Impact on the National Library of Medicine.—These two circumstances have profound and far-reaching implications for the NLM, and for the medical library network with which it is affiliated. The world in which they had their historical development has been disoriented, and its axis shifted. The fundamental problem facing the NLM, as well as other institutions involved in the communications process, is to accommodate to this new orientation and new magnitude of research.

The NLM's major response is the medlars system of computer-based indexing, previously described. The fundamental significance of the computer in a large-scale information storage and retrieval system lies in its ability to manipulate masses of material along multiple axes. With medlars, the library will have

[1] Lindsay, D. R., and Allen, E. M., "Medical Research: Past Support, Future Directions," Science, 134: 2017–24, 1961.

the ability to unitize new medical information, and to put these units together again in any pattern or combination which may conform either to disciplinary or interdisciplinary requirements. Medlars, in short, is the bridge between the two worlds, between the past and the future.

National significance.—Computer-based information systems developed or contemplated to date have been restricted to the use of a particular group or company, and are, in a real sense, private systems. The significance of medlars is that it has a potential for controlling the largest of the scientific literatures for one of the largest professional groups as a public service function. On completion, this computer-based indexing system will be a unique asset for American science. The library expects and intends to share this Government-owned asset widely with other institutions, thereby to realize as completely as possible this national potential.

"Current awareness" services.—To keep scientists up to date on newly published research results published throughout the world, specialized rapidly produced listing services are an essential. With increasing frequency the library has been approached by interdisciplinary research groups, representing both public agencies and private societies, with request for monitoring devices which will cover the world's literature of special interest to them. In a first phase, the library plans to provide up to 50 current listing services, each tailored to the specifications of a research group, as one of the principal medlars products. Through the duplication of medlars tapes, and the use of computers at university centers, this facility can be progressively expanded in a second phase on behalf of still more groups. In a third phase, such listing services can be provided for research teams and individual laboratories in many centers.

Toward a national retrieval network.—The unprecedented search and retrieval capability of the medlars system can and should be widely duplicated if the full benefits to American medical science are to be realized. Following the principal that bibliographic access and physical access should go hand in hand, the NLM has developed preliminary plans for the establishment of a national retrieval capability in which medical libraries at university centers throughout the country will have a central role. Prelminary plans have been developed, which call for the duplication of tapes from masters prepared in the NLM, and their distribution to other libraries having access to computers. Much further developmental work must be done before such a system can be an operating reality, but the library looks forward to the day when 50 libraries in as many States will utilize the Index Medicus published in a magnetic tape edition for daily machine literature searches in support of local research needs.

Depressed state of medical libraries.—This unprecedented retrieval capability, however, has little meaning to the libraries or to the national research effort unless it is matched with adequate availability of the literature itself. For years it has been increasingly evident that medical libraries have been undersupported by the schools and institutions which they serve. Ten years ago, when the Federal funds for medical research were half what they are now, the professionally conducted survey, "Medical Schools in the United States at Mid-Century,"[2] found "little evidence * * * of attempts to meet the libraries' increased needs during a period of tremendous expansion in the research and other activities of the schools." The report concluded that faculty workers, research workers, and students would be "severely handicapped unless the new demands placed on libraries are met by careful administrative and budgetary planning. In a Nation dependent on medical research to a greater degree than ever before, surprisingly little is being expended on the housing of the reports of that research and on making those reports available."

The Deitrick survey found the medical libraries had accumulated deficiencies through years of undersupport, and judged them to be dangerously inadequate to meet the needs of medical research and eduaction 10 years ago. In the 10 years since the report, wtih greatly increased burdens placed on them, the libraries have not held their own; research expenditures have increased eightfold; the amount spent on libraries but doubled. Of all the resources supporting national programs of research and training, it is obvious that the stored intellectual resources, represented by the medical libraries, is the weakest.

Their weakness is evident in four aspects: books and journals, skilled manpower, outdated technology, and housing.

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[2] Deitrick, J. E., and Berson, R. C., "Medical Schools in the United States at Mid-Century," New York, McGraw-Hill, 1953.

Library resources.—The demands of interdisciplinary research for library materials in basic scientific fields not previously considered to be within the scope of a medical library have caught many libraries unaware, and unprepared to acquire, process, and store the large amounts of new literature required. Library budgets, already inadequate for the purchase of books and journals in the conventional medical sciences, have been overpowered. The median medical school library of 53,000 volumes is about half of what it should be to support broad biomedical research programs.

Regional medical libraries.—Faced with these deficiencies, libraries in metropolitan centers have entered into cooperative agreements for the pooling of their resources. Several areas (New York, Boston, Pittsburgh, and Cleveland) have preliminary plans for regional medical library centers, which would store and service on behalf of the entire metropolitan library complex, the lesser used but scientifically important literatures of medicine and its related scientific fields. Dollar resources have been lacking to support this promising trend, which is entirely compatible with the NLM plans for decentralizing the medlars system.

Manpower deficiencies.—Manpower deficiencies are both quantitative and qualitative. A vicious circle of low performance requirements, low salaries, low training resources, low recruitment successes, and again low performance requirements has led to a depressed situation where able, qualified medical librarians are in distressingly short supply. The median number of librarians with professional training working in schools of medicine is 3; the total professional manpower pool for 80 schools of medicine is 326.

The revolutionary changes in the scientific bases of medicine, the new fields of interdisciplinary research, the rapid advances being made in the organization, storage, and retrieval of medical information have caught the medical librarians grossly underprepared. The talents, for example, to master the man-machine interrelationships of the proposed decentralized medlars system are almost nonexistent.

The strengthening of educational resources, the vigorous recruitment of new manpower, the retraining of librarians already on the job, are essential if the human resources necessary to the servicing of the information needs of medical research and education are to be assembled.

Outdated technology.—The technologies related to the provision of better bibliographic access (e.g., machine storage and retrieval of information) and to physical access (e.g., photocopy devices, facsimile transmission) have made giant strides over the last decade. Medical libraries have been slow to profit by these advances primarily because of the developmental costs involved, and the capital outlays, which, even though modest, have been beyond their ability to fund. If the libraries are to become effective instruments for supporting research and education, attention must be given to research and development to bring the advantages of modernized technology to the library process.

Construction needs.—Most urgent is the need for more and improved housing for medical libraries. The majority of libraries which were planned a generation ago were underplanned at the time, were hopelessly overcrowded 10 years ago, and are desperately in need of more space today. The "publication explosion" cannot be accommodated within the four walls of underplanned libraries.

As a consequence, in many institutions, publications essential to research programs are warehoused miles away from the school campus, making the ready access of scientists to the literature a fiction. The operating inefficiencies of such medical libraries handicap severely the educational and research programs conducted within the schools.

Seventy percent of American medical school library buildings are more than 10 years old; 50 percent more than 30 years. A 1957 survey [3] showed that over half of the medical school libraries reporting had exceeded their shelving capacity, and but a handful of new buildings have been achieved since.

Recommendations of National Advisory Health Council.—The National Advisory Health Council has passed repeated resolutions calling attention to the serious state caused by library inadequacies. Its resolution of November 1962 reads in part: "The medical library network which has been designed to make the published record of medicine available is in dire trouble. During a period of intensive development of research institutions, their essential library support has been seriously neglected. In recent years, the needs for adequate library

[3] Fry, A., and Adams, S., "Medical Library Architecture in the Last 50 Years." Bulletin, Medical Library Association, 45: 47–79 (1957).

working and storage space, for more trained library personnel, and for new methods of handling and disseminating the growing scientific medical literature have become acute."

Bloomquist survey.—A 1962 study[4] of the accumulated needs of medical school libraries—which is equally applicable to other types of medical libraries—iterates these deficiencies, points out that little improvement has occurred since the Deitrick survey of 10 years ago, and makes the following recommendations for an action program, involving Federal assistance:

Recommendations

1. Federal funds should be made available to both existing and new medical schools for the purpose of building up their collections to a minimum adequate standard. It is suggested that this standard in 1962 be 100,000 volumes and the current receipt of 1,500 journals.

2. Federal granting agencies should take realistic responsibility for the support of their grant programs in terms of the literature, library staff, and library services required, just as it does in terms of equivalent technicians and laboratory services required.

3. Federal funds should be made available for the support of the essential bibliographic apparatus needed in medical research. This apparatus today is breaking down. The National Library of Medicine should take national leadership in medical bibliography in its multidisciplinary aspects.

4. A system of regional reservoir libraries should be established in the United States, encouraged and supported by the National Library of Medicine through the granting of funds, the development of an improved bibliographic apparatus, and the development of an improved communications network.

5. If science information centers develop with the aid of Federal funds, maximum advantage should be taken of existing library resources in order to minimize useless and costly duplication.

6. Federal funds should be appropriated to initiate a vigorous program of recruitment, education, and training of medical librarians aimed at raising the standards of medical librarianship and creating a manpower pool. These funds should support and expand the Medical Library Association's present programs of scholarships, fellowships, internships, and continuing education. In addition funds should be made available to qualified academic institutions for the initiation or improvement of their training facilities in this area.

7. Federal matching funds should be made available for the constructing, equipping, and renovating of medical school library facilities under the research facilities construction program. Federal grants to new medical schools for library construction and equipment should be provided under the proposed educational facilities construction program.

8. A program should be established whereby nonrecurring Federal grants for special projects would be made available directly to medical school libraries. These would tend to be small in amount and for the purpose of catching up with existing backlogs.

9. Experimentation in new electromechanical and reproductive devices relevant to library problems should be encouraged and funded.

NLM interests.—As a national library, with a statutory responsibility for the dissemination of health and medical information, the NLM is deeply concerned with the health and service capabilities of other medical libraries. It is well aware of the national need for the strengthening of medical library resources and services. Even though the library had no national system for mechanized storage and retrieval in contemplation, a large-scale program to raise these libraries out of their present depressed state to a level adequate for the support of present-day research and education is still urgently required.

As the world moves into the computer age, and the medlars system becomes operative, the underdevelopment of medical libraries poses a critical problem. How will the power of electronic retrieval benefit local research needs if the local medical libraries cannot supply the literature retrieved? Of the two basic research library functions, the provision of bibliographic access and the provision of access to the materials, the former can be performed with a tenfold increas eof efficiency; the latter remains grossly depressed The mismatch of capability is great, and comparable to the installation of a turbofan motor in a model T chassis. The full benefits of the medlars to the American medical

[4] Bloomquist, H., "The Status and Needs of School Medical Libraries in the United States," Boston, 1962.

establishment cannot be realized without the rehabilitation of local medical libraries.

Over a long period of time, local resources have proved to be inadequate to provide for the normal development of medical libraries at rates commensurate with the increase in research and educational requirements. Now, these chronic needs are magnified by the challenge of the electronic age. The library believes, therefore, that a comprehensive program of Federal support, on a matching basis, is essential to rehabilitate the medical library system. This will require specific Government-assisted programs for education and training, to raise the skills of librarians on the job, and to increase the national manpower reservoir. It will require programs for the building of new library facilities, and the reconstruction of older ones. It will require support for the augmentation of library collections, for strengthening the many direct services performed for research workers, and for research and development in library technology.

Only through a major rehabilitation effort can the country's medical libraries reach a status where they can be full partners of the NLM in exploiting the potential of the medlars. And only through such extensive exploitation can the country's medical research effort be supported with information services at a level adequate to the national purpose.

Nonconventional information systems

The library represents a conventional information system familiar to us all. It appears that we can expect—in addition to innovations in the conventional systems, as represented by medlars and other changes taking place in libraries—the development of almost totally new nonconventional systems.

New electronic methods for handling information are now becoming available. Eventually an electronic nationwide or even international network with central storage of information and local "browsing" and retrieval may speed and improve the flow of information.

The U.S. Public Health Service is now giving intensive consideration to needs for expanded and modernized procedures for national or international biomedical information processing. Much research and development obviously would be required before such a system could be operative. The Service has recently consulted a number of experts in this field, in order to get their opinions concerning the desirability of a range of projects and proposals. The Service has requested from these experts their detailed comments about many aspects of this system including its feasibility, the length of time which would be required to make it operative, the present existence of necessary hardware and software, further development of components which would be required, cost estimates, and alternate proposals which would accomplish the same purposes as such a system more feasibly or efficiently or at lesser expense.

A tentative decription of a national or international network for automated information processing is set forth here for the committee's consideration.

> In light of the rapidly increasing biomedical scientific information, and in anticipation of radically changed methods of handling information, serious thought should be given to the development of a national or international network for information processing, storage, and retrieval of biomedical articles, books, and documents of all sorts. These would be collected at a central point, as rapidly as possible after they have been produced. Possibly manuscripts could be transmitted by wire directly from the author to the central point. The full documents would be stored electronically, abstracted in various ways by machine or by human abstracters, and translated as necessary. Original materials and abstracts would also be transmitted to appropriate information evaluation centers, where critical reviews of the current state of specialized fields would be prepared in appropriate formats for other scientists, for pactitioners like physicians and dentists, for the public, and for health administrators.
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> The original articles, the abstracts, and the critical evaluations would be made available for retrieval of individual facts contained in them as well as for total retrieval, at dispersed places throughout the country and perhaps abroad. This retrieval might be accomplished over ordinary long-distance telephone lines, or perhaps over a special network established for the purpose, if that appeared more efficient.
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> Some aspects of the system would certainly be altered to increase its sophistication after the primary system became operational. Consideration of the following points is necessary in the planning of this system:
>
> 1. Optimum methods for searching for stored information.

2. Alternative coding systems for identifying informatin.
3. Alternative forms of machine and human abstracting.
4. Alternative information storage rationales.
5. Developmental work required on new information processing hardware and software.
6. Developmental work required on techniques for remote transmission of information so that it can be available on demand to users who may wish to "browse" through it at a distance.
7. Techniques for automatic suggestion to the searcher about secondary materials relevant to his interests.
8. Searching techniques which will automatically teach the user how to operate the system most effectively, as well as "learn" from users how to adjust filing and coding procedures for greater efficiency.
9. Procedures which will take the initiative in notifying users of new items of possible interest to them.

Suggestions as to the overall organization and operation of such a program are being collected by the Public Health Service.

Consideration is also being given to similar systems for the processing of clinical records of medical cases, whether this is feasible, whether it should be integrated with the above system for biomedical information processing, operated on a parallel basis, or operated entirely independently.

Evaluation of scientist-to-scientist communication in the biomedical field

The first step in implementing any system for transmitting biomedical information from the research stage to practical use in improving the health of the individual is identification of user groups, their needs for information, and their present methods of getting and using information.

To this end a project is now underway sponsored by the National Institutes of Health and involving the joint efforts of the Federation of American Societies for Experimental Biology, the Institute for Advancement of Medical Communication, and the National Academy of Sciences-National Research Council.

This project will obtain an integrated picture of the needs, habits, and problems of the biomedical community of research workers and teachers with respect to biomedical information and relate this picture to the complex of systems and services involved in the handling of such information from its generation through its ultimate use for the purpose of:

1. Evaluating the nature of the problems presented to the scientific community and the character of present and anticipated needs.
2. Identifying actions that can be taken to improve present circumstances and areas where further, more detailed studies are indicated.
3. Developing principles useful in guiding private and governmental efforts toward more effective management of scientific and technical information for the advancement of the biomedical sciences.

Primary emphasis will be placed on unrestricted channels of information, written or oral, by which the scientist communicates at his own volition. Consideration will also be given to the problems of privileged information whose dissemination is restricted either for the protection of the investigator (applications for grants, progress reports, and other administrative materials) or for the protection of national security.

To achieve the objective of this project a number of coordinated studies will be conducted aimed at three broad areas of assessment:

1. An examination and evaluation of the problems and needs of the working scientist in respect to the generation, dissemination, and access to scientific and technical information and the systems, services, and resources therefor, as viewed by and within the scientific community, including studies such as:
   (*a*) An assembly, critique, and synthesis of available data on scientists' habits and attitudes.
   (*b*) A delineation of the several roles and responsibilities of the scientist in regard to scientific information as an invesigator-generator, a user, and a purveyor-evaluator (referee editor, teacher, reviewer, etc.).
2. A review and assessment of the nature, status, problems, and potentialities of present and prospective mechanisms, systems, services, and approaches to the management of scientific and technical information in relation to the problems of the working community and other needs, including:
   (*a*) An assessment of the total resources (private and governmental) in biomedical communication.

(*b*) An analysis of the strengths and weaknesses of each of the major types of publication: primary (journals publishing the original reports of research), secondary (abstracting and indexing services, bibliographies, etc.), and tertiary (reviews, compendia, handbooks, etc.).

(*c*) An assessment of critical operational and technical problems of information services and of potentialities for the use of mechanical and electronic devices.

(*d*) A critical review of current experiments in scientific communication.

(*e*) An analysis of the optimal roles of general information centers (libraries) and specialized information centers.

3. Development of a broad plan of action indicating immediate feasible steps, useful direction of further effort, principles to be observed, respective responsibilities of public and private agencies and areas of further study, including:

(*a*) Delineation of the responsibilities that would seem, on grounds of tradition and professional practice, to be appropriate to private resources, and those which would seem to call for Government initiative.

(*b*) An exploration of mechanisms for achieving voluntary coodinaation and integration of private efforts in biomedical communication and across the interface between private and governmental efforts.

(*c*) Developing principles for determining in what fields specialized information centers of services are most needed, for evaluating their effectiveness, and for preventing duplication of effort by vertical and horizontal ties to the total biomedical information complex.

(*d*) The relative characteristics of services intended for discipline-oriented research workers and those designed for "mission-oriented" investigators.

The project will culminate in a final report which will attempt to integrate the substance of the several studies into a coherent evaluation of needs, practices, and resources and will make specific recommendations for action and for further study.

Operational plan

The project is conceived as primarily a staff task force operation developed in cooperation with informal panels of scientists representative of various fields of biomedicine. As staff papers are developed, they will be submitted informally for criticism and elaboration to established committees of the Academy-Research Council and to ad hoc groups of biomedical scientists and of information specialists.

In view of the needs of the Service with respect to early planning and programing, the project groups will submit working papers and progress reports from time to time as ideas and patterns mature, or as it becomes possible to identify additional studies that can be initiated.

The final, comprehensive report, which will emphasize principles and recommendations, will be evaluated and approved by a senior advisory committee, and should be ready for submission to the Director of the National Institutes of Health by October 1963.

Manpower

The traditional concept of information specialist was limited by its emphasis on the librarian.

The skills now required in handling scientific information involve a variety of professions, including psychologists, science writers, editors, research workers, teachers, health and medical practitioners, health educators.

Very close cooperation among all those groups concerned with improving communication will be necessary to develop, through training and recruitment, a supply of competent communication personnel.

Programs will be no better than the people who are selected to plan them and put them into effect. Adequate manpower, both in number and in competence, is one of the keys to success in any program. Improved communication activities by the Public Health Service will undoubtedly require more personnel and more training both on the job and for those preparing for Service positions. A statement from the Panel on Research on Communications at the November 1962 conference on health communications is pertinent:

"Although no system of priorities in research was devised by the panel, it was agreed that the element of personnel resources is critical to the entire field of

communication, and especially to research in communications. Along with the importance of recruiting and training programs, it was agreed that the process of identifying, selecting, and training personnel in these fields is an appropriate domain of research."

Research already undertaken suggests a rather direct and simple solution to certain problems of personnel; that is, raise salaries. The Bloomquist study on the needs of medical school libraries in the United States points out, for example, on page 26:

"It is all very well to discuss recruitment, training, and continuing education of medical librarians, but in order to recruit, you must have something to offer; in order to train properly, you must have someone who can be properly trained, and in order to educate continuously you must have someone who can learn. * * *

"One medical school pays its chief librarian $4,500. One school pays a professional assistant $3,000. Although there are 17 medical schools who pay a librarian $10,000 or more per year, there are 42 who pay $5,000 or less per year and 7 who pay less than $4,000 per year.

"The median annual salary of all professional medical school librarians is $6,000. The median annual salary of U.S. college and university faculty members, all ranks, all institutions, is $7,486. The approximate annual salary of secretaries in San Francisco is $5,278. More than 25 percent of the professional medical school librarians in the United States make less per year than secretaries in San Francisco."

Continuing medical education

Professional health practitioners must keep abreast of new information and developments which could affect their practice.

The Bureau of State Services has plans for expanding its programs of continuing education for health practitioners.

The panel on "communication with practitioners" at the Surgeon General's conference on health communications gave first priority to consideration of continuing education for health personnel and agreed upon a comprehensive recommendation which was presented to the conference and to the Public Health Service for consideration.

Systematic collection of drug information

The need for more precise channeling of information on drugs seems apparent. The absence of any system to coordinate and distribute information on drugs has been a matter of public discussion and recent comment in the Congress.

Establishment of a formal drug information processing system of some kind is probably imminent.

The kinds of information to be collected, organized, and selectively distributed include—

1. Drug brochures and similar collections of information about regularly used drugs, especially new ones;
2. Continuous appraisals of volume of use in each country for each drug;
3. Adverse reactions;
4. Therapeutic advantages, especially comparison studies;
5. A country-by-country collection of management-type information, legal basis for drug controls, government organization and personnel, identification of research workers by name and by institution, and their current lines of research.

Information collection, organization, and dissemination might be contracted out to a professional society organization, with DHEW retaining policy control and direction, and with formalized participation in information collections by the State Department and other Government agencies.

Systematic collection and organization of information about drugs would be of great value for several purposes:

1. To aid U.S. drug research by providing up-to-date information about therapeutic failures and successes in other countries;
2. To aid U.S. drug development by bringing to pharmaceutical manufacturers full and prompt information about commercial successes in foreign countries;
3. To aid the Food and Drug Administration in its evaluation of drugs for safety and effectiveness;
4. To serve as a prototype for analogous systems for collecting and utilizing information pertinent to other aspects of environmental health.

A project prerequisite to establishing such a drug information network is now underway.

The purpose of this project is to define in detail the specific kinds of drug information needed by each one of the groups that might reasonably be expected to be a major collaborator in the ultimate international network of drug information exchanges. Approximately 30 major users and contemplated suppliers of drug information have been identified.

A second purpose of the project is to collect information about sources of drug information, published and unpublished.

It is not a purpose of the project to define ultimate organizational or administrative patterns, nor the mechanical aspects of information handling. Both of these aspects necessarily await more definitive descriptions of needs for information outputs and resources for information inputs.

The Medical Board of the NIH Clinical Center has established a task group on drug toxicity and reaction reporting, chaired by Dr. Joseph J. Bunim, Clinical Director of the National Institute of Arthritis and Metabolic Diseases. The group is to study and report toxicity and drug reactions arising within the clinical programs carried out within the Clinical Center. This system is planned as an experimental development looking toward the formulation of a model that can be extended to other major hospital centers in the United States.

The objective of this system will be to permit the continuing study, analysis, and reporting of data on the toxicity of, and adverse reactions to, drugs in current use in the context of the total experience with such drugs in diverse clinical programs.

A second stage would be the extension of the system to a small number of major clinical settings to permit the inclusion of from 2,000 to 4,000 patients in this analysis of experience with drugs.

A final stage could involve broadening the coverage of this study and reporting program to include facilities whose patient load might total from a 20,000 to 50,000 daily census of patients.

There has also been established at the NIH a Committee on the Management of Drug Information, chaired by Dr. Thomas Kennedy, special assistant to the Director. This committee has been given responsibility for devising a formal and effective pattern for providing information, expert advice, and consultation to the Food and Drug Administration.

International potential for communication

Many of the activities which are being considered for national health programs will probably be expanded to become international in scope.

The United States as well as all other nations stands to benefit from an international exchange of biomedical information.

It is presumed that agencies other than the Public Health Service will be responsible for international programs. The Service will share, however, in the concern and some of the responsibility insofar as the subject matter is public health.

Developments in public information

Those whose job it is to be aware of variations in the public's interests in scientific information report a hunger for more knowledge and for treatment of subjects "in depth."

More substantive reports to the lay public would be welcomed. Formalized and regular reports prepared in some detail and richness of explanation would find an eagerly receptive audience.

Several proposals for public information projects under consideration by the Public Health Service are rather long-standing, having waited authorization and funding for their implementation. Others have been developed more recently by the Office of Information and Publications in association with the Bureau information officers and represent new departures or major new activities.

The proposals vary from the modest and easily activated to the more ambitious and long-range. Among these proposals are short, inexpensive filmed progress reports, a yearbook of health, and programs for science writers and editors.

Information about ongoing grant-supported research

Special attention is being given in the Service to the distribution of information developed as a result of research grants, with emphasis on the scientific content of this information as contrasted with information developed for administrative or management purposes.

The Public Health Service relies to some extent, although not entirely, on the Science Information Exchange, for releasing information on the Public Health Service extramural programs of research and for obtaining information about grants awarded by other agencies.

Until recently, components of the Service followed individual and differing policies on whether they sent information regarding research grants to the Science Information Exchange. Newly established policy requires all components to submit such information.

Some bureaus are in the process of working out systems of reporting that will be compatible with other information collecting and reporting operations already established. By the middle of the year a complete reporting system for all bureaus to the Science Information Exchange should be in effect.

Research in communication

Existing techniques and knowledge must be used in reducing communication difficulties and there is need to develop new ideas and methods.

Facilities must be obtained to provide for the requirements of this relatively new field of research. Training of new investigators will have to be undertaken.

While communication research centers will be concerned with the development of new techniques, they will also conduct research on conventional methods and the evaluation of techniques which are currently being used.

Research on communication will use skills from many scientific disciplines. Behavioral, social, and educational research will emphasize the human factor in communication; progress in electronics, computers, and so-called hardware will put at the disposal of the man new mechanical aids.

Consolidation of terminology dictionaries in the health science fields

Systematic control over information requires agreement as to the meanings of specialized words. The National Library of Medicine has compiled, for "Index Medicus," a formal list of indexing terms. The NIH–DRG has a formal thesaurus—list of "descriptor" words or indexing terms—which is being used to compile the "Research Grants Index." The Science Information Exchange maintains a similar kind of thesauric control over the materials it processes. The Bureau of State Services is compiling a thesaurus for its fields. The Department of Defense in its ASTIA program, has a thesaurus for biomedical terms.

None of these agencies makes a successful attempt at coordination of terms with any other. Public Health Service interests, and fields, are best represented by the indexing lists maintained by the National Library of Medicine, suitably expanded.

It would seem advisable that a consolidated and dynamic thesaurus be worked out for all the areas represented in the Public Health Service. The system approach worked out by the National Library of Medicine appears to be the most practical at present. An analogous, centralized, Service-wide program would provide efficient bibliographic control over Public Health Service supported work, and could provide continuously updated periodic indexes to the programs of any given institute, division, or program area.

A very important consequence of the Conference on Health Communications is developing through meetings of representatives of "Chemical Abstracts," "Biological Abstracts," "Excerpta Medica," and the National Library of Medicine, where attempts are being made to reach agreement on terms and systems for indexes and abstracts.

VII. NEEDS FOR THE FUTURE

Communication will be a continuing concern. There have even been predictions that things may get worse before they get better in the business of transmitting scientific knowledge.

It is to be hoped that the effect of stepped-up efforts by research and health agencies will be sufficient to disprove this gloomy prophecy.

Continuing guidance from the public

The Surgeon General's conference on health communications was helpful in channeling recommendations from a variety of sources to the Surgeon General. The Public Health Service will continue to seek counsel from those outside the Government who are in strategic positions to be aware of the shortcomings and potentialities of Public Health Service programs.

A balance of short-range and long-range goals

It will be very important for the Service, as well as for other agencies confronted with communication needs, to have long-range goals and short-term objectives and to be striving for both at the same time.

Providing seminar for science writers, which can be done with relative ease, must be accomplished concurrently with investigating and perhaps instituting electronic transmission of drug information on an international basis.

Public Health Service reliance on non-Government systems

Fear has been expressed by some representatives from the scientific community that the Government's concern with communication might lead to the formation of a monolithic system of information exchange which would supplant the various and scattered non-Government systems now in operation.

In view of this misconception, the Service feels that it is appropriate to articulate and to emphasize its reliance on non-Government systems and its intention to utilize, support, and extend the non-Government services already in operation which provide a strong and irreplaceable foundation for much of the necessary work in scientific communication.

The Public Health Service reliance on non-Government systems for biomedical communications has had several direct benefits. The most important of these is the maintenance of quality controls by the total scientific community, through the editorial boards of scientific journals and societies. Direct reporting of research and development results has been avoided deliberately, for this reason.

As a consequence, we are not faced with the difficult problem of in-house evaluation, the acceptance or rejection of grantee reports for inclusion in a Government-controlled science information management system. Recipients of research grant funds from this agency retain responsibility for primary publication of their results—seeing to it that the quality of their offerings is high enough to be accepted for publication by a reputable journal. This system works well since a scientist's professional reputation—and his ability to secure support for his research—is dependent on his record of scientific productivity, measured by his peers.

Nevertheless, financial problems exist. An attempt to meet these, at least in part, is reflected by the now Government-wide policy of permitting "page charges" as a direct cost of research, charges against grant funds for primary publication of results, where these charges are made by the publisher to all authors. This is at best a stopgap measure, producing certain inequities difficult to resolve.

The high cost of publication, coupled with the increasing volume of research results, has led to wasteful practices. Scientific journal editors are placing more and more emphasis on short papers; authors are frequently told to reduce the number of pages by a third, or a half, to be acceptable. Such abbreviation is often, but not always, desirable. More important is the hidden effect. All scientists realize the difficulties editors are facing and the unlikelihood for acceptance of manuscripts which deal with so-called negative results, or with experimentation in seemingly less important aspects of biomedical science. Such papers may, therefore, never be written. Discouraging primary publication has important long-range effects on scientific discovery.

The Public Health Service is ready to accept a larger part of the responsibility for the continuing health of our present systems for reporting the results of research through traditional, non-Government-controlled, channels.

Some specific proposals

The Service is now engaged in studying and in implementing a large number of specific recommendations which have been garnered from within the Service and from the communications conference.

The conference recommendations present in condensed form a quantity of ideas, both simple and complex, which convey the flavor of what communication involves. The recommendations suggest the wide range of actions needed.

The recommendations of the conference participants constitute an important segment of the Report on the Surgeon General's Conference on Health Communications. The report is available as Public Health Service Publication No. 998.

KANSAS STATE UNIVERSITY LIBRARY MANHATTAN, KAN.

Dr. TERRY. As I indicated earlier, virtually everything we do could be discussed under the heading of "Extending and Improving Health Services for the Public." However, there are several areas where the Service has unique functions which I would like to discuss separately.

C. QUARANTINE AND COMMUNICABLE DISEASE CONTROL

This is the second oldest function of the Service, beginning as early as 1799. It is still a large and important activity.

By acts of 1878 and 1893 Congress authorized the Service to begin opertaion of a Federal quarantine system. Nearly 400 quarantine inspectors are maintained at ports of entry into the United States.

At 22 locations in Europe, Canada, Mexico, and Hong Kong, medical officers are stationed to carry out the medical examination of aliens applying for visas to enter the United States.

The striking increase in tourism and especially the rapidly increasing international air travel have greatly complicated our job. Smallpox, cholera, and yellow fever—diseases which have been eradicated in this country—are still only a few hours from our shores.

More than 6 million people entering this country each year from foreign lands are inspected for quarantinable and other communicable diseases.

In addition, about 11 million inspections are performed on persons who periodically cross or make local visits along the Mexican border. Approximately 300,000 Mexican migratory farmworkers, who enter this country under the farm placement program, get medical examinations every year.

Special measures have been required to protect the United States from smallpox importation for the past decade, from cholera, and yellow fever in the past several years, and from typhoid in 1963.

In the last 6 months of 1962 our quarantine staff gave special attention to 3,997 persons at U.S. ports because of a communicable disease problem; 1,874 of these were found to have a disease, and action was taken to prevent the spread of infection in the United States.

Any infected person arriving in the United States may be placed under appropriate control until he is no longer a danger to public health, if he is infected with one of the communicable diseases specified in Executive orders of the President on recommendation of the National Advisory Health Council and the Surgeon General. The law also provides that we examine certain aliens entering this country to determine whether they have excludable conditions which are specified in the Immigration and Nationality Act:

(1) Dangerous communicable diseases, (2) feeblemindedness, insanity, psychopathic personality, epilepsy, narcotic drug addiction, chronic alcoholism, and other mental defects, (3) physical defects that may limit the alien's ability to earn a livelihood where it is evident that this will result in the alien's becoming a public charge.

These examinations are now made abroad before the alien is given a visa to come to this country. In 1962 Public Health Service officers stationed abroad examined 189,000 visa applicants. Of these about 1,800 were found to have an excludable disease.

Measures are also taken to prevent the introduction of insects, animals, and biological materials that may be carriers of dangerous diseases.

This system, Mr. Chairman, works with remarkable effectiveness. For instance, 1962 was the 15th straight year that this country did not experience an outbreak of quarantinable disease known to have been introduced from abroad.

The Service has comparable authority with respect to interstate quarantine. If recommended by the National Advisory Health Council, the Service may adopt regulations to apprehend and examine any individual who is reasonably believed to be infected with a communicable disease, and who is moving, or about to move, from one State to another. If the individual has an infectious disease he may be detained for such time and in such manner as may be reasonably necessary.

Actually this power has been seldom used. Any action usually is taken at the State and local level. The authority to adopt interstate quarantine regulations has been used very constructively, however, in developing a program to attain and maintain adequate sanitation, particularly in eating, drinking, and waste disposal facilities aboard interstate carriers. By the same token, our foreign quarantine authority has been the basis for upgrading the sanitation features in existing and newly constructed merchant ships.

(NOTE.—The foreign quarantine functions are described in more detail on pp. 22–24.)

D. BIOLOGICS CONTROL

The Service also has somewhat unique functions with respect to biological products for human use. Regulation of these biological products was first required by act of Congress in 1902 and is now incorparted in section 351 of the Public Health Service Act.

We have responsibility to inspect and license both the producing establishments, as well as the items they produce. This applies to—

> any virus, therapeutic serum, toxin, antitoxin, or analogous products or arsphenamine or its derivatives * * *

The law also applies to human blood products and all of their derivatives. The law specifies requirements on labeling, and sets a fine of $500 or imprisonment not exceeding 1 year, or both, upon conviction of a violation.

The authorizing legislation provides for the establishment and maintenance of standards for the safety, potency, and purity of commercial biological products applicable to the prevention and treatment of the diseases of man. Although the law applies primarily to products in interstate commerce this encompasses virtually all biological products in this country.

In practice, our approach to this problem has been to develop a close working relationship and a free exchange of information with the manufacturers. We place considerable reliance on data submitted by the manufacturers on their products. Independently, however, we check their results.

Over 7,000 control tests are performed annually on individual lots of biological products. Seventy-five official standard, reference, and control preparations are currently maintanied, and each year about 6,000 vials of standard reference preparations are distributed to manufacturers and laboratories throughout the world.

We, of course, have to develop the standards which the manufacturers must observe to assure safety, potency, and purity. Much research is required to do this. Once the standards are developed, they are published as regulations in the Federal Register, and acquire the force of law.

We also conduct and support a research program to develop control tests for new biologicals, and are constantly attempting to improve the quality of vaccines, and other biological products that are already on the market.

E. CERTAIN ENVIRONMENTAL HEALTH PROGRAMS

As I pointed out earlier, the Service has long been concerned with environmental health problems, but largely from the standpoint of the transmission of communicable diseases. This still is an important area. However, many new problems have arisen as a consequence of the thousands of new chemicals and other substances, some of which find their way into the air we breathe, the water we drink, and the food we eat.

The problem is further compounded by various materials arising from auto exhausts, smoke from factories, incinerators, and fallout of radioactive substances from weapons testing. All of these are impinging on man usually in minute doses, but from multiple sources, and with health effects not yet fully understood.

One of the sharpest dilemmas confronting the American people is how to create a healthful environment in a highly industrialized, urbanized society, and at the same time retain the benefits of modern technology. Modern technological developments have added enormously to the healthfulness and convenience of daily living. Yet, these benefits have not been without cost in terms of health—not to mention economic effects—damage to crops, buildings, recreation areas.

Our programs in water pollution, air pollution, food and milk, radiological health, occupational health, and accident prevention in general, employ the same means as I have already described. The objects of their attention are, however, quite different from the other programs, and the media through which man is affected are unique—since air, food, and water are requisites for life, itself.

Much additional research is necessary to detect, identify, and measure the suspect materials, to assess their effects on health, and to devise effective and economical methods of control. Trained manpower for these complex and difficult undertakings is in exceedingly short supply. Hence we have a training program—not yet adequate, but improving.

There is much that can be done to apply existing knowledge, and this we are doing as vigorously as we know how within the limits of appropriation and legislative authorizations.

The scope of our authority varies considerably from one area to another. In water pollution, for example, we have considerable authority, ranging all the way from research through assistance for facility construction to enforcement powers. The law grants these authorities to the Secretary of the Department of Health, Education, and Welfare, who has in turn delegated them to the Public Health Service—except the enforcement functions.

The water pollution program also has another unique feature: It directs the Department to be concerned with—

> waters for public water supplies, propagation of fish and aquatic life and wildlife, recreational purposes, and agricultural, industrial, and other legitimate uses—

in other words, all legitimate uses of the Nation's waters. It assigns to the Department of Health, Education, and Welfare a major role in conservation and water resource development.

As this committee is aware, the Congress now has before it, several legislative proposals which would broaden our authority in other environmental health fields, particularly in air pollution control.

F. CHRONIC DISEASE ACTIVITIES

To help States and communities meet the changing health needs of their people, the Service is giving greatly increased emphasis to the stimulation and support of community health programs designed especially to serve the chronically ill and aged. Recent advances in medical knowledge could, if widely applied, prolong thousands of lives and prevent or relieve suffering for many thousands more. We are striving to speed the application of health knowledge—to shorten the timelag between what is known and what is actually done.

Toward this end, we are adapting our traditional methods of operation—technical assistance and financial stimulation—to solve problems in the chronic disease field. Grants authorized by the Community Health Services and Facilities Act of 1961 are helping to support new or strengthened programs in all the States, and experiments and demonstrations are now underway to develop better programs of home care services, to improve the quality of service in nursing homes, and for various other purposes.

Public Health Service personnel are working directly with their State and local counterparts to stimulate better programs for the early diagnosis of heart disease, cancer, diabetes, and glaucoma, to mention a few.

Special manuals have been prepared and distributed, outlining methods for the rehabilitation of stroke and arthritis patients which can be applied directly in the patient's homes.

These and many other programs are part of the Service's response to the urgent and complex challenge of the chronic diseases.

Our goal in this area is to apply the growing wealth of research knowledge—to prevent diseases where we can, and to prevent or minimize the damage done by those diseases which cannot yet be prevented.

G. INTERNATIONAL HEALTH FUNCTIONS

I would like to say a few words about our international activities since they are very important, and this committee has played an important role in what we are doing through the International Health Research Act of 1960. Because of this the committee print contains a full description of our international activities, which I shall simply highlight.

The Public Health Service is primarily a resource in the field of international health. It cooperates with national and international agencies, governmental and nongovernmental, by providing scientific information, expert advice, technical assistance and in some instance financial support to international health programs. It provides assistance to the World Health Organization which in turn is a primary resource in the health field for the 117 nations which are members.

The PHS is the official technical liaison of the U.S. Government with the World Health Organization. Beginning with the first World Health Assembly the Surgeon General has served as the chief U.S. delegate to all of the 15 World Health Assemblies (except one).

This particular assembly was in 1961 immediately after I came into office. Dr. Burney, who was retiring from the position of Surgeon General was well experienced and sophisticated in this field and was willing to continue as head of this delegation and at my request he kindly did so. I think he gave us the best representation that we could possibly have had at that assembly.

In a sense the creation of the World Health Organization was the culmination, on a worldwide basis, of an effort begun 46 years previously when the United States participated in organizing the first hemispherewide health organization, later to become the Pan American Sanitary Organization. We have a relationship with this organization quite comparable to that with the World Health Organization.

Likewise, our bilateral assistance program, now known as AID, had their start, so far as health is concerned, in this hemisphere with the inter-American health programs.

We continue to support the AID programs through assignment of staff—76 at the moment. Twenty-four of these are constituted into four surgical teams—surgeons, nurses, anesthetists, and laboratory technicians—to provide surgical care particularly for civilian casualties in South Vietnam.

We also provide assistance in research, technical advice, and short-term assignments of staff. We operate a Cholera Research Laboratory at Dacca, East Pakistan, in association with SEATO.

This area of the world is the last remaining focus where cholera is both endemic and regularly epidemic. Someday we hope this formidable disease will also be wiped out.

During the past 12 months, 1,181 foreign scientists and health administrators visited the facilities of the Public Health Service in the Washington area alone. We arranged formal professional education in U.S. institutions for 527 foreign health workers from 92 countries. Research training was provided for 190 foreign scientists at the NIH plus 92 elsewhere. Three hundred and thirty-five American scientists received similar experience and training in foreign laboratories.

We make research grants to carefully selected institutions and investigators in foreign countries and occasionally to international organizations. This is done under authority of sections 301 and 308 of the Public Health Service Act.

The latter section was added by the provisions of section 3 of the International Health Research Act of 1960, in which your committee played such a constructive role. These activities are undertaken as an extension of our domestic research programs to take advantage of unique research capabilities, special facilities, or other situations not available in the United States.

Eight hundred and four grants totaling $13.2 million are active at the moment. We have also developed collaborative research projects in each of the nine countries where excess foreign currencies are available as a result of our surplus agricultural commodity sales under Public Law 480, 83d Congress.

During fiscal year 1962 the NIH obligated the equivalent of $3,017,624 for 29 projects in six countries. Projects are also being de-

veloped in the community health and environmental health areas. This committee may recall that section 5 of the International Health Research Act of 1960 also authorized use of "foreign currencies which accrue under title 1 of the Agricultural Trade Development and Assistance Act of 1954, and the Mutual Security Act of 1954, or which are otherwise available for utilization by the United States" for the advancement of the health sciences. However, this latter authority was given to the President, and he has not yet delegated it.

Our international activities have grown to the point where NIH has established five offices overseas—at Paris, London, Rio de Janeiro, Tokyo, and New Delhi. We also have established research laboratories in Ghana, West Africa, and one in the Panama Canal Zone.

The international programs of the Public Health Service have grown in number and diversity as greater recognition has come that our own health problems and their solution are intimately interrelated with those of other countries.

H. VITAL AND HEALTH STATISTICS

Almost every operating program in the PHS produces some statistics for the guidance of its own program. However, we also have one program—the National Center for Health Statistics—that is entirely concerned with collecting, compiling, analyzing, and distributing health statistics on a national basis.

It is estimated that health expenditures, public, private, Federal, State, and local are approximately $30 billion per year. Our Statistics Center in a sense is the "human bookkeeper" for this activity, in which every American citizen is concerned.

Our national statistics give us the only comprehensive answer to the question, "How are we doing?"

Data is obtained from a wide variety of sources. In 1962, more than 6 million records of births, deaths, fetal deaths, marriages, and divorces were received through a chain of reporting agencies maintained by the States and developed into a nationally uniform system by voluntary State-Federal cooperation.

A wide variety of other sources of information are used through surveys, health records, special reports, physical examinations, and special interviews. The result is a vast array of statistics which are essential to policymakers, program operators, and planners, not just in the Public Health Service, and not just in DHEW or the executive branch. They are nationally and internationally useful.

Statistics on birth rates are of obvious interest to school authorities and to numerous others concerned with the social and economic effects of our rapidly growing population.

As the country becomes more densely populated it is a safe prediction that statistics showing the excess of births over deaths will come to have as much importance to the Government as do statistics on unemployment today.

Data on causes of death, disease, and disability, infant and maternal death rates, and so on, are essential guides to the pace and direction of public health effort. Time lost on the job from illness and injury, accidents, data on the utilization of health services in the home, in the doctor's office, or in the hospital—these and many more are additional guidelines to action.

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Trends in mortality, birth rates, the changing composition of the population, average life expectancy—all of these are important not just in health but also in many other fields.

Our National Center for Health Statistics is one of the five largest general purpose statistical units in the U.S. Government. It is now full converted to computer operations. I invite you to come over to the Department of Health, Education, and Welfare building, north, and take a look at this amazing operation. Since I cannot do the subject full justice in the brief time we have, I am submitting a much more adequate written document for your information and for the record.

Mr. ROBERTS. Without objection, that will be included.

(The document referred to is as follows:)

THE NATIONAL CENTER FOR HEALTH STATISTICS

PART A. THE WHY AND HOW OF HEALTH STATISTICS

In August 1960, the Surgeon General of the U.S. Public Health Service established the National Center for Health Statistics (NCHS). This new Center was one result of the recommendations that were made by a committee which was appointed to study the whole organization of the Public Health Service.[1] The main objective in establishing the NCHS was to create an organization, more adequate than those previously existing, to cope with the increasing needs for health statistics. It was recognized that "the shift of health problems from infectious diseases, population increases, population mobility, the fragmentation of health services, and the increasing complexity of the environment all present added difficulties in the development of intelligence adequate to meet current and future health needs * * *." and it was concluded that "* * * the Public Health Service has an urgent task in developing better ways to record and report basic health data, and to give them more rapid and meaningful interpretation."[2]

It was believed that these demanding needs could be better met by the creation of a statistical entity, within the Public Health Service, which would "* * * bring together the major components of Public Health Service competence in the measurement of the health status of the Nation and the identification of significant associations between characteristics of the population and health related problems."[3]

1. The particular importance of vital and health statistics

There is perhaps no aspect of American life in which policies and decisions have more far-reaching implications for the future of the country than in the related fields of health and demography.

Health is a matter of personal concern to every individual, and the collective health and vitality of our population is a critical element in the strength of our country. In addition, health expenditures, public and private, now total some $30 billion in the United States. Statistics on illness, accidental injuries, disability, mortality, health facilities, and the medical, dental, nursing, and other services received by the people form the basis for indexes of the priority of health and medical care problems. They also afford a means of evaluating success or failure in meeting these problems.

Statistics on births, deaths, marriages, and divorces, along with health statistics, provide some of the critical elements for understanding the changing structure of our population and for measuring its growth—in short, provide elements for the science of demography. Population growth and structure are matters of such deep concern to health programs that the latter are often categorically related to population groups, as in health problems for the aged, for migratory workers, and the like. Population changes are also matters likely to demand increasing attention by nonhealth Government agencies. A most obvious case is the interest of school authorities in the changing birth rate. The economic importance of marriage and divorce statistics, representing as

[1] U.S. Public Health Service, "Final Report of the Study Group on Mission and Organization of the Public Health Service," U.S. Department of Health, Education, and Welfare, Washington, D.C., June 1960.

[2] Ibid., p. 49.

[3] Ibid., p. 50.

they do the formation and dissolution of families, is equally obvious. As the country becomes more and more densely populated, it is a safe prediction that the statistics showing the excess of birth over deaths will come to have as much importance to the Government as do statistics on unemployment today.

It is also safe to say that the governmental decisions that have to be made in the fields of health and demography are as complex and the problems as stubborn as any other domestic decisions and problems which the country has.

All of these facts point up the need for comprehensive and reliable health and vital statistics to assist the policymaker in his job. Moreover, the importance of such data as aids to research should not be overlooked. A great deal of our peresent knowledge of the distribution of disease in the population and of trends in disease incidence comes from the statistics on mortality which we too often take for granted. An increased quantity and quality of statistics on disease morbidity is now being added to that fund of knowledge about disease characteristics. More and more often such statistics turn up new clues, curious associations of morbidity or mortality with population characteristics, which must be followed up by the research organizations. The observation of such relationships in the statistics leads to the formulation of hypotheses which, in turn, leads to experiments to test the hypotheses.

Hence, both the policymaker and the research worker turn to the statistics for objective evidence.

2. Who uses health statistics?

Almost every operating program of the Public Health Service produces some statistics for the guidance of its own activities. Naturally, such statistics are of principal concern to the programs themselves, to higher officials of the Service, and to other governmental and nongovernmental agencies engaged in similar work. The data are essential to efficient operation of the programs.

Statistics are also produced within the Service in the course of every experiment and research study that is conducted. The enormous volume of research findings is expressed principally in the form of statistics. So, in effect, every worker in the field of public health who has an interest in the research results published by the Service is a user of health statistics.

The concern here, however, is chiefly with the general-purpose vital and health statistics which are collected, analyzed, and published by the Public Health Service, chiefly by the new National Center for Health Statistics. For these data the variety of "consumers" is very great.

The most important consumers of the general-purpose health statistics produced by the Public Health Service are, of course, the programs of the Service itself. In many instances the collection is specifically designed to meet their needs. Other programs of the Department of Health, Education, and Welfare, particularly the Social Security Administration and the Vocational Rehabilitation Administration, make major use of these data, but the organizations and agencies who call upon the reports of vital and health statistics for information they need range far beyond the Department and beyond the executive branch.

Congressional committees initiate many requests for special data in connection with hearings. The hearings may deal either with the need for or the potential cost of new programs.

Beyond this, the findings are of particular interest to scientists in the fields of medicine, public health, demography, sociology, and economics. They are essential to a great variety of businesses, such as insurance and the manufacturing and marketing of drugs, medicines, appliances, baby foods, and an almost endless variety of other products.

Every kind of enterprise concerned with measuring population change, including, of course, the Bureau of the Census, uses statistics on births, deaths, and marriages from the Public Health Service.

Among the most important consumers of all are the providers of health services throughout the country. Medical and dental organizations, hospitals, clinics, voluntary associations, and public and private welfare groups use the information to plan and evaluate their activities.

The research uses of the data have already been mentioned and are well known. Less well known is the fact that in medical education, vital and health statistics are finding an increasingly important place in the curriculum.

As the data are improved in variety and quality, the possibilities for usefulness are growing. Constant attention must always be given to the consumer and his needs in order to make sure that data-collection activities remain responsive

to these needs. In this respect the National Center for Health Statistics, for example, operates in a manner similar to the manufacturer of any other product. The Center does not invest in the production of a statistical product unless it is known that there will be an important market for it.

3. The sources of basic vital and health statistics in the United States

It is obvious that the needs of a widely diverse group of users of health statistics, requiring a great variety of facts on every facet of the health of the American people, will not be satisfied by the use of any single simple source of data. The complexity of the data-collecting methods can be seen by a brief review of the many sources that must be tapped. This review of sources must of necessity be superficial. Whole textbooks have been written on the subject. What follows will be in abbreviated form and will cover only the principal sources of the national statistics produced by the Public Health Service.

(*a*) *Notifiable diseases.*—State laws require the reporting, by physicians and other persons, of all cases of certain diseases which are almost exclusively those of a communicable and epidemic nature. The national statistics are published by the Communicable Disease Center of the Public Health Service, which receives weekly reports on a prompt schedule from State health departments. Also useful for epidemic intelligence are weekly reports of pneumonia and influenza deaths received from large cities throughout the country.

(*b*) *General morbidity, accidental injuries, and resulting disability.*—The incidence and prevalence of acute and chronic morbidity, the incidence and types of accidental injuries, disability (including days of restricted activity, days in bed, and school and work absenteeism), and related data are published by the National Center for Health Statistics. The statistics are based upon national sample surveys conducted by the Center with the assistance of the Bureau of the Census. The surveys also include medical and dental examination findings, such as blood pressures, electrocardiograms, vision and hearing tests, and diagnoses based upon the findings of clinical tests and examinations by physicians.

(*c*) *Mortality.*—Comprehensive mortality statistics, including the results of retrospective surveys of samples of deceased persons, are published by the National Center for Health Statistics. The Center purchases copies of all death certificates from the State health departments. Every State requires the registration of deaths. The certificates serve both legal and statistical purposes.

Life tables for the national population are also prepared and published by the Center.

(*d*) *Nationality.*—Birth statistics are based on birth certificates filed in accordance with State law in every State. Like the death certificate, the birth certificate serves both legal and statistical purposes. The Center purchases copies of these certificates and produces comprehensive natality statistics. Surveys are also conducted starting with samples of births.

(*e*) *Marriages and divorces.*—Forty-two States upstate New York require the central filing of marriage records; 40 States have similiar requirements for divorce records. Based on these records and special surveys, the National Center for Health Statistics produces national estimates for marriages and divorces.

(*f*) *Utilization of health services.*—Statistics on the use of hospitals, doctors, dentists, and other health services, as well as coverage of health insurance and personal health expenditures are based on sample surveys conducted by the National Center for Health Statistics. New surveys to produce more comprehensive national hospitals statistics and statistics on the characteristics of institutionalized populations are now being planned. The National Institute for Mental Health carries out an annual census of mental institutions which emphasizes diagnoses and patient movement.

(*g*) *Health facilities.*—Data on available health facilities of various types are gathered in several parts of the Public Health Service but particularly in the Division of Hospital and Medical Facilities. In this Division the operation of the Hill-Burton program provides statistics on hospitals and hospital beds gathered from the responsible State agencies. By similar means this Division conducts inventories of nursing home units. As a byproduct of its sampling operations and the coding of birth and death records, the National Center for Health Statistics is also publishing data on the numbers and types of institutions.

(*h*) *Health manpower.*—Compilation and publication of statistical data on all important categories of health manpower, based on professional directories, census figures, and ad hoc surveys, is carried on principally in the Division of Public Health Methods of the Public Health Service.

(*i*) *Other statistics.*—It should be emphasized again that the list above by no means exhausts the types of statistics collected within the Public Health Service. Among the more specialized types which should be covered in a more comprehensive review are: Statistics from occupational health surveys; statistics on various aspects of the environment, such as those from air, water, and milk sampling; statistics on radioactivity in the environment; and many others.

4. The role of the National Center for Health Statistics (NCHS)

As stated above, the Surgeon General's Study Group observed that the Public Health Service needed better ways to report basic health data and recommended that a statistical organizational entity be created which could bring together the major components of the competences of the Public Health Service in the measurement of the health status of the Nation. As a consequence of this recommendation, the National Center for Health Statistics was established.

However, if the Center is to serve important and useful purposes, its programs, organization, and policies require careful consideration. The first point requiring clarification is the relation of the Center to the statistical work of other departments of the Government.

With its establishment, the NCHS became, in terms of breadth of responsibility and size, one of the five largest general-purpose statistical units of the U.S. Government, being surpassed in size by the Bureau of the Census of the Department of Commerce, the Bureau of Labor Statistics of the Department of Labor, and the Statistical Reporting Service and Economic Research Service of the Department of Agriculture.

Health statistics are closely tied to medical interests and data needs, yet health-related problems have ramifications in practically every area of human activity. Thus, a completely unrestrained program of health statistics could easily overlap into subject areas of other departments of the Government, and conversely, the statistical work of such other departments could easily enter the health field. Thus, perhaps one of the major tenets of the NCHS is a recognition of the fact that it cannot operate as an autonomous unit isolated from the statistical activities of the rest of the Government but must seek ways of utilizing what other units of the Government have to offer and must also make its own program responsive to the needs for health-related data of other components of the Government. This policy provides a wasteful duplication of effort and focuses the program of the Center at the most important areas of unmet statistical need.

Similarly, within the Public Health Service, the Center avoids duplication of the work of other units by making a sharp distinction between what might be termed "general purpose" and "special purpose" statistics.

Under this principle the NCHS has responsibility for collecting data (*a*) which have general purpose interest, or (*b*) which come from a source not uniquely related to some single-program unit of the U.S. Public Health Service, or (*c*) for which the collecting mechanisms established by the NCHS is the most suitable available mechanism.

Accordingly, the scope of the NCHS data collection and analysis program is compatible and nonoverlapping with other statistical activities in the accident prevention program, the heart control program, the community health program, the water and air pollution control programs, the research activities of the National Institutes of Health, and numerous other phases of the total public health program.

In addition to not being a centralization of public health statistics in this total sense, the NCHS also does not exercise any regulatory or supervisory control over these other statistical actvities. Such control responsibilities might be considered a proper function of a large, technically well-staffed unit with a central organizational position, but it is the policy of the NCHS to concentrate on the problems of the scientific development of new types of needed health data and to abjure the administrative or coordinating tasks of being a control channel for specialized statistical projects, the design and conduct of which is the function of other units of the Service.

The emphasis in the NCHS program on health statistics that serve a number of general purposes creates a particular problem in determining what the genearl purposes to be served actually are. A specialized statistical program designed for the needs of a single public health program has a relatively simple problem in determining its clientele and the specific objectives that must be achieved in the statistical compilation work to meet the needs of that clientele. With a general-purpose health statistics office the problem is much more complicated. This is particularly true in the system of medicine in the United States

where medical care, public health, and health-related research is carried on by a vast group of Federal, State, and local officials and nonofficial agencies, by professional associations, voluntary health agencies, universities, schools of public health, individual and group physicians, pharmaceutical companies, and numerous other entities having a legitimate concern with health problems. Collectively, all of these activities need and desire an astoundingly wide range of health facts.

It is considered the obligation of the NCHS to serve not just the internal administrative requirements of the Public Health Service, but to provide the basic core of data important to the whole diffuse U.S. health care and disease prevention system.

Special techniques to appraise the responsibilities of the NCHS in this regard are necessary and these range from a continuously receptive attitude toward informal expressions of need from data consumers to an active policy of seeking advice on consumer needs through a system of governmental and nongovernmental advisory committees and consultants. It may be sufficient to say here that although the program of the NCHS is rapidly expanding to include new types of data and new methods of collection, the important needs for various types of health-related statistics exceed the present capacity of the NCHS and in many cases require the design of data-collection systems not now considered feasible for technical or administrative reasons.

The task of the NCHS to serve a wide range of users, both within and outside the Public Health Service, determines the necessary organizational location of the Center within the Service.

The Surgeon General's Study Group recommended that the Center be established as a self-contained unit attached directly to the Surgeon General. This central location reflects a most important principle inasmuch as the main task of the Center is to produce data of general use and interest, and being located in this position, the Center is equally accessible to other units of the Public Health Service and can be equitably responsive to the needs and interests of all. In many instances of governmental organization, there is a tendency to bury a general-purpose operating statistical unit under some other major organizational subdivision. It is believed that this inevitably has an unbalancing effect on the character and direction of evolution of the statistical program.

5. *Internal organization of the National Center for Health Statistics (NCHS)*

The internal organization of the NCHS follows no single principle. For example, some units are defined on the basis of an operation or function; others are determined more by their responsibility for a specified subject. The whole organizational pattern may be considered a pragmatic arrangement designed to achieve the policies anud objectives of the Center but adapted to the realities of available personnel, its budget, and the resources that might be utilized through contracts with other governmental or nongovernmental agencies.

The NCHS is organized into the Office of the Director, the Office of Electronic Systems, the Office of Health Statistical Analysis, and two operating Divisions—the National Vital Statistics Division and the National Health Division. The arrangement of these units and the functional branches of the two Divisions are shown in chart 1.

The Office of the Director has few operating functions, being concerned primarily with the overall direction and coordination of the professional programs of the Center; with budget and financial planning; with certain management services; and with responsibility for the international relations and activities of the Center.

The Office of Electronic Systems consists of the computing equipment of the Center and a limited programing and systems development staff. The electronic computer configuration consists of one IBM 1410 computer with 40K units of core memory and eight high-speed tape drives; an auxiliary IBM 1401 computer with 8K units of more memory, a card read-punch, a paper tape reader, a high-speed printer, and six tape drives; and other related equipment for preparation of program or data cards and tapes.

The primary responsibility of the Office of Electronic Systems is to provide the computer facilities necessary for the work of the Center, but in addition, it will serve to some extent as a computer facility for other statistical programs in the Public Health Service. It is expected that the Office will exert a strong influence to encourage the maximal use of technological innovations in the compilation of health data. To carry out these tasks the Office is organized into two sub-units, one containing the computer itself and the necessary administra-

tive and computer operating staff, and the other unit comprising a small staff for programing.

Under this arrangement, the computer staff is responsible for providing an efficiently operating computer, for its administration and for the control of its time allotments, and for providing console operators and engineers who work in cooperation with "monitors" from the other units of the Center in making the actual computer computations.

It is intended that the programer staff of the Office of Electronic Systems will be available for programing assistance to computer users outside the Center, for ad hoc or special assignments, for the preparation of general-purpose routines, and for assisting other programer groups at peak work periods.

The National Vital Statistics Division has as its major responsibility the compilation of vital statistics—that is national tabulation of births, deaths, marriages, and divorces. Each of these subjects are represented by a separate major branch of the division which is responsible for the subject content of the statistical program in its field—the processing requirements, definitions, and classifications, and studies of quality of data and analysis of results.

The source documents for the official vital statistics of the United States are the records of births, deaths, fetal deaths, marriages, and divorces which are collected under State law, with copies being furnished to the Federal Government for national statistics. The individual records on file in the States serve important legal and administrative purposes for the individual as well as public and private agencies, a development which has turned the vital records system into a real national resource for the protection of personal rights and interests as well as for national security. More recently, these records are also utilized as the base for the rapidly increasing volume of medical and research studies. How well and comparably the records accommodate the multitude of diverse uses depends on the operating efficiency of the independent local and State offices that collect and preserve the records and provide the record services, and the leadership that the Federal focal point for the system furnishes to them for maintaining high performance standards.

The National Vital Statistics Division is the designated focal point for this national system. See H. Doc. No. 242, 78th Cong., 1st sess., and Reorganization Plan No. 2, 1946.) Among the major responsibilities of this Division are: coordination and standardization of the registration practices of these independent registration areas; and establishment of liaison between States and between the State and Federal agencies that rely on vital records in the administration of their programs.

Working within the framework of normal Federal-State relations, the National Vital Statistics Division serves to resolve difficulties and inconsistencies that arise in registration practices; develops and promotes uniform standards, definitions, model laws, certificate forms, and classifications of national importance; and aids the States in devising more efficient and economic procedures.

As stated, the original collection of vital records is a State function, and the birth, death, fetal death, marriage, and divorce records are permanently filed in State offices. The National Vital Statistics Division receives from each State copies of each of these individual certificates—mostly in microfilm form. For 1962, more than 6 million of these individual records were received. The Division is responsible for the inspection, editing, and coding of these records and for the preparation of punchcards and control counts to be used as input to the computers of the Center.

Some of the tabulations are based on samples and all of the quality control tests are on the sampling basis. In some procedures, sample selection is made in the State offices. In other cases, sample selection is done in the national office from the files of individual records received from the States. Since individual copies of records are received, complete flexibility is maintained with regard to items to be coded, classification systems to be used, and detail of cross-tabulation to be made. Since the original record is at hand, various studies can also be made on the quality of the basic information.

While the activities described above may be considered the traditional vital statistics program, under the organization of the new Center, additional emphasis is being given to methodological studies and to the development of new ways of using and augmenting the information on the vital record. This aspect of the program is particularly evident in a new program of sample followback surveys based on vital records as the sampling frame.

The program of the National Health Survey Division includes the efforts of the Center to collect a very wide range of health related facts by various sample

survey techniques. Branches of this Division have been established to carry on each of the three major types of surveys now contemplated.

The health interview survey is a survey design utilizing direct interviews with a nationwide sample of households. This survey, established in 1957, has collected data from approximately 40,000 households each year and has already resulted in some 61 publications on various health topics. Being based on interviews this survey is considered an appropriate collection method for a wide range of what may be called the demographic, social, and economic aspects of health.

The health examination survey collects data in successive rounds from a smaller sample of approximately 6,000 individuals over a 2- to 3-year period, utilizing itinerant caravans of medical examination equipment and personnel. This survey is designed to collect health data of the diagnostic, physical, and physiological type. The first cycle of the health examination survey was completed in 1962.

The health records survey is still in the early developmental and testing stages and will collect data based primarily on samples using existing records of hospitals and other medical institutions. This group of surveys is considered especially appropriate for the collection of health data relating to various aspects of medical care.

All of the various types of surveys underway and planned are considered to be only in their early stages of technical development, and for this reason special provision is made in the organization for facilitating a wide range of developmental and evaluation studies.

Perhaps a unique feature of the program of the Health Survey Division and one of its strong policies, is its close cooperative relation with the Bureau of the Census. Much of the early design of the initial health surveys was based on pioneer work carried on by the Bureau of the Census and that statistical agency continues as a close partner not only in developmental work but as a collecting and processing agency for many phases of the continuing surveys. This policy takes advantage of the technical experience of the Bureau of the Census and avoids the establishment of a duplicating field data-collection organization.

Another organizational feature of the NCHS is the Office of Health Statistics Analysis. It was not the purpose in creating this Office to assume the analytical responsibilities of the two data-compiling divisions. It was thought, however, that the creation of a small staff, isolated from the day-to-day preoccupation with collection, classification, and data publication problems, could carry the analysis of the data to a more fruitful and comprehensive level. The full character of the program to be developed in this Office is not yet evident. It will attempt to identify and carry out studies of major health problems. Much of this analytical work will be done by the staff of the Office, but some may also be done on a contract basis by individual scientific investigators in the United States and in other countries.

Analysis done in this Office as well as in other parts of the NCHS adhere to the principle that it is the goal of the NCHS to provide scientific data with interpretation limited to scientifically based observations. It is not in the scope of the program of the Center to suggest or to advocate the policy positions or public health actions that might be indicated by the statistical findings.

PART B. A BRIEF SUMMARY OF SIGNIFICANT HEALTH AND DEMOGRAPHIC LEVELS AND TRENDS

1. Significant population changes

The largest numerical growth of the U.S. population occurred in the past two decades. Of the total increase of 48 million between 1940 and 1960, about 90 percent was due to natural increase—births minus deaths—with the remaining 10 percent due to net migration from other countries (table 1 and fig. 1). The death rate declined only moderately during this period, and the annual number of deaths rose only slightly while the natural increase of the population rose from well under 2 million a year before 1946 to about 3 million over recent years. This increase is largely due to a sharp rise of the birth rate.

Birth rates increased from an average of 19 per 1,000 population for the years 1936–40 to 21 for 1941–45 and 25 for 1946–50 and for 1951–55. The rate continued at this level through 1957, but beginning with 1958, it has declined moderately and was about 22.4 in 1962. The average annual number of births rose from 2.9 million during the period 1941–45 to 4.3 million during 1956–60 (fig. 2).

Probably the most important factors in the marked increase of the birth rate were a general change in attitudes on the desired number of children and im-

proved economic conditions. Illustrative of the first factor is that in 1959 only 15 percent of ever-married women of childbearing age were childless. In 1950 the corresponding percentage was 23 and in 1940 the percentage was 27. Also an increasing proportion of couples are starting their families at an earlier age and more are having two to four children as compared with earlier years (fig. 3).

The substantial increases in births during the past 20 years have significantly changed and will continue to change the age structure of the population. The major change is in the proportion of the population under 15 years which rose from 25 percent in 1940 to 31 in 1960. The proportion 65 years and over increased from 7 to 9 percent due to the relatively large numbers of births in the late 19th century, a high level of immigration, and declining mortality. In contrast, the proportion of persons aged 15 to 64 declined from 68 to 60 percent (fig. 4). The median age of the population rose from 29 years in 1940 to 30.2 in 1950 despite the increase in births, but declined to 29.5 years in 1960 because of the increase in the population at the younger ages.

These population changes have had and will continue to have dramatic effects on the needs for various public services. The increase in persons under 20 years of age—from 45 million in 1940 to 51 million in 1950 to 69 million in 1960—has required large-scale expansion of educational facilities and health and welfare services and has raised the requirements for housing, food, and a wide range of other products and services. There will be increased demand by 1970 and 1980 in the need for these facilities and services; such incurred demands will be almost completely independent of future birth rates.

The rise in numbers of persons 65 years and over—from 9 million in 1940 to 12 million in 1950 and almost 17 million in 1960—has likewise increased needs for facilities and services of particular importance to the older ages (fig. 4).

The more rapid reduction in mortality of women compared with that of men caused a continuation of the fall of the sex ratio in the population. In 1960 there were 97.8 males per 100 females in the entire population. At ages 25 to 44 the ratio was 96.9; 45 to 64, 95.8; and for persons 65 and over it dropped to 82.8. These figures take an added meaning when it is noted that in 1961, 39 percent of all women 55 years and older were widowed as compared wih 12 percent of the men. The number of widows at these ages was almost four times as large as the corresponding number of widowers. At ages 65 and over, 53 percent of all women are widows.

The total age-adjusted death rate for females declined 65 percent from 1900 to 1960, while the rate for males fell only 49 percent (fig. 5). The death rates for females have decreased more rapidly than those for men at all ages, but the differences have been particularly notable after age 44.

Between 1940 and 1960, the nonwhite population increased more rapidly than the white—52 percent compared with 34 percent. The proportion of nonwhites in the population rose from 10 to 11 percent from 1940 to 1960. This was due chiefly to the higher birth rates of the nonwhite population. For example, in 1960 the birth rate was about 32 per 1,000 population for nonwhites compared with about 23 for whites. At the same time the crude death rate for the nonwhite population decreased about 27 percent from 1940 to 1960 compared with 9 percent for whites. If age-adjusted rates are used, however, the difference is less marked since the rate of decrease in nonwhite mortality was 36 percent against 28 percent for whites during this period (fig. 5).

The differences in the average expectation of life for the different race-sex groups can be measured by the mortality experiences of these groups. The average expectation of life has increased between 1939–41 and 1960 from 67.3 to 74.1 years at birth for white females, while for white males the increase was from 62.8 to 67.4 years. The largest increase occurred among nonwhite females, 55.5 to 66.3 years with life expectancy for nonwhite males rising from 52.3 to 61.1 years (table 2).

Population growth has not of course been evenly distributed throughout the country. The largest increases occurred in the far western areas and in Florida and were due to higher rates of inmigration. The southern part of the country showed the largest rate of natural increase (births minus deaths), but this was partly offset by a net loss of population due to outmigration, particularly from rural areas.

Between 1950 and 1960, the populations of the metropolitan areas grew more rapidly (26 percent) than did those of the remainder of the country (7 percent). The former increase was due to a net immigration of about 9 percent plus a natural increase of 15 percent. In contrast, the nonmetropolitan areas experienced a net loss of almost 9 percent from outmigration, which offsets more than one-half of the natural increase.

Within the metropolitan areas, population growth was relatively much larger in the suburban areas (49 percent) than in the central cities of those areas which increased only 11 percent.

In general, differences in net migration rates between different parts of the country are larger than differences in birth and death rates. In fact, fertility and mortality differences between geographic divisions of the country are becoming smaller.

2. Leading causes of death, 1920 and 1961

Progress in diagnostic knowledge limits the usefulness of studies in changes of causes of death over a long period of time. Better diagnostic facilities and improvements in cause-of-death reporting add an imponderable factor even to the comparison of deaths reported in 1920 and 1961. The leading causes as they were reported in 1960 and 1920 are shown in table 3.

It may be recalled that in 1920 the pandemic of influenza had not completely receded. This disease and the accompanying pneumonia was the leading cause of death. Influenza and pneumonia are still among the leading causes, but the rate is now 30.2 per 100,000 population. Tuberculosis, the third leading cause in 1920, has been eliminated from the top group of health problems. On the other hand, the death rates for diseases of heart and malignant neoplasms (cancer) have increased substantially reflecting in part problems of an older population.

3. Indexes of morbidity and disability

Restricted activity.—For the year ending June 1960, there were 2,830,000 days of restricted activity due to illness of the civilian, noninstitutional population of the United States. Of these 1,055,000 or 37 percent were days of bed disability.

On the average, each person had 16 days of restricted activity for the year ending June 1960 including 6 days of bed disability. This was approximately the same as that for the period July 1958–June 1959, but during July 1957–June 1958 when an Asian influenza epidemic occurred, each person had an average of 20 restricted-activity days and 8 bed-disability days.

A day of restricted activity is defined as a day on which the person cut down on his usual activities for the whole of that day as a result of illness or injury. A day of bed disability, also considered as a restricted-activity day, is defined as a day on which the person spent all or most of the day in bed because of illness or injury.

During July 1959–June 1960, more disability days were experienced by women than men and older persons reported more disability days than younger persons.

People who live in the South had a higher rate of disability days than did persons living in other sections of the country; those in the North Central States had the lowest rate.

Persons living in families whose income was under $2,000 a year experienced an estimated 28 days of restricted activity per capita a year, while household members with family incomes of $7,000 and over reported an average of 13 days a year.

Persons with an annual family income under $2,000 had an average of 9.8 bed-days a year, or twice as many as the 4.8 days reported by persons with family incomes of $7,000 and over.

Chronic limitation of activity.—Approximately 19 million persons or 11 percent of the population, exclusive of those in institutions, have some degree of activity limitation due to chronic illness or impairment.

Of these 19 million, about 14.2 million have continuous limitation affecting their major activity, i.e., ability to work, keep house, or go to school. This estimate, based on data collected in household interviews during July 1959–June 1961, included about 6 million or 42 percent of the 14.2 million who had their present limitation for 5 years or more. The rate of continuous limitation of activity increases with age; about 1 in each 100 persons under 17 years of age was limited in major activity, and about 38 in every 100 persons aged 65 years and over were so limited.

Of the 62 million persons who were classified as "usually working," about 6 percent or 4 million had some degree of activity limitation affecting their major activity. About 3.7 million of these people were limited in amount or kind of work; this figure may be considered as a gross estimate of the number of workers in the United States who are handicapped in some degree by a chronic condition or impairment.

Selected impairments.—An estimated annual average of 3.5 million persons in the civilian, noninstitutional population have visual impairments according to household interviews during the 24-month period July 1959–June 1961. Cataract, glaucoma, and other local diseases of the eye accounted for 50 percent of all cases of severe visual impairments. About 67 percent of all persons with severe visual impairments were 65 years or older.

Data for the same period show an average of 6 million persons with hearing impairments, 1 million with speech defects, 946,000 with complete or partial paralysis, and 259,000 with absence of major extremities. Over 13 million individuals have orthopedic defects of the limbs, back, and trunk.

Acute conditions.—During the 12-month period July 1960–June 1961, it is estimated that about 359 million acute illnesses or injuries (about 2 conditions per person per year) involving either activity restriction or medical attention were experienced by members of the civilian, noninstitutional population of the United States during the year. About half of all conditions were respiratory illnesses. The next largest groups, with very similar rates, were injuries and infective and parasitic diseases other than respiratory.

For all persons in the population, acute conditions resulted in an average of 8.6 days of restricted activity and 3.3 days of bed disability per person per year. Rates were highest for children under 5 years of age, and in general declined during each succeeding age group. The rates of restricted activity and bed disability were, however, about the same for persons aged 65 years and over as they were for those in the youngest age group.

Persons injured.—Data for the period July 1959–June 1961 show that on the average 45 million persons per year sustained injuries requiring medical attention or causing restriction of usual activities for a day or more.

Among the total persons injured, 12 million or 27 percent were involved in accidents described as falls. About 4 million of the accidents resulting in injury were falls on stairs, steps, or from a height. Other types of injury that occurred frequently in the population are described as injury resulting from being struck by a moving object (other than vehicle) and from bumping into an object or person. The estimate includes about 3 million persons injured in moving motor vehicle accidents and 42 million persons injured in all other kinds of accidents.

Approximately 23 percent of the 45 million persons injured had 1 or more days of bed disability associated with the injury.

About 45 percent of all injuries occurred in the home or on home premises. Among females, 57 percent of the injuries were sustained in the home, while among males, only 36 percent occurred in the home. The rate of injury in the home was highest among children and among persons 65 years and older. Of the 45 million persons injured, 38 million or 84 percent had medical attention.

4. Indexes of use of health service

Persons receiving care at home.—Approximately 1 million persons in the civilian, noninstitutional population required either constant care of part-time help in their home. About 60 percent of the total required constant care. For the survey period July 1958–June 1959, those persons who were reported as receiving personal care in the home required constant, or part-time help, or nursing care for such activities as dressing, eating, or toilet activities.

Household members provided the bulk of personal care reported for either the constant or part-time care groups. However, nursing services, professional or practical, were utilized in a substantially greater proportion of cases by the constant care group—12 percent as compared with 4 percent for those requiring part-time care.

The prevalence rate of persons receiving care at home rises consistently from about 2.3 per 1,000 population among persons under 15 years of age to 87.7 per 1,000 for persons 75 years and older. Of those receiving care at home, males constituted the majority of persons at the lower ages, while females represented the largest group at ages 45 and over.

Paralysis, circulatory conditions, senility, and arthritis and rheumatism were the leading conditions involved and were responsible for over half of those receiving care.

About 30 percent reported the interval under care as 5 years or longer, 38 percent between 1 and 4 years, and 27 percent as less than 1 year. Altogether more than 90 percent of the persons needing care had either major or partial limitation of activity. Persons receiving constant care constituted about three-fourths of all those who reported 90 or more bed-days.

There were 23 physician visits per person for those receiving part-time or constant care at home as compared with an average of 5 for the U.S. population as a

whole. About 80 percent of all persons receiving care were living with relatives.

Physician visits.—During the 2-year period July 1957–June 1959, the number of physician visits made in the United States was 1,703,000. This amounts to an average annual number of 852 million visits per year or about 5 physician visits per person per year.

A physician visit was defined in the survey as a consultation with a physician, either in person or by telephone, for examination, diagnosis, treatment, or advice, excluding inpatient hospital visits.

Of the total number of physician visits made, approximately 66 percent took place in a physician's office, 10 percent at home, and 9 percent in an outpatient clinic of a hospital. About 10 percent of all visits were telephone consultations.

Data collected during July 1957–June 1959 show that about 75 percent of the physician visits were for the diagnosis and/or treatment of an illness or injury. Visits for "general checkup" accounted for 8 percent and immunizations were involved in 7 percent of the visits.

Beginning with the age group 15 to 24 years, women averaged a greater number of physician visits than did men. Part of the difference is accounted for by visits for the prenatal or postnatal care, but even excluding this type of visit, the rates for women were still higher than the rates for men.

The rate of physician visits was higher among urban residents than among rural residents and higher for white persons than for nonwhite persons.

The rate of physician visits varied directly with the amount of family income. Those in families having incomes under $2,000 had a rate of 4.6 physician visits per person per year as compared with 5.7 visits for persons in families earning $7,000 or more.

Hospital discharges.—There was an average annual estimate of about 20 million patients discharged from short-stay hospitals according to data for the period July 1958–June 1960. The total hospital stay for these patients amounted to 167 million days.

All data are based on estimates of the average annual number of hospital discharges and the number of hospital days for patients discharged from short-stay hospitals. Discharges and days for persons who died during the year prior to the interview are excluded.

In the United States there are approximately 115 discharges from short-stay hospitals in a year among every 1,000 persons alive at the end of the year. These figures refer to the civilian, noninstitutional population.

Excluding deliveries, the rate of hospitalization increases with age from 55 discharges per 1,000 children aged 5 to 14 to 154 discharges per 1,000 persons aged 75 years and over. Similarly, the average length of hospital stay increases with age, ranging from 4.7 days to 15.8 days per episode for the age groups mentioned.

Although the rate of hospital discharges per 1,000 population is higher for females (99.4) than it is for males (87.5) even after deliveries have been excluded, the average length of stay for males is 2.1 days longer than the average length of stay for females.

Of the total patients discharged from short-stay hospitals, 57.8 percent had a length of stay of less than 6 days and 88.4 percent stayed less than 15 days. The length of stay increased markedly with age.

Dental care.—During the 2-year period July 1957–June 1959, people in the United States made approximately 517 million dental visits, representing an estimate of 258 million visits per year. This amounted to an average of 1.5 dental visits per person per year.

The rates of dental visits varied greatly among the different subgroups of the population. Members of families having an annual income of less than $2,000 made an average of 0.7 dental visits per year as compared with a rate of 2.5 visits for those in families with an income of $7,000 or more.

During the year July 1958–June 1959, information was collected on the number of dental visits a person had made during the 12-month period prior to the week of interview. About 60 percent of the population reported no visits during the year preceding the interview while 16 percent reported one dental visit. An additional 11 percent reported two visits, 4 percent reported three visits, and 9 percent reported that they had made four or more visits.

5. Some indications for the future

The health and growth of the population depend upon many factors. The determinants are demographic, economic, and social and involve medical progress as well. A precise forecast of the future course of events in health and demography is not possible, but in the light of the past and present situation, it seems reasonable to expect certain developments in the future. Some of these are:

TABLE 1.—*Estimated population, 1900–1962*

[In thousands. As of July 1, except where noted. Beginning 1940, includes Alaska and Hawaii. Estimate for 1900 to 1909 are sums of State estimates based on local data indicative of population change. Estimates for 1910 to 1962 are based on decennial censuses and statistics of births, deaths, immigration, emigration, and Armed Forces. See also Historical Statistics, Colonial Times to 1957, series A 1–31]

Year	Total population residing in United States [1]	Year	Total population residing in United States [1]
1900	76,094	1915	100,549
1901	77,585	1916	101,966
1902	79,160	1917 [2]	103,266
1903	80,632	1918 [2]	103,203
1904	82,165	1919 [2]	104,512
1905	83,820	1920	106,466
1906	85,437	1921	108,541
1907	87,000	1922	110,055
1908	88,709	1923	111,950
1909	90,492	1924	114,113
1910	92,407	1925	115,832
1911	93,868	1926	117,399
1912	95,331	1927	119,038
1913	97,227	1928	120,501
1914	99,118	1929	121,770

Year	Total population including Armed Forces abroad	Total population residing in United States [1]	Civilian population	Year	Total population including Armed Forces abroad	Total population residing in United States [1]	Civilian population
1930	123,188	123,077	122,923	1948	147,208	146,730	145,746
1931	124,149	124,040	123,886	1949	149,767	149,304	148,157
1932	124,949	124,840	124,694	1950	152,271	151,868	150,790
1933	125,690	125,579	125,436	1951	154,878	153,982	151,599
1934	126,485	126,374	126,228	1952	157,553	156,393	153,892
1935	127,362	127,250	127,099	1953	160,184	158,956	156,595
1936	128,181	128,053	128,879	1954	163,026	161,884	159,695
1937	128,961	128,825	128,639	1955	165,931	165,069	162,967
1938	129,969	129,825	129,635	1956	168,903	168,088	166,055
1939	131,028	130,880	130,683	1957	171,984	171,187	169,110
1940	132,594	132,457	132,129	1958	174,882	174,149	172,226
1941	133,894	133,669	132,060	1959	177,830	177,135	175,277
1942	135,361	134,617	131,444	1960	180,676	179,983	178,144
1943	137,250	135,107	128,010	1961	183,742	183,043	181,193
1944	138,916	133,915	127,227	1962: [3]			
1945	140,468	133,434	128,112	Jan. 1	185,290	184,556	182,439
1946	141,936	140,686	138,932	Feb. 1	185,506	184,772	182,620
1947	144,698	144,083	143,138	Mar. 1	185,708	184,970	182,823

[1] Excludes Armed Forces abroad.
[2] Total population including Armed Forces abroad (in thousands): 1917, 103,414; 1918, 104,550; 1919, 105,063. Civilian population (in thousands): 1917, 102,796; 1918, 101,488; 1919, 104,158.
[3] Provisional.

Source: Department of Commerce, Bureau of the Census, "Current Population Reports," series P-25, and reports and records.

(*a*) It has been estimated that the population will grow from the enumerated population of 179 million in 1960 to 209 million or more in 1970. By 1980, the population may reach anywhere from 246 to 260 million, depending upon the assumptions of future fertility rates.

The increase in population will obviously have an impact on many aspects of social and economic life, including the provision of health and medical services.

(*b*) The babies born during World War II and the postwar years, a period of unprecedented rise in the birth rate, are beginning to reach their majority. It is expected that this will create another wave of marriages and of births. A strong buildup will probably start in the mid-1960's. This will produce a fast increasing load on the obstetrical and pediatric services. The 1970's and the 1980's will see these children become of school age with the attendant problems of providing educational facilities and teachers.

(*c*) Because of the increasing difference in mortality between males and females, the already predominant female population will continue to increase faster than the male.

TABLE 2.—*Selected life table values, 1900–1960*

[Beginning 1959, includes Alaska. Data prior to 1933 for death-registration States only: see text p. 49. See also "Historical Statistics, Colonial Times to 1957," series B 76–83 and B 92–100]

Color and period	At birth		Age 20		Age 40		Age 65	
	Male	Female	Male	Female	Male	Female	Male	Female
AVERAGE EXPECTATION OF LIFE IN YEARS								
White:								
1900–02	48.23	51.08	42.19	43.77	27.74	29.17	11.51	12.23
1909–11	50.23	53.62	42.71	44.88	27.43	29.26	11.25	11.97
1919–21	56.34	58.53	45.60	46.46	29.86	30.94	12.21	12.75
1929–31	59.12	62.67	46.02	48.52	29.22	31.52	11.77	12.81
1939–41	62.81	67.29	47.76	51.38	30.03	33.25	12.07	13.56
1949–51	66.31	72.03	49.52	54.56	31.17	35.64	12.75	15.00
1955	67.3	73.6	50.1	55.8	31.7	36.7	12.9	15.5
1957	67.1	73.5	49.9	55.7	31.4	36.6	12.7	15.4
1958	67.2	73.7	50.0	55.9	31.5	36.7	12.7	15.4
1959	67.3	73.9	50.1	56.0	31.5	36.9	12.7	15.6
1960	67.4	74.1	50.1	56.2	31.6	37.1	12.9	15.9
Nonwhite:								
1900–02 [1]	32.54	35.04	35.11	36.89	23.12	24.37	10.38	11.38
1909–11 [1]	34.05	37.67	33.46	36.14	21.57	23.34	9.74	10.82
1919–21 [1]	47.14	46.92	38.36	37.15	26.53	25.60	12.07	12.41
1929–31 [1]	47.55	49.51	35.95	37.22	23.36	24.30	10.87	12.24
1939–41	52.33	55.51	39.74	42.14	25.23	27.31	12.18	13.95
1949–51	58.91	62.70	43.73	46.77	27.29	29.82	12.75	14.54
1955	61.2	65.9	45.5	49.6	28.6	32.0	13.2	15.5
1957	60.3	65.2	44.7	48.9	27.8	31.3	12.4	14.8
1958	60.6	65.5	45.0	49.3	28.0	31.5	12.1	14.8
1959	60.9	66.2	45.3	50.0	28.3	32.1	12.5	15.2
1960	61.1	66.3	45.5	49.9	28.4	32.1	12.7	15.2

[1] Figures cover Negroes only. In every case, however, Negro population comprised 95 percent or more of corresponding nonwhite population.

Source: Department of Health, Education, and Welfare, Public Health Service: "United States Life Tables and Actuarial Tables, 1939–41, Vital Statistics—Special Reports," vol. 41 and vol. 52, and annual report, Vital Statistics of the United States.

(*d*) In the past decade, there has been a marked slowing up in the rate of decline of the death rate. Further declines in the death rate are possible, but it is not likely that substantial reductions in the death rate will be achieved in the future unless major breakthroughs are made in the prevention of deaths from the chronic diseases and accidents.

(*e*) It is expected that the average expectation of life will continue to rise, but at a much slower pace than in the past. Although the proportion of the population reaching the older ages will probably not increase for some time, the actual number of older people in the population will continue to grow.

(*f*) The growing number of older persons in the population will lead to increasing morbidity from the chronic diseases unless effective methods of prevention are developed. On the other hand, there will probably be some decrease in the disability rate for chronic conditions resulting from more successful rehabilitation.

(*g*) Epidemics of acute respiratory diseases are still major causes of disability. Although there are major technical problems in the development and mass production of effective vaccines and in the mounting of a successful immunization program on a large scale, progress in this area might be expected to dampen the epidemic swings of acute respiratory infections in the future.

(*h*) The demand for health and medical care services will increase on a total as well as on a per capita basis. The rapidly increasing proportion of the population with health insurance coverage of one form or another will probably contribute significantly to the per capita demand.

(*i*) The emergence of new public health problems may be expected. One of these is suggested by the rapidly increasing mortality from the chronic bronchopulmonary diseases. Mortality from these lung diseases appears to be a particular problem in the older ages. After a period of declining or stationary death rates, there has been an upturn and the rate is now increasing.

TABLE 3.—*Deaths and death rates for leading causes of death, United States, 1961*

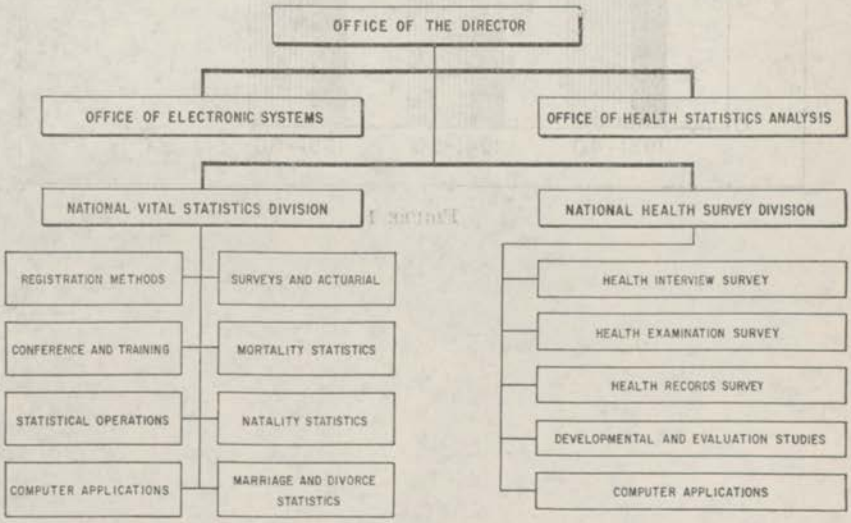
[Data refer only to deaths occurring within the United States. Excludes fetal deaths. Rates per 100,000 population residing in area for specified group, estimated as of July 1. Numbers after causes of death are category numbers of the 7th revision of the International List, 1955]

Cause of death	Number	Rate
All causes	1,701,522	930.0
Diseases of heart, 400–402, 410–443	663,391	362.6
Malignant neoplasms, including neoplasms of lymphatic and hematopoietic tissues, 140–205	273,502	149.5
Vascular lesions affecting central nervous system, 330–334	192,951	105.5
Accidents, E800–E962	92,249	50.4
Certain diseases of early infancy, 760–776	65,679	35.9
Influenza and pneumonia, except pneumonia of newborn, 480–493	55,175	30.2
DEATHS AND DEATH RATES FOR LEADING CAUSES OF DEATH, DEATH-REGISTRATION STATES, 1920 [1]		
All causes	1,118,070	1,298.9
Pneumonia (all forms) and influenza, 91, 92, 10	178,438	207.3
Diseases of the heart, 77–80	137,374	159.6
Tuberculosis (all forms), 28–35	97,366	113.1
Intracranial lesions of vascular origin, 64–66, 82	80,019	93.0
Cancer and other malignant tumors, 39–45	71,756	83.4
Accidents, 164–181, 185, 186	61,133	71.0

[1] Death-registration States include 34 States and the District of Columbia. Number after causes of death are International List Numbers, 1909 revision.

CHART 1

ORGANIZATION OF THE NATIONAL CENTER FOR HEALTH STATISTICS



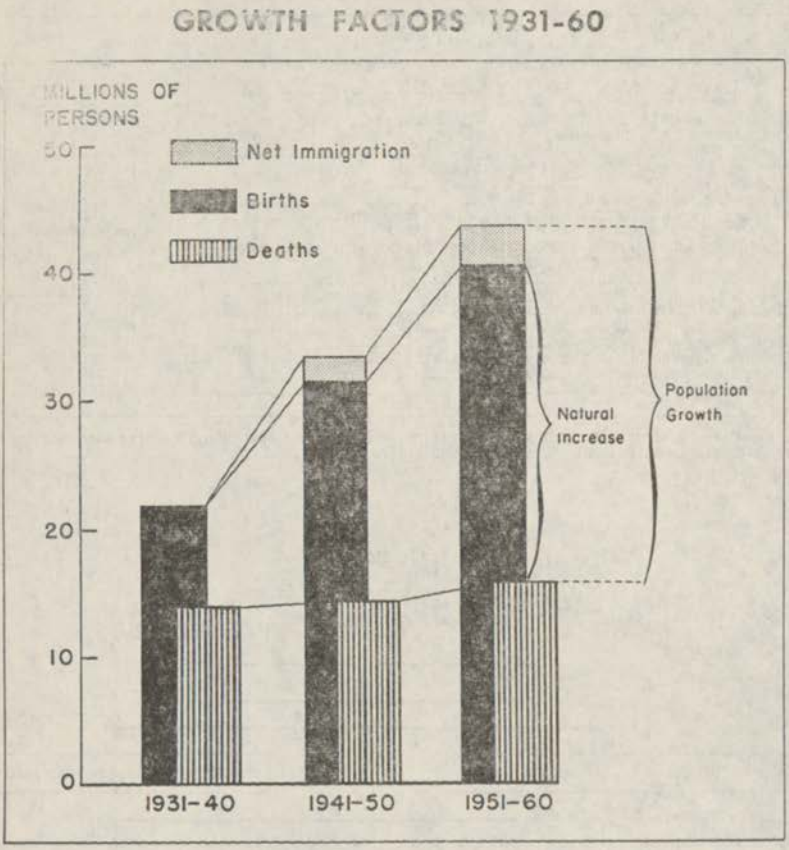

GROWTH FACTORS 1931-60
MILLIONS OF PERSONS
50
40
30
20
10
0
Net Immigration
Births
Deaths
Natural increase
Population Growth
1931-40
1941-50
1951-60

FIGURE 1

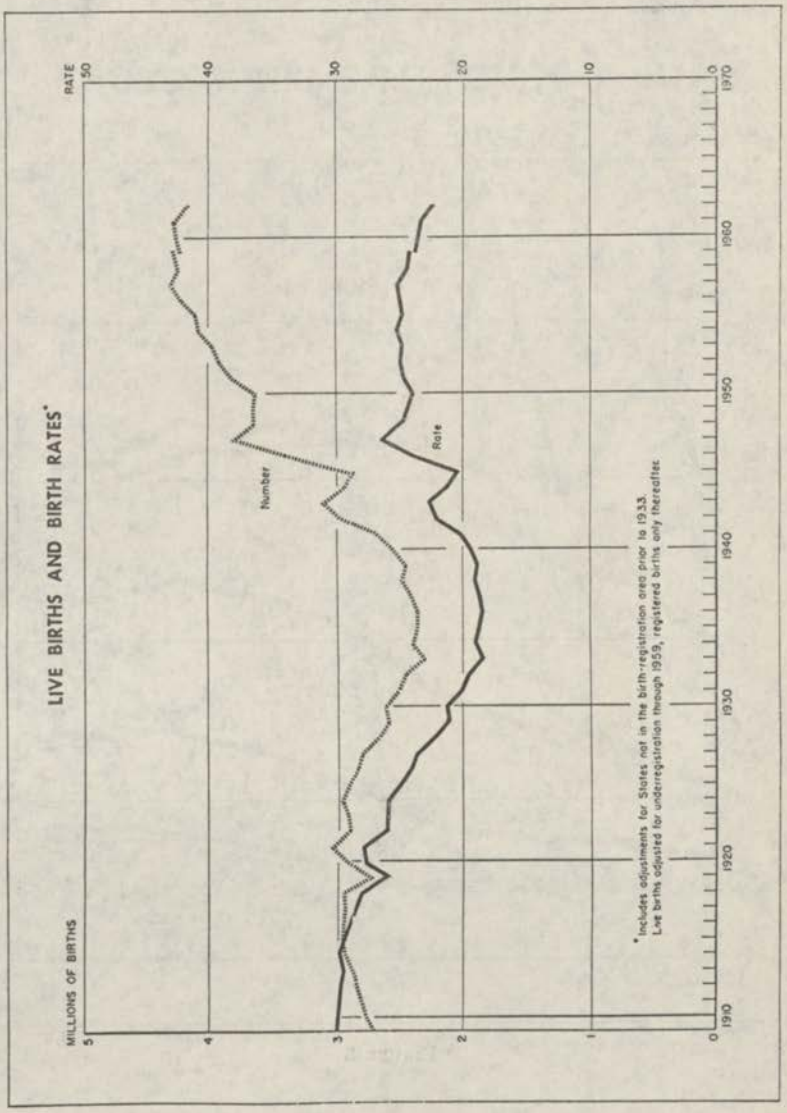

LIVE BIRTHS AND BIRTH RATES*
MILLIONS OF BIRTHS
RATE
Number
Rate
*Includes adjustments for States not in the birth-registration area prior to 1933.
Live births adjusted for underregistration through 1959, registered births only thereafter.
5
4
3
2
1
0
50
40
30
20
10
0
1910
1920
1930
1940
1950
1960
1970

FIGURE 2

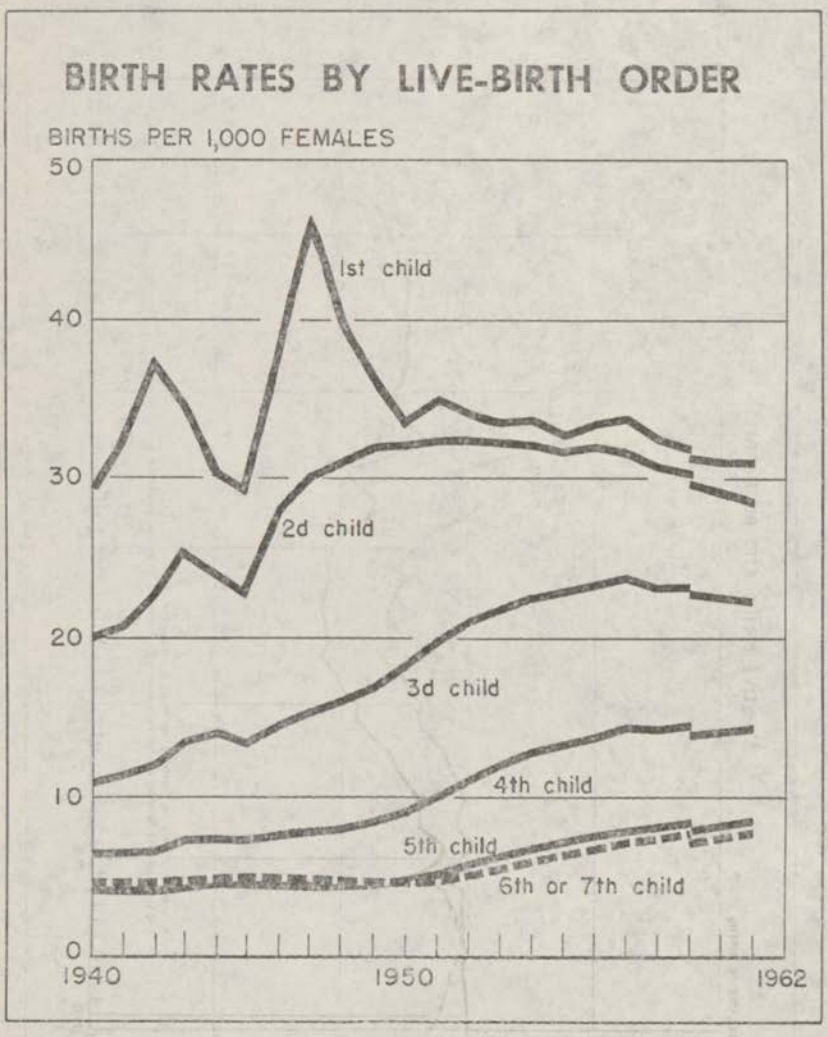

BIRTH RATES BY LIVE-BIRTH ORDER
BIRTHS PER 1,000 FEMALES
50
40
30
20
10
0
1940
1950
1962
1st child
2d child
3d child
4th child
5th child
6th or 7th child

FIGURE 3

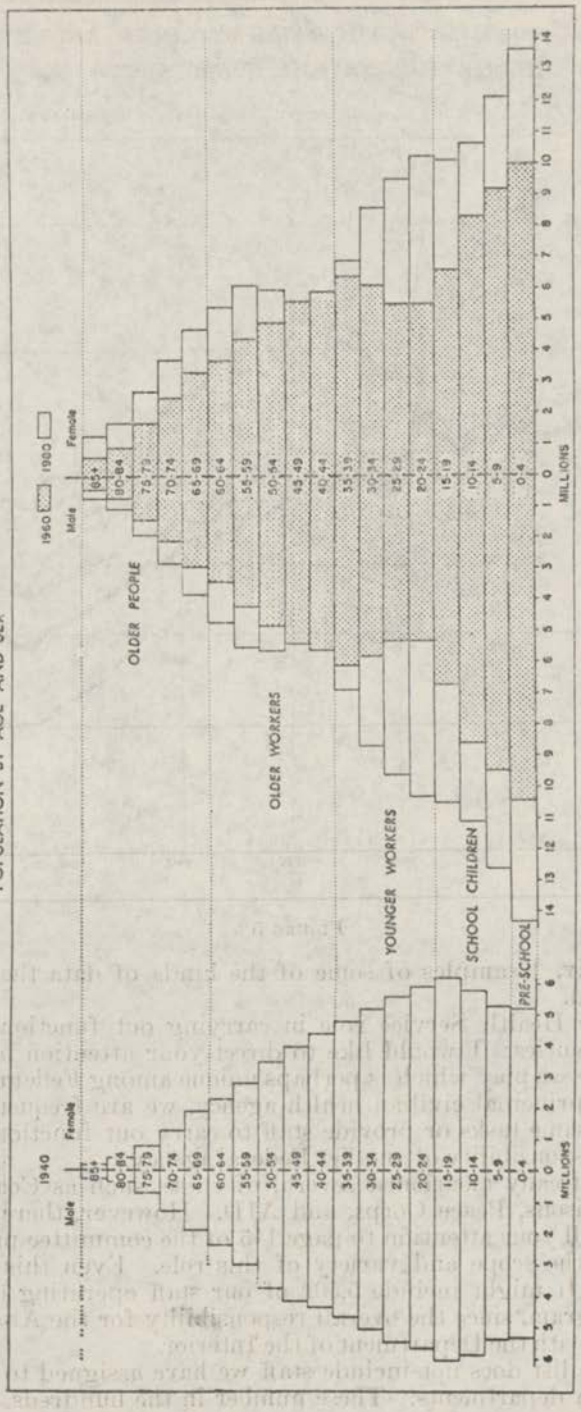

POPULATION BY AGE AND SEX
1940
1950
Male
Female
85+
80-84
75-79
70-74
65-69
60-64
55-59
50-54
45-49
40-44
35-39
30-34
25-29
20-24
15-19
10-14
5-9
0-4
MILLIONS
OLDER PEOPLE
OLDER WORKERS
YOUNGER WORKERS
SCHOOL CHILDREN
PRE-SCHOOL

FIGURE 4

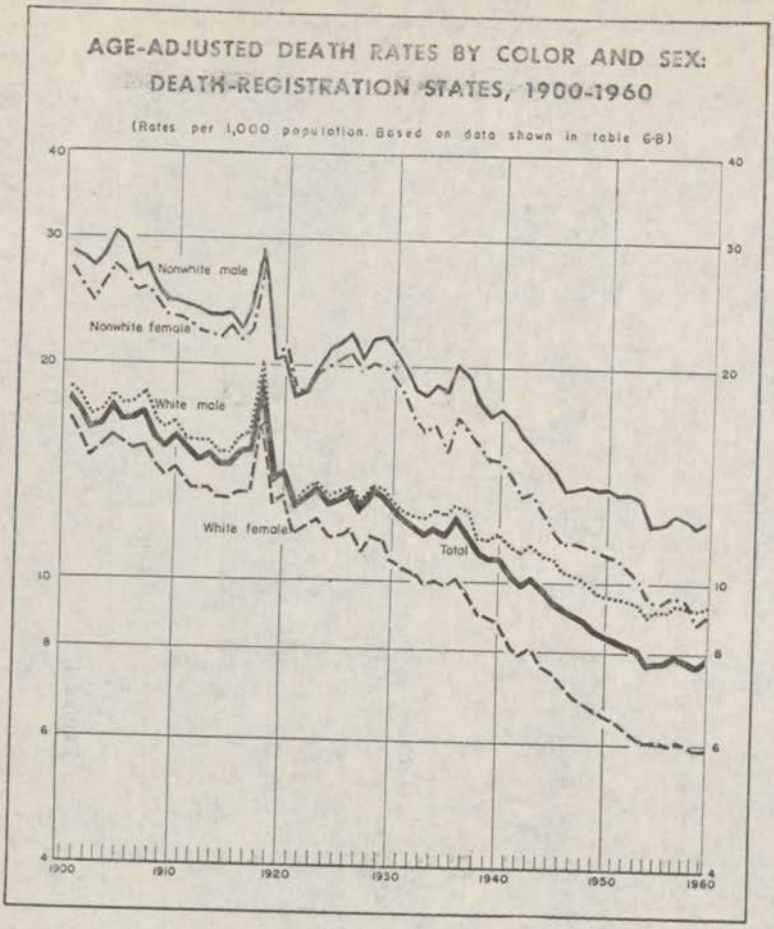


FIGURE 5

Dr. TERRY. Examples of some of the kinds of data they produce are included.

I. Public Health Service role in carrying out functions in other Federal agencies: I would like to direct your attention briefly to a type of role we play which is perhaps unique among Federal agencies. Being the principal civilian health agency, we are frequently called upon to assume tasks or provide staff to carry out functions that are the basic responsibility of another Federal agency.

I have already mentioned several of these, such as Coast Guard, Federal prisons, Peace Corps, and AID. However, there are many more. I call your attention to page 145 of the committee print which illustrates the scope and variety of this role. Even this list is incomplete. It might include 5,502 of our staff operating the Indian health program, since the overall responsibiilty for the American Indians rests with the Department of the Interior.

Also, the list does not include staff we have assigned to State and local health departments. These number in the hundreds. At times

we assign officers to act as State or local health officers although we discourage this as much as possible.

In most instances, this type of arrangement has been made when an agency without any established health or medical staff undertakes a program which has a health or medical component, or which require health or medical support services.

In other instances, the need is for liaison in areas where we have close operating responsibilities.

In other instances, we have loaned officers to create a health or scientific capability in another agency; for example, the Federal Aviation Agency.

For a few years after World War I, we attempted to provide medical services for what we now call the Veterans' Administration. However, they gradually created their own medical capability, although some veterans still receive care in Public Health Service hospitals when they are more convenient than veterans hospitals.

Today, the role of the Public Health Service in the functions of other Federal agencies includes activities of four general types:

1. It operates medical care programs for other Federal agencies.
2. It provides medical services for the clientele or beneficiaries of other Federal agencies.
3. It assigns personnel to other Federal agencies for purposes related to the Nation's health.
4. It gives direct or collaborative assistance to other Federal agencies in connection with health and scientific activities of mutual concern.

We are pleased to assist other agencies whenever possible. In general, it represents an efficient and satisfactory procedure to both parties. Most of these assignments are on a reimbursable basis. However, our shortages in many categories of personnel are becoming so acute that we cannot meet many of the requests which are made of us.

We are also aware that some legislation pending in the Congress, such as the Youth Conservation Corps, would undoubtedly create further demands for staff.

Mr. Chairman, I would like also to submit a fuller report for the record which presents more detailed information on our activities in carrying out functions for and with the other Federal agencies.

Mr. ROBERTS. Without objection, that will be included.

(The report referred to is as follows:)

THE ROLE OF THE PUBLIC HEALTH SERVICE IN CARRYING OUT FUNCTIONS IN OTHER FEDERAL AGENCIES

One of the main functions of the Public Health Service since its earliest beginnings has been to provide other Federal agencies with medical services, supply them with health personnel, and cooperate with them in a wide variety of activities to further the Nation's health. The role of the Service has never been confined to its own programs; it has always included many activities designed especially for the benefit of other Federal programs.

Today the role of the Public Health Service in the functions of other Federal agencies includes activities of four general types:

1. It operates medical care programs for other Federal agencies.
2. It provides medical services for the clientele or beneficiaries of other Federal agencies.
3. It assigns personnel to other Federal agencies for purposes related to the Nation's health.
4. It gives direct or collaborative assistance to other Federal agencies in connection with health and scientific activities of mutual concern.

These activities are financed in various ways. The Department of Justice seeks the funds for medical care in the Bureau of Prisons. Funds for Coast Guard medical care are sought as a part of our own appropriation requests. In the Indian health program we prepare and propose the budget as a part of the Department of the Interior budget. Assignment of staff to other agencies is generally on the basis of reimbursable detail. Medical care for personnel who are not legally designated PHS beneficiaries is generally on a reimbursable basis.

The following outline lists the principal agencies assisted and briefly describes the assistance given, in each of the four types of activities.

1. Operates medical-care programs for other agencies:

DEPARTMENT OF COMMERCE

Coast and Geodetic Survey: Provides medical care as needed for the 195 commissioned officers and 109 retired officers of the Survey and their dependents.

Provides commissioned officers as ships' physicians aboard vessels making oceanographic surveys in remote areas of world. Five officers are assigned to these tours of duty.

Maritime Administration: A PHS officer serves as chief medical officer of administration, providing professional consultation and service.

Three officers provide health care for cadets at U.S. Merchant Marine Academy.

DEPARTMENT OF THE INTERIOR

Bureau of Indian Affairs: Conducts comprehensive health program for 380,000 American Indians and Alaska natives. Division of Indan Health has 5,300 employees including 488 commissioned officers. Annual budget is $55,834,000; in addition $9,335,000 is available for construction.

(Responsibility for health services for Indians and Alaska natives was transferred by the Congress from Bureau of Indian Affairs to Public Health Service in 1955; previously, PHS detailed officers to BIA for health program. Although appropriation requests are presented in connection with Department of the Interior, Public Health Service has independent authority for conduct of health program.)

DEPARTMENT OF JUSTICE

Bureau of Prisons: Provides comprehensive medical care for 23,689 Federal prisoners, including operation of 23 hospitals and 7 infirmaries. Assigns 103 officers and 178 other employees to program. Annual budget is $2,510,000.

DEPARTMENT OF LABOR

Bureau of Employees' Compensation: Operates medical program of BEC which provides medical care, treatment, and rehabilitation services for Federal employees, and other eligible persons, who are injured on duty or become ill from causes related to their work. Program encompasses 2½ million Federal employees and 1 million other persons including war claims group, the old Civilian Conservation Corps, District of Columbia employees, employees of private industry in the District and longshore and harbor workers. There are about 125,000 new injury claims among Federal employees each year.

Six medical officers and six other physicians are assigned by PHS to administer medical, rehabilitation, training, and safety aspects of program and serve as technical advisers in adjudication of claims.

The annual budget is $150,000.

PEACE CORPS

Directs medical program. Supplies commissioned officers for key medical care positions. Examines candidates, gives immunizations and medical care to members.

Forty-four officers are assigned, 34 of whom are stationed in 30 foreign countries.

DEPARTMENT OF THE TREASURY

Coast Guard: Operates medical program for the 31,000 active members of Coast Guard, 10,000 retired members, and 45,000 to 50,000 dependents. Ninety-six officers and other employees are assigned full-time. There were 8,000 ad-

missions of Coast Guard members and dependents to PHS hospitals in 1962; and 6,400 admissions to other hospitals with cost paid by PHS. Also, 229,300 visits were made to PHS outpatient facilities.

Provides medical and dental officers for cutters and patrol ships. Each year 40 to 50 officers make short tours in Atlantic and about 12 in Pacific.

PHS officers in charge of hospitals, clinics, or quarantine stations act as Coast Guard district medical officers in 10 of the 12 districts.

The annual budget is $1,037,000.

FEDERAL AGENCIES

At request of Federal agencies desiring this assistance, operates employee health units providing on-the-job health services including: Treatment of conditions requiring emergency attention; preemployment and other examinations; referral of employees to private physicians and dentists; and preventive health programs. There are 39 units serving about 60,000 Federal employees in Washington, D.C., and nearby field locations, and in several other cities over the country. More than 250,000 visits are made to the units each year.

Nine medical officers, 21 part-time physicians, and 92 other employees are assigned to administration and operation of the Federal employee health program. The annual budget is $844,769.

2. Provides medical services for clientele or beneficiaries of other Federal agencies:

CIVIL SERVICE COMMISSION

Examines applicants for civil service appointment and civilian employees of Government to determine fitness for duty and eligibilty for disability retirement.

DEPARTMENT OF DEFENSE

Army, Navy, Air Force, Marine Corps: Provides medical care for military personnel and dependents where military facilities are not available, and where PHS facilities are available.

FEDERAL JUDICIARY

PHS officers assigned to medical staff of Bureau of Prisons, Department of Justice, perform psychiatric examinations, under certain conditions, of offenders whose competency for trial has been questioned; of youth and young adult offenders; and of certain other offenders.

DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE

Social Security Administration, Bureau of Family Services: Gives psychiatric care and treatment to U.S. nationals returned to this country by Department of State because of mental illness.

DEPARTMENT OF JUSTICE

Examines persons subject to prosecution who claim physical inability to appear in court.

Federal Bureau of Investigation: Examines applicants for employment as special agents.

Immigration and Naturalization Service: Gives physical examinations and, in some cases, treatment to aliens arriving at air, sea, and land border ports of the United States.

DEPARTMENT OF LABOR

Bureau of Employment Security: Conducts medical screening and disease control program for farmworkers recruited from Mexico.

DEPARTMENT OF STATE

Bureau of Security and Consular Affairs: Examines visa applicants at certain U.S. consulates and notifies consular officers of findings.

Foreign Service: Provides medical care and treatment of Foreign Service personnel and dependents, where PHS facilities are available.

DEPARTMENT OF THE TREASURY

Internal Revenue Service: Examines persons subject to prosecution who claim physical inability to appear in court.

VETERANS' ADMINISTRATION

Provides medical care for veterans where VA facilities are not available, and where PHS facilities are available.

DEPARTMENT OF THE TREASURY

Bureau of Customs

DEPARTMENT OF JUSTICE

Immigration and Naturalization Service

DEPARTMENT OF AGRICULTURE

Agricultural Research Service

Performs primary or screening inspections for these agencies at certain U.S. entry points on Mexican border as part of multiple-screening program in which the four inspection agencies exchange services.

ALL FEDERAL AGENCIES

Immunizes Federal employees and dependents leaving United States under official travel orders.

3. Assigns personnel to other agencies for purposes related to the Nation's health.

DEPARTMENT OF AGRICULTURE

Agricultural Research Service: Assigns officer as assistant to Administrator of ARS to maintain PHS liaison on problems of mutual concern including: diseases and pests of animals transmissible to man; and national defense program of biological warfare, chemical warfare, and radiological defense.

ATOMIC ENERGY COMMISSION

Performs off-site surveillance operations in connection with Nevada Test Site, Las Vegas. From 33 to 60 PHS staff members are assigned, depending on the project.

ATOMIC ENERGY COMMISSION—DEPARTMENT OF AGRICULTURE

Agricultural Research Service (AEC–USDA–PHS pilot plant development): Assigns officer to cooperative project to find practical method of removing radionuclides from milk. Three agencies are also developing an ion exchange plant for removal of strontium 90 and other radionuclides for commercial scale use.

ATOMIC ENERGY COMMISSION—DEPARTMENT OF COMMERCE

Maritime nuclear agreement: Responsible for support to medical and health physics operations of nuclear ship *Savannah*. Provides environmental surveillance of harbors in connection with visits of *Savannah*. Three officers are assigned.

ATOMIC ENERGY COMMISSION—NATIONAL ACADEMY OF SCIENCES

Atomic Bomb Casualty Commission, NAS–AEC–PHS co-op study: Assigns eight officers to Hiroshima or Nagasaki to participate with AEC and NAS in medical and epidemiologic studies of survivors for long-range radiation effects.

DEPARTMENT OF COMMERCE

Business and Defense Services Administration: Assigns officer who is in charge of Drug Branch, Chemical and Rubber Division, and serves as a pharmaceutical industry analyst with particular emphasis on health mobilization activities.

DEPARTMENT OF DEFENSE

PHS-Department of Defense Agreement Joint Task Force: Monitors radioactivity levels (fallout) in connection with Pacific nuclear tests. Ten staff members, on the average, are assigned.

Air Force, Aerospace Medical Division (Air Force-PHS joint study of primates): Four staff members are assigned to Brooks Air Force Base to conduct study of long-term effects of low-level ionizing radiation in subhuman primates.

Armed Forces Institute of Pathology: Helped establish "Registry of Radiation Pathology" in Armed Forces Institute of Pathology at Walter Reed Hospital, under auspices of Research Council of National Academy of Sciences. Furnishes seven staff members to run the registry.

Department of the Army:

U.S. Army Medical Unit, Fort Detrick, Md.: Assigns officer as Chief of Bacteriology Division, concerned with protection of the military from biological warfare.

Chemical Research and Development Laboratories, Edgewood Arsenal, Md.: Assigns officer as scientific liaison officer and special assistant to Chief of Toxicology Division.

Department of the Navy: Assigns four staff members to perform environmental surveillance and off-site monitoring in connection with two power reactors in Antarctica.

Bureau of Ships:

Naval Reactor Development Plant, Pittsburgh: Assigns an officer to cooperate with Navy in health and safety aspects of development of prototypes of seagoing reactors.

Naval School of Aviation Medicine, Pensacola, Fla.: Assigns officer to participate in epidemiological study of cardiovascular disease in 1,000 naval aviators who have been under study for 20 years.

EXECUTIVE OFFICE OF THE PRESIDENT

Office of Emergency Planning: Assigns an Assistant Surgeon General as health adviser in the determination and coordination of necessary plans and preparedness to meet all conditions of a national emergency including attack on the United States.

Office of Science and Technology: Assigns officer as staff assistant to the Director, working in the whole broad field of the life sciences.

FEDERAL AVIATION AGENCY

Assigns officer as acting civil air surgeon to direct entire program of aviation medicine for FAA; and another officer as special assistant for the Technical Staff in Aviation Medicine who deals with health hazards in aviation industry, environmental health matters, and work of medical review board.

FEDERAL RADIATION COUNCIL

Assigns officer as secretary of Council.

DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE

Office of the Secretary: Assigns a senior officer as staff assistant to Special Assistant for Health and Medical Affairs.

St. Elizabeths Hospital: Assigns an Assistant Surgeon General as superintendent of hospital; a sanitarian to direct hospital's sanitation program; and seven physicians who furnish general medicine, internal medicine, and psychiatric services to patients.

Social Security Administration, Bureau of Family Services: Assigns medical officer as Chief of the Division of Medical Care Standards, and medical officer as Chief of the Medical Assistance Standards Branch, who assist the States in evaluating their public assistance medical care programs.

Vocational Rehabilitation Administration: Assigns officers for three major positions: Assistant Director for Health and Medical Activities, in charge of entire medical program; senior consultant, rehabilitation facilities, responsible for all phases of rehabilitation facilities in nationwide program; and associate regional representative for health and medical activities, region 2, responsible for health and medical activities in New York, Pennsylvania, Delaware, and New Jersey.

Welfare Administration, Children's Bureau: Assigns officer as regional medical director in Atlanta, Ga., responsible for whole medical program of Children's Bureau in Alabama, Florida, Georgia, Mississippi, South Carolina, and Tennessee.

HOUSING AND HOME FINANCE AGENCY

Urban Renewal Administration: Assists in program of area redevelopment with emphasis on related public health problems. Assigns an officer to Philadelphia regional office.

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

Manned Spacecraft Center, Houston, Tex.: Assigns officer as acting head of Space Medicine Branch, Crew Systems Division, which develops best ways of assaying astronauts' health in devising best means of medical care in space.

DEPARTMENT OF STATE

Agency for International Development: Assigns officer as Deputy Medical Director and 90 other officers to provide assistance to other countries in public health programs, clinical research, and surgical care. Seventy-five officers are stationed in 21 countries all over the world, including 24 who are members of 4 surgical teams recently sent to assist the civilian population of South Vietnam.

Office of International Research Activities: Assigns science officer (biomedical) to provide liaison with HEW activities in the application of State Department policy; and to provide coordination with World Health Organization and Pan American Health Organization and other public and private agencies engaged in international biomedical research.

4. Gives direct or collaborative assistance to agencies in connection with health and scientific activities of mutual concern:

DEPARTMENT OF AGRICULTURE

Agricultural Research Service: Conducts research on effects of air pollutants on plants and vegetation.

Cooperates in a project to identify sources of iodine 131 contamination in milk from dairy herds in 3 Midwestern States.

Analyzes bovine thyroids for iodine content.

Forest Service: Cooperates in comprehensive river basin planning for water pollution control.

Soil Conservation Service: Cooperates in comprehensive river basin planning; and in studies in streamflow augmentation below Federal dams.

DEPARTMENT OF COMMERCE

Area Redevelopment Administration: Close collaboration in administering accelerated public works funds for construction of sewage treatment facilities.

Participates in review and approval of applications for hospital and health facilities projects under accelerated public works program.

National Bureau of Standards: Conducts research inorganic chemistry and photochemistry such as developing procedures for determining materials needed for oxidation-reduction studies.

Collaborates in carrying out research pertaining to hospital contruction standards.

Weather Bureau: Conducts research on relationship of meteorology to air pollution, such as transport of air pollutants in atmosphere, forecasting air pollution potential.

Cooperates in comprehensive river basin planning.

DEPARTMENT OF DEFENSE

PHS-Department of Defense missile program—SNAPS: Provides environmental surveillance and off-site monitoring at Atlantic and Pacific Missile Ranges.

Office of Civil Defense: Cooperates in connection with design of health facilities structures that would withstand hazards of nuclear fallout.

Air Force (PHS-Air Force agreement on nuclear incidents): Conducts radiation control assistance for Air Force in connection with nuclear incidents.

Army Chemical Corps: Cooperates in project to develop a serum that will immunize human beings against paralytic shellfish poisoning.

Army Corps of Engineers: Cooperates in: comprehensive river basin planning; studies in streamflow augmentation below Federal dams; collection of basic data by national water quality network.

Department of the Navy, Bureau of Ships: Reviews plans for certain research and oceanographic survey vessels for compliance with PHS standards with respect to water supplies, waste disposal, food-service sanitation, and ratproofing.

FEDERAL AVIATION AGENCY

Furnishes sanitary engineering and sanitation services for Washington National and Dulles International Airports, including surveys of water and sewage distribution systems, sewage and industrial waste disposal.

GENERAL SERVICES ADMINISTRATION

Surveys cross-connections in federally controlled buildings and inspects sanitation of food-service establishments.

HOUSING AND HOME FINANCE AGENCY

Community Facilities Administration: Close collaboration in administering accelerated public works funds for construction of sewage treatment facilities.

DEPARTMENT OF THE INTERIOR

Bureau of Reclamation: Cooperates in: comprehensive river basin planning; studies in streamflow augmentation below Federal dams; inclusion of benefits of municipal and industrial water supply needs in Federal reservoir planning; basic data collections by national water quality network.

Bureau of Mines: Cooperates in studies of, and publications on, health hazards in mines.

Collaborates in research studies pertaining to combustible anesthetic gases.

Cooperates in: collection of basic data by national water quality network; surveys to determine extent of acid mine drainage causing stream pollution.

Conducts research in engineering and physical sciences, such as determining methods of removing sulfur dioxide from fuels, analyzing gasoline engine exhaust.

Geological Survey: Cooperates in comprehensive river basin planning; collection of basic data by national water quality network.

National Park Service: Provides consulting sanitary engineering services relating to construction, operation, and maintenance of parks. Annually surveys the 186 park areas to evaluate sanitation. Assists in plans and approval of projects relating to water supply, sewage disposal, food-service facilities, refuse disposal, and swimming pools.

Cooperates in comprehensive river basin planning.

LIBRARY OF CONGRESS

Conducts an abstracting service on literature pertaining to air pollution.

J. PUBLIC HEALTH SERVICE PERSONNEL

Dr. TERRY. And now for my last, and, to me, the most important topic: Our staff. They are our lifeblood. When we have a qualified, competent staff, we have increasingly strong programs. When we have trouble recruiting and retaining skilled people, our programs suffer accordingly.

As you have seen, our programs have grown greatly in size, scope, and variety. Since 1947, our budget has increased fifteenfold, but our staff has only doubled. Some of our budgetary growth has been in grant activities. These require very little staff in proportion to other types of programs. However, a study of the budget and staff charts I have given you will show that, since 1947, there has been more than

a ninefold increase in operations which are not grant type activities—again with only a twofold increase in staff. I think this reflects quite favorably on our staff—and I take great pride in it.

We have two personnel systems in the Public Health Service. One, a commissioned officer system, and the other, a civil service system like those operating in other Federal agencies. Professional personnel entering the Service may come in through either system.

The commissioned officer system, historically, has provided the administrative backbone of the Service. You may be interested in knowing that the first career service for Federal Government employees was created in 1873 to supply physicians for our hospitals. Several epidemics of that time underscored the need for a mobile force of physicians and the Congress gave statutory recognition to the establishment of the Public Health Service Commissioned Corps in 1889.

In 1900, our total staff consisted of 107 officers and 988 civil service employees. Today we have 4,501 officers and 26,808 civil service employees. (Fiscal 1962 figures are shown on page 150 of the committee print.)

The commissioned system is similar and, in many respects, identical to the commissioned system of our military forces. In time of war, the President may, and did during World War II, declare the Public Health Service Commissioned Corps to be an integral part of our military forces. I feel I need spend no time in discussing the civil service system. I am sure you are familiar with it.

Mr. Chairman, you and your committee should know that we are having great difficulty in obtaining the number, quality, and type of staff we must have to run this increasingly complex organization. We are in a competitive position with universities, industry, hospitals, and other medical care activities.

The recent civil service pay legislation was a tremendous help. Pay legislation for the Commissioned Corps is now pending in the Congress.

In summary, Mr. Chairman, I have covered a lot of territory in what must seem an inordinately long time to those who have been patiently listening. I hope I have managed to convey some understandig of what the Service is and does. I hope my presentation will at least serve to open avenues which the committee may wish to explore in greater depth.

As I look back over what has happened to the Service over the last 10 or 15 years, two facts stand out:

(1) The emergence of a dominant Federal role in creating and maintaining a vastly expanded research capability in health and the biomedical sciences. The Service, largely but not exclusively through the National Institutes of Health, has become the main instrument of the Federal Government in carrying out this development;

(2) The assumption of a more limited role by the Federal Government in assisting the construction of essential health facilities.

As I look to the decade ahead, I am sure these two developments will continue to be of the highest importance. In addition, however, I see two other areas where major developments will have to occur:

(1) In the area of environmental health—air pollution, water pollution, and radiological health problems—we must step up our efforts

to understand and control the chemicals and other substances so prevalent in our modern technological society.

(2) In the area of health service, underlying all of these important trends, both old and new, is a great problem of health manpower. We must act if we are to meet the foreseeable needs—for service, for research, and for teaching. I, personally, believe that these needs can only be met through substantial Federal assistance.

Mr. Chairman, this concludes my prepared statement.

I thank you and the members of the committee for your patience in listening to me.

Mr. ROBERTS. Thank you, Dr. Terry. I want to congratulate you on what I consider to be a very fine, full, and clear statement of the activities of the Public Health Service.

We are not going to have time to enter into the question-and-answer period at this session of the hearings.

I would like to give you an indication of where I would want you to prepare for the questioning period by having you look at charts A and B, and particularly B, where you break down the funds for the period 1945–63, and break down for us the grants and direct operations which you detail in chart B.

I would like you to be prepared to do that first tomorrow so that we will have a logical place to begin our questioning period.

I would also like to compliment you particularly on the way you have presented the activities of the Service. I make only one suggestion, which I hope you will be able to comply with for the benefit of the committee. I would like you to take your statement page by page and where you refer to certain activities I would like you to detail through the advice of your counsel on the margin of your statement the act of Congress under which you are proceeding, the authority that has been given you, simply by referring to the act, itself, and, of course, the public law designation. I think that will be a lot of help to us.

Dr. TERRY. Thank you very much. I will be glad to do it.

Mr. ROBERTS. You understand what I am driving at.

Dr. TERRY. Yes, sir.

Mr. ROBERTS. I hope it will be conveniently possible to do so.

Dr. TERRY. Yes, sir.

Mr. ROBERTS. This will conclude the hearings for today and the committee will stand in recesss until tomorrow at the same time in the same hearing room.

Dr. TERRY. Thank you, sir.

(Whereupon, at 12 noon, the committee recessed, to reconvene on Wednesday, April 24, 1963, at 10 a.m.)

ORGANIZATION OF PUBLIC HEALTH SERVICE

WEDNESDAY, APRIL 24, 1963

House of Representatives,
Subcommittee on Public Health and Safety
of the Committee on Interstate and Foreign Commerce,
Washington, D.C.

The subcommittee met at 10 a.m., pursuant to recess, in the caucus room, Cannon Building, Hon. Kenneth Roberts (chairman of the subcommittee) presiding.

Mr. Roberts. The subcommittee will please be in order.

Dr. Terry, yesterday we were at the point of concluding your statement, and I had made two requests. I believe, if you will remember, one was trying to find a starting place, and I believe we selected charts A and B, particularly B. I made one other request that you supply the committee with some notations of public laws in your statement. So, we will start there today.

STATEMENT OF DR. LUTHER L. TERRY, SURGEON GENERAL; ACCOMPANIED BY DR. DAVID PRICE, DEPUTY SURGEON GENERAL; DR. JAMES M. HUNDLEY, ASSISTANT SURGEON GENERAL FOR OPERATIONS; ELTON WOOLPERT, ASSISTANT TO THE SURGEON GENERAL FOR LEGISLATION, PUBLIC HEALTH SERVICE, DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE; DR. JAMES A. SHANNON, ASSISTANT SURGEON GENERAL, NATIONAL INSTITUTES OF HEALTH; DR. ROBERT ANDERSON, CHIEF, BUREAU OF STATE SERVICES (ENVIRONMENTAL HEALTH); AND JOSEPH S. MURTAUGH, CHIEF, OFFICE OF PROGRAM PLANNING, NATIONAL INSTITUTES OF HEALTH

Dr. Terry. Mr. Chairman, first with regard to a breakdown of the budgets, you have before you the large table headed "Public Health Service—1963, as appropriated, by purpose."

This presents in a manner in which we though you wished the various appropriation items. You will note that this is broken down, for instance, into two large headings, "Grants" and "Direct operations," and then under "Grants" there are columns on "Construction," "Research," "Fellowships," "Training," and "State."

Then under "Direct operations" the various columns show the specific approriation items or categories.

I realize this is only for 1963, Mr. Chairman, and does not illustrate any trend to the members of the committee. It is a portrayal of the present status.

If the committee would like to have it, we could do a similar thing for other years. Of course it might take sometime, but if it would be useful to the committee, we should be happy to do that.

(The table referred to is as follows:)

Public Health Service—1963, as appropriated, by purpose

Appropriation title	Grants					Direct operations						Total
	Construction	Research	Fellowships	Training	State	Indian health program	Construction	Research and investigations	Technical assistance to States	Medical care and related activities	Other direct operations	
Buildings and facilities	0	0	0		0	0	$33,200,000	0	0	0	0	$33,200,000
Accident prevention	0	$1,828,000	0	0	0	0	0	$785,000	$1,055,000	0	0	3,668,000
Chronic diseases and health of the aged	0	0	0	0	$19,000,000	0	0	1,451,000	2,478,000	0	0	22,942,000
Communicable disease activities	0	0	0	0	0	0	0	6,817,500	3,244,500	0	0	10,062,000
Community health practice and research	0	0	0	$7,900,000	15,000,000	0	0	797,000	2,079,000	0	0	25,776,000
Control of tuberculosis	0	0	0	0	4,500,000	0	0	1,613,200	879,800	0	0	6,993,000
Control of venereal diseases	0	0	0	0	4,335,000	0	0	922,700	2,742,300	0	0	8,000,000
Dental services and resources	0	0	0	0	0	0	0	1,561,800	1,444,200	0	0	3,006,000
Nursing services and resources	0	0	0	7,325,000	0	0	0	214,000	899,000	0	0	8,438,000
Hospital construction activities	$220,600,000	3,000,000	0	0	0	0	0	600,000	2,020,000	0	0	226,220,000
Air pollution	0	2,973,000		450,0000	0	0	0	6,664,000	982,000	0	0	11,069,000
Milk, food, interstate and community sanitation	0	3,979,000	0	0	0	0	30,000	2,107,000	2,420,000	0	0	8,536,000
Occupational health	0	1,786,000	0	0	0	0	0	1,591,000	745,000	0	0	4,122,000
Radiological health	0	1,545,000	0	2,000,000	1,500,000	0	0	4,369,000	6,461,000	0	0	15,875,000
Water supply and water pollution control	0	3,285,000	$300,000	1,100,000	5,500,000	0	0	2,876,000	11,646,000	0	0	24,707,000
Grants for waste treatment works construction	90,000,000	0	0	0	0	0	0	0	0	0	0	90,000,000
Hospitals and medical care	0	0	0	0	1,200,000	0	0	521,000	0	$45,881,000	0	47,602,000
Foreign quarantine activities	0	0	0	0	0	0	0	0	0	5,892,000	0	5,892,000

Indian health activities	0	0	0	0	0	$55,834,000	0	0	0	0	0	55,834,000
Construction of Indian health facilities	0	0	0	0	0	0	9,335,000	0	0	0	0	9,335,000
General research and services, National Institutes of Health	0	101,421,000	14,480,000	35,442,000	0	0	0	6,917,000	0	0	$1,566,000	159,826,000
National Cancer Institute	0	63,288,000	4,788,000	13,470,000	8,250,000	0	0	62,761,000	2,086,000	0	1,099,000	155,742,000
Mental health activities	0	56,102,000	5,940,000	49,373,000	10,950,000	0	0	16,951,000	2,892,000	0	1,391,000	143,599,000
National Heart Institute	0	98,514,000	5,950,000	16,000,000	7,000,000	0	0	13,796,000	5,361,000	0	777,000	147,398,000
National Institute of Dental Research	0	10,042,000	1,630,000	5,853,000	0	0	0	3,468,000	0	0	206,000	21,199,000
Arthritis and metabolic disease activities	0	73,050,000	3,927,000	13,034,000	0	0	0	13,008,000	0	0	369,000	103,388,000
Allergy and infectious disease activities	0	39,156,000	2,900,000	7,200,000	0	0	0	16,484,000	0	0	402,000	66,142,000
Neurology and blindness activities	0	51,232,000	2,023,000	13,767,000	0	0	0	12,161,000	3,800,000	0	523,000	83,506,000
Grants for construction of health research facilities	50,000,000	0	0	0	0	0	0	0	0	0	0	50,000,000
Scientific activities overseas (special foreign currency program)	0	0	0	0	0	0	0	2,800,000	0	0	0	2,800,000
National health statistics	0	0	0	0	0	0	0	5,150,000	0	0	0	5,150,000
National Library of Medicine	0	0	0	0	0	0	0	3,335,000	0	0	0	3,335,000
Salaries and expenses, Office of the Surgeon General	0	0	0	0	0	0	0	800,000	0	0	5,050,000	5,850,000
Total definite appropriations (exclusive of "Emergency health activities")	360,600,000	511,201,000	41,938,000	172,914,000	77,235,000	55,834,000	42,565,000	190,534,200	53,234,800	51,773,000	11,383,000	1,569,212,000
Emergency health activities	0	0	0	0	0	0	0	0	0	0	7,000,000	7,000,000
Total definite appropriations	360,600,000	511,201,000	41,938,000	172,914,000	77,235,000	55,834,000	42,565,000	190,534,200	53,234,800	51,773,000	18,383,000	1,576,212,000
Retired pay of commissioned officers (indefinite)	0	0	0	0	0	0	0	0	0	2,657,000	2,671,000	5,328,000
Total, Public Health Service	360,600,000	511,201,000	41,938,000	172,914,000	77,235,000	55,834,000	42,565,000	190,534,200	53,234,800	54,430,000	21,054,000	1,581,540,000

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Mr. ROBERTS. The Chair is of the opinion that we should have that breakdown to show the acceleration of expenditures, and I think, for the purpose of comparison that some of the members would want to make, that it would be more valuable to us if you could supply that for the record.

Dr. TERRY. Mr. Chairman, have you any specific directions? In other words, would you like it for selected years?

Mr. ROBERTS. I believe that the charts that were introduced in the record yesterday started out with 1945.

Dr. TERRY. The principal points on the chart yesterday as presented were 1945, 1950, 1955, 1960, and 1963.

Mr. ROBERTS. I think if you could go back that far it would be very valuable to the committee.

Dr. TERRY. All right, sir, and we will take those particular points and not attempt to fill in all of the individual years, if that is the wish of the committee.

(The material referred to is as follows:)

Public Health Service—1962 as appropriated, by purpose

Appropriation title	Grants					Direct operations						Total
	Construction	Research	Fellowships	Training	State[1]	Indian health program	Construction	Research and investigations	Technical assistance to States	Medical care and related activities	Other direct operations	
Buildings and facilities	0	0	0	0	0	0	$18,230,000	0	0	0	0	$18,230,000
Accident prevention	0	$1,921,000	0	0	0	0	0	$345,000	$1,352,000	0	0	3,618,000
Chronic diseases and health of the aged	0	0	0	0	$6,950,000	0	0	1,889,000	2,119,000	0		10,958,000
Communicable disease activities	0	0	0	0	0	0	0	7,307,000	2,693,000	0	0	10,000,000
Community health practice and research	0	0	0	$5,375,000	17,000,000	0	0	335,000	1,626,000	0	0	24,336,000
Control of tuberculosis	0	0	0	0	4,000,000	0	0	1,746,200	746,800	0	0	6,493,000
Control of venereal diseases	0	0	0	0	2,585,000	0	0	922,700	2,492,300	0	0	6,000,000
Dental services and resources	0	0	0	0	0	0	0	1,221,800	1,278,200	0	0	2,500,000
Nursing services and resources	0	0	0	6,625,000	0	0	0	81,000	969,000	0		7,675,000
Hospital construction activities	$209,728,000	0	0	0	0	0	0	0	1,772,000	0	0	211,500,000
Air pollution	0	1,944,000	0	113,000	0	0	0	6,077,600	665,400	0	0	8,800,000
Milk, food, interstate and community sanitation	0	3,310,000	0	0	0	0	1,570,000	375,000	2,169,000	0	0	7,424,000
Occupational health	0	1,884,000	0	0	0	0	0	1,188,000	909,000	0	0	3,981,000
Radiological health	0	1,198,000	0	1,000,000	0	0	0	3,660,700	4,788,300	0	0	10,647,000
Water supply and water pollution control	0	2,670,000	$100,000	900,000	5,100,000	0	0	2,423,000	9,135,000	0	0	20,328,000
Grants for waste treatment works construction	80,000,000	0	0	0	0	0	0	0	0	0	0	80,000,000
Hospitals and medical care	0	0	0	0	1,200,000	0	0	371,000	0	$48,438,000	0	50,009,000
Foreign quarantine activities	0	0	0	0	0	0	734,000	0	0	5,350,000	0	6,084,000
Indian health activities	0	0	0	0	0	$53,010,000	0	0	0	0	0	53,010,000
Construction of Indian health facilities	0	0	0	0	0	0	8,285,000	0	0	0	0	8,285,000
General research and services, National Institutes of Health	0	79,247,000	11,290,000	31,000,000	0	0	0	5,610,000	0	0	$490,000	127,637,000
National Cancer Institute	0	68,700,000	3,100,000	9,055,000	6,000,000	0	0	43,022,000	12,019,000	0	940,000	142,836,000
Mental health activities	0	46,445,000	4,440,000	34,856,000	6,750,000	0	0	12,307,000	3,103,000	0	975,000	108,876,000
National Heart Institute	0	91,928,000	4,150,000	13,104,000	5,000,000	0	1,000,000	12,363,000	4,600,000	0	767,000	132,912,000
National Institute of Dental Research	0	8,073,000	1,120,000	4,791,000	0	0	0	3,208,000	0	0	148,000	17,340,000
Arthritis and metabolic disease activities	0	58,009,000	1,500,000	10,300,000	0	0	0	11,757,000	0	0	265,000	81,831,000
Allergy and infectious disease activities	0	36,800,000	1,700,000	5,400,000	0	0	750,000	11,197,000	0	0	244,000	56,091,000
Neurology and blindness activities	0	44,460,000	1,780,000	10,000,000	0	0	0	11,147,000	3,000,000	0	425,000	70,812,000
Grants for cancer research facilities	5,000,000	0	0	0	0	0	0	0	0	0	0	5,000,000
Hospital and medical facility research	5,800,000	3,725,000	0	0	0	0	0	475,000	0	0	0	10,000,000
Grants for construction of health research facilities	30,000,000	0	0	0	0	0	0	0	0	0	0	30,000,000
Scientific activities overseas (special foreign currency program)	0	0	0	0	0	0	0	9,000,000	0	0	0	9,000,000

[1] This includes both formula and project grants related to health services.

Public Health Service—1962, as appropriated, by purpose—Continued

Appropriation title	Grants					Direct operations						Total
	Construction	Research	Fellowships	Training	State [1]	Indian health program	Construction	Research and investigations	Technical assistance to States	Medical care and related activities	Other direct operations	
National health statistics	0	0	0	0	0	0	0	$4,642,000	0	0	0	$4,642,000
Operations, National Library of Medicine	0	0	0	0	0	0	0	2,066,000	0	0	0	2,066,000
Salaries and expenses, Office of the Surgeon General	0	0	0	0	0	0	0	815,000	0	0	$4,560,000	5,375,000
Civil defense medical stockpile activities	0	0	0	0	0	0	0	0	0	0	13,000,000	13,000,000
Total definite appropriations	$330,528,000	$450,314,000	$29,180,000	$132,519,000	$54,585,000	$53,010,000	$30,569,000	155,552,000	$55,437,000	$53,788,000	21,814,000	1,367,296,000
Retired pay of commissioned officers (indefinite appropriation)	0	0	0	0	0	0	0	0	0	0	2,360,118	2,360,118
Total, Public Health Service	330,528,000	450,314,000	29,180,000	132,519,000	54,585,000	53,010,000	30,569,000	155,552,000	55,437,000	53,788,000	24,174,118	1,369,656,118

[1] This includes both formula and project grants related to health services.

Public Health Service—1961, as appropriated, by purpose

Appropriation title	Grants					Direct operations						Total
	Construction	Research	Fellowships	Training	State [1]	Indian health program	Construction	Research and investigation	Technical assistance to States	Medical care and related activities	Other direct operations	
Assistance to States, general	0	0	0	$4,430,000	$17,000,000	0	0	$421,000	$5,426,000	0	0	$27,277,000
Control of tuberculosis	0	0	0	0	4,000,000	0	0	1,961,400	531,600	0	0	6,493,000
Communicable disease activities	0	0	0	0	2,400,000	0	0	8,036,500	4,956,500	0	0	15,393,000
Environmental health activities	0	$450,000	0	600,000	3,040,500	0	0	11,395,700	12,281,800	0	0	27,768,000
Grants for waste treatment works construction	$45,000,000	0	0	0	0	0	0	0	0	0	0	45,000,000

Grants for hospital construction	185,000,000	1,000,000	0	0	0	0	0	200,000	0	0	0	186,200,000
Salaries and expenses, hospital construction services	0	0	0	0	0	0	0	0	1,610,800	0	$125,200	1,736,000
Hospitals and medical care	0	0	0	6,550,000	1,200,000	0	0	676,000	0	$46,645,000	952,000	56,023,000
Foreign quarantine activities	0	0	0	0	0	0	0	0	0	4,821,800	288,200	5,110,000
Indian health activities	0	0	0	0	0	$50,271,000	0	0	0	0	0	50,271,000
Construction of Indian health facilities	0	0	0	0	0	0	$9,714,000	0	0	0	0	9,714,000
General research and services, National Institutes of Health	0	42,318,000	$10,100,000	27,000,000	0	0	0	4,482,000	0	0	0	83,900,000
National Cancer Institute	5,000,000	48,823,000	2,400,000	7,055,000	5,000,000	0	700,000	35,985,000	5,517,000	0	520,000	111,000,000
Mental health activities	0	35,260,000	2,390,000	39,470,000	6,000,000	0	5,139,000	9,700,000	2,226,000	0	715,000	100,900,000
National Heart Institute	0	55,991,000	3,100,000	11,970,000	3,500,000	0	0	9,579,000	2,329,000	0	431,000	89,900,000
Dental health activities	0	6,500,000	760,000	2,965,000	0	0	0	3,855,000	1,300,000	0	120,000	15,500,000
Arthritis and metabolic disease activities	0	42,060,000	870,000	8,300,000	0	0	0	9,770,000	0	0	200,000	61,200,000
Allergy and infectious disease activities	0	29,251,000	1,400,000	4,790,000	0	0	0	8,370,000	0	0	189,000	44,000,000
Neurology and blindness activities	0	31,797,000	980,000	8,450,000	0	0	7,000,000	8,063,000	0	0	310,000	56,600,000
Grants for construction of health research facilities	30,000,000	0	0	0	0	0	0	0	0	0	0	30,000,000
Construction of mental health-neurology research facility	0	0	0	0	0	0	[12,139,000]	0	0	0	0	[12,139,000]
Scientific activities overseas	0	1,707,000	0	0	0	0	0	2,000,000	0	0	0	3,707,000
Operations, National Library of Medicine	0	0	0	0	0	0	0	1,738,000	0	0	0	1,738,000
Buildings nad facilities	0	0	0	0	0	0	3,470,000	0	0	0	0	3,470,000
Salaries and expenses	0	0	0	0	0	0	0	2,960,000	0	0	4,266,000	7,226,000
Total, definite appropriations	265,000,000	295,157,000	22,000,000	121,580,000	42,140,500	50,271,000	26,023,000	119,192,600	36,178,700	51,466,800	8,116,400	1,037,126,000
Retired pay of commissioned officers (indefinite appropriation)	0	0	0	0	0	0	0	0	0	0	1,926,837	1,926,837
Total, Public Health Service	265,000,000	295,157,000	22,000,000	121,850,000	42,140,500	50,271,000	26,023,000	119,192,600	36,178,700	51,466,800	10,043,237	1,039,052,837

[1] This includes both formula and project grants related to health services.

Public Health Service—1960 appropriations, as apportioned

Appropriation title	Grants					Direct operations						Total
	Construction	Research	Fellowships	Training	State [1]	Indian health program	Construction	Research and investigations	Technical assistance to States	Medical care and related activities	Other direct operations	
Assistance to States, general	0	0	0	$2,974,000	$15,000,000	0	0	$1,020,900	$5,385,900	0	$116,200	$24,497,000
Control of venereal diseases	0	0	0	0	2,400,000	0	0	813,000	1,955,000	0	232,000	5,400,000
Control of tuberculosis	0	0	0	0	4,000,000	0	0	1,811,100	481,200	0	159,700	6,452,000
Communicable disease activities	0	0	0	0	0	0	0	6,077,000	1,517,500	0	563,000	8,157,500
Sanitary engineering activities	0	$450,000	0	100,000	3,040,500	0	0	5,315,600	6,493,200	0	320,700	15,720,000
Grants for waste treatment works construction	$46,101,000	0	0	0	0		0	0	0	0	0	56,101,000
Grants for hospital construction	185,000,000	1,000,000	0	0	0	0	0	200,000	0	0	0	186,200,000
Salaries and expenses, hospital construction services	0	0	0	0	0	0	0	0	1,533,800	0	116,200	1,650,000
Hospitals and medical care	0	0	0	5,910,500	1,000,000	0	0	419,500	0	$43,366,000	904,000	51,600,000
Foreign quarantine activities	0	0	0	0	0	0	0	0	0	4,414,200	271,600	4,685,800
Indian health activities	0	0	0	0	0	$45,700,000	0	0	0	0	0	45,700,000
Construction of Indian health facilities	0	0	0	0	0	0	$4,787,000	0	0	0	0	4,787,000
General research and services, National Institutes of Health	0	23,559,000	$5,310,000	13,040,000	0	0	0	4,085,000	0	0	0	45,994,000
National Cancer Institute	0	37,068,000	1,912,000	7,205,000	3,750,000	0	0	34,982,000	5,932,000	0	408,000	91,257,000
Mental health activities	0	23,482,000	1,996,000	26,206,000	5,000,000	0	0	8,875,000	1,938,000	0	593,000	68,090,000
National Heart Institute	0	36,468,000	2,663,000	8,[illegible]79,000	3,125,000	0	0	9,157,000	1,726,000	0	419,000	62,237,000
Dental health activities	0	4,476,000	650,000	1,100,000	0	0	0	2,517,000	1,190,000	0	86,000	10,019,000
Arthritis and metabolic disease activities	0	31,818,000	437,000	6,298,000	0	0	0	8,139,000	0	0	170,000	46,862,000
Allergy and infectious disease activities	0	21,593,000	1,066,000	3,621,000	0	0	0	7,596,000	0	0	178,000	34,054,000
Neurology and blindness activities	0	24,484,000	536,000	8,888,000	0	0	0	7,329,000	0	0	250,000	41,487,000
Grants for construction of health research facilities	30,000,000	0	0	0	0	0	0	0	0	0	0	30,000,000
Construction of animal quarters, Hamilton, Mont	0	0	0	0	0	0	150,000	0	0	0	0	150,000
Research facilities construction and site acquisition	0	0	0	0	0	0	150,000	0	0	0	0	150,000
Operations, National Library of Medicine	0	0	0	0	0	0	0	1,566,000	0	0	0	1,566,000
Salaries and expenses	0	0	0	0	0	0	0	2,069,600	0	0	3,746,400	5,816,000
Total, definite appropriations	261,101,000	204,398,000	14,570,000	84,021,500	37,315,500	45,700,000	5,087,000	101,972,700	28,152,600	47,780,200	8,533,800	838,632,300
Retired pay of commissioned officers (indefinite appropriations; estimated amount)	0	0	0	0	0	0	0	0	0	0	1,681,852	1,681,852
Total	261,101,000	204,398,000	14,570,000	84,021,500	37,315,500	45,700,000	5,087,000	101,972,700	28,152,600	47,780,200	10,215,652	840,314,152

[1] This includes both formula and project grants related to health services.

Public Health Service Appropriations—1955, by purpose

	Grants					Direct operations					
	Construction	Research	Fellowships	Training	State [1]	Construction	Research and investigations	Technical assistance to States	Medical care and related activities	Other direct operations	Total
Assistance to States, general	0	0	0	0	$9,725,000	0	0	$3,175,000	0	$100,000	$13,000,000
Disease and sanitation investigations and control, Territory of Alaska	0	0	0	0	638,000	0	$360,000	75,900	0	51,100	1,125,000
Control of venereal diseases	0	0	0	0	700,000	0	535,000	1,575,000	0	190,000	3,000,000
Control of tuberculosis	0	0	0	0	4,500,000	0	875,000	485,000	0	140,000	6,000,000
Control of communicable diseases	0	0	0	0	0	0	0	3,920,000	0	380,000	4,300,000
Engineering, sanitation, and industrial hygiene	0	0	0	0	0	$270,000	697,500	2,515,000	0	82,500	3,565,000
Grants for hospital construction	$96,000,000	0	0	0	0	0	0	0	0	0	96,000,000
Salaries and expenses, hospital construction services	0	0	0	0	0	0	0	1,004,920	0	95,080	1,100,000
Hospital and medical care	0	0	0	0	1,000,000	0	90,000	0	$31,294,500	615,500	33,000,000
Foreign quarantine service	0	0	0	0	0	0	0	0	2,716,000	184,000	2,900,000
Operating expenses, National Institutes of Health	0	$4,000,000	$124,000	0	0	0	551,000	0	0	0	4,675,000
Salaries, expenses, and grants, National Cancer Institute	0	9,260,000	861,000	$2,725,000	2,250,000	0	5,929,000	393,000	0	319,000	21,737,000
Mental health activities	0	3,587,000	187,000	4,310,000	2,325,000	0	2,996,500	397,000	0	345,000	14,147,500
Salaries, expenses, and grants, National Heart Institute	0	7,750,000	873,000	2,762,000	1,125,000	0	3,687,000	290,000	0	181,000	16,668,000
Dental health activities	0	421,000	100,000	0	0	0	741,000	660,000	0	68,000	1,990,000
Arthritis and metabolic disease activities	0	3,990,000	150,000	250,000	0	0	3,710,000	0	0	170,000	8,270,000
Microbiology activities	0	2,110,000	117,000	0	0	0	3,769,000	0	0	184,000	6,180,000
Neurology and blindness activities	0	3,900,000	150,000	1,004,000	0	0	2,416,500	0	0	130,000	7,600,500
Retired pay of commissioned officers	0	0	0	0	0	0	0	0	0	1,141,000	1,141,000
Salaries and expenses	0	0	0	0	0	0	480,000	0	0	2,300,000	2,780,000
Gorgas Memorial Laboratory	0	131,000	0	0	0	0	0	0	0	0	131,000
Surveys and planning for hospital construction	2,000,000	0	0	0	0	0	0	0	0	0	2,000,000
Total	98,000,000	35,149,000	2,562,000	11,051,000	22,263,000	270,000	26,837,500	14,490,820	34,010,500	6,676,180	251,310,000

[1] This includes both formula and project grants related to health services.

Public Health Service appropriations—1950, by purpose

Appropriation title	Grants					Direct operations					
	Construction	Research	Fellowships	Training	State [1]	Construction	Research and investigations	Technical assistance to States	Medical care and related activities	Other direct operations	Total
Obligational cash and contract authority:											
Control of venereal diseases	0	0	0	0	$13,095,000	0	$596,476	$2,084,284	0	$224,240	$16,000,000
Control of tuberculosis	0	0	0	0	6,790,000	0	721,996	1,765,272	0	272,732	9,550,000
Assistance to States, general	0	0	0	0	14,200,000	0	0	2,260,637	0	139,363	16,600,000
Control of communicable diseases	0	0	0	0	0	0	0	6,498,400	0	851,600	7,350,000
Salaries and expenses, water pollution control	0	0	0	0	0	0	0	1,200,000	0	0	1,200,000
Grants, water pollution control	0	0	0	0	1,000,000	0	0	0	0	0	1,000,000
Disease and sanitation investigations, Territory of Alaska	0	0	0	0	757,117	0	362,820	139,263	0	57,800	1,317,000
Grants for hospital construction (contract)	$150,000,000	0	0	0	0	0	0	0	0	0	150,000,000
Administrative expenses, assistance for hospital construction	0	0	0	0	0	0	0	1,080,294	0	128,206	1,208,500
Hospitals and medical care	0	0	0	0	0	0	0	0	$24,666,000	534,000	25,200,000
Foreign quarantine service	0	0	0	0	0	0	0	0	3,006,000	135,000	3,141,000
Operating expenses, National Institutes of Health	0	$5,480,000	$515,000	0	0	0	5,830,000	0	0	250,000	12,075,000
Contract	0	[2] 1,925,000	0	0	0	0	0	0	0	0	1,925,000
Operating expenses, National Cancer Institute	0	3,600,000	500,000	$2,625,000	3,500,000	0	3,660,500	400,623	0	438,877	14,725,000
Contract	6,000,000	0	0	0	0	0	0	0	0	0	6,000,000
Mental health activities	0	450,000	100,000	2,444,500	3,550,000	0	479,000	374,090	2,992,900	471,510	10,862,000
Contract	0	650,000	0	1,500,000	0	0	0	0	0	0	2,150,000
Operating expenses, National Heart Institute	1,600,000	3,820,000	300,000	891,000	2,000,000	0	1,435,525	451,280	0	227,195	10,725,000
Contract	4,455,876	0	0	891,000	0	0	0	0	0	0	5,346,876
Dental health activities	0	200,000	35,000	0	0	0	209,660	1,285,540	0	49,800	1,780,000
Construction of research facilities	0	0	0	0	0	$3,900,000	0	0	0	0	3,900,000
Contract	0	0	0	0	0	12,100,000	0	0	0	0	12,100,000
Pay, etc., commissioned officers	0	0	0	0	0	0	0	0	0	1,600,000	1,600,000
Salaries and expenses	0	0	0	0	0	0	535,538	718,085	0	3,146,377	4,400,000
Employee health service programs	0	0	0	0	0	0	0	0	167,000	0	167,000

Research facilities, National Institute of Dental Research	0	0	0	0	0	76,427	0	0	0	0	76,427
Office of international health relations	0	0	0	0	0	0	0	130,000	0	0	130,000
Total, obligational cash	1,600,000	13,550,000	1,450,000	5,960,500	44,892,117	3,976,427	13,831,515	18,387,768	30,831,900	8,526,700	143,006,927
Total, contract authorization	160,455,876	2,575,000	0	2,391,000	0	12,100,000	0	0	0	0	177,521,876
Total, obligational cash and contract authorization	162,055,876	16,125,000	1,450,000	8,351,500	44,892,117	16,076,427	13,831,515	18,387,768	30,831,900	8,526,700	320,528,803
Liquidating cash:											
Grants for hospital construction	40,000,000	0	0	0	0	0	0	0	0	0	40,000,000
Operating expenses, National Cancer Institute	4,175,000	0	0	0	0	0	0	0	0	0	4,175,000
Mental health activities	0	344,000	0	406,000	0	0	0	0	0	0	750,000
Construction of research facilities	0	0	0	0	0	13,100,000	0	0	0	0	13,100,000
Total, liquidating cash	44,175,000	344,000	0	406,000	0	13,100,000	0	0	0	0	58,025,000
Totals (excluding amounts rescinded):											
Obligational cash	1,600,000	13,550,000	1,450,000	5,960,500	44,892,117	3,976,427	13,831,515	18,387,768	30,831,900	8,526,700	143,006,927
Contract authorization	160,455,876	2,575,000	0	2,391,000	0	12,100,000	0	0	0	0	177,521,876
Liquidating cash	44,175,000	344,000	0	406,000	0	13,100,000	0	0	0	0	58,025,000
Totals, excluding rescissions	206,230,876	16,469,000	1,450,000	8,757,500	44,892,117	29,176,427	13,831,515	18,387,768	30,831,900	8,526,700	378,553,803
Rescissions:											
Obligational cash (NIDR)	0	0	0	0	0	23,573	0	0	0	0	23,573
Contract authorization (Heart & CRF)	3,124	0	0	0	0	800,000	0	0	0	0	803,124
Total rescissions	3,124	0	0	0	0	823,573	0	0	0	0	826,697
Totals (including rescissions):											
Obligational cash	1,600,000	13,550,000	1,450,000	5,960,500	44,892,117	4,000,000	13,831,515	18,387,768	30,831,900	8,526,700	143,030,500
Contract authorization	160,459,000	2,575,000	0	2,391,000	0	12,900,000	0	0	0	0	178,325,000
Liquidating cash	44,175,000	344,000	0	406,000	0	13,100,000	0	0	0	0	58,025,000
Total appropriations	206,234,000	16,469,000	1,450,000	8,757,500	44,892,117	30,000,000	13,831,515	18,387,768	30,831,900	8,526,700	379,380,500

[1] This includes both formula and project grants related to health services.

[2] From language 1950. Unused but appropriated.

Mr. ROBERTS. All right.

Dr. TERRY. Mr. Chairman, in relation to the other request, you asked that we make an annotation of the legislative authority for each of the areas which I discussed in my report yesterday. The method which I chose for my discussion makes this an extremely difficult sort of thing.

As you recall, I talked about the various means available to the Public Health Service to do things and the various objectives toward which we were working. Presenting them in these groupings, makes it very difficult to annotate the specific legislative authorizations.

On the other hand, Mr. Chairman, I would like to call your attention to the committee print which you have of background material concerning the administration and organization of the Public Health Service. For instance, beginning with section VII on page 31, there is a breakdown by organizational structure for each of the program activities.

Mr. ROBERTS. Just a minute, Dr. Terry.

You referred to page 31?

Dr. TERRY. Page 31, sir, in the committee print, section VII, "Current programs." Beginning here, the organizational structure and programs for each bureau are presented.

For each of the divisions or segments of our program, you will notice, Mr. Chairman, that for each program there is cited its legal basis. For instance, if one takes page 32, under "Division of Health Mobilization (civil defense activities)," there are "Objectives," "Extent of problem," "Present program scope," "Recent changes," and then the "Legal basis." I believe, Mr. Chairman, this was the thing in which you were primarily interested.

In addition under section VIII, beginning on page 75, "Grants-in-aid activities of the Public Health Service" are broken down in a somewhat similar manner with each of the grant programs having a citation as to the legal background and basis.

I hope, Mr. Chairman, that this might satisfy the needs of the committee. If it does not, of course, we shall proceed to supply with whatever additional information you need.

Mr. ROBERTS. I think that will be sufficient.

I note that you have under each section detailed not only the public laws, but also all the regulations, Executive orders, and with the source and annotation of each, so I think that is sufficient. We will just drop that and go ahead.

Dr. TERRY. Mr. Chairman, my staff has just called my attention to one other matter and that has to do with the detail of Public Health Service personnel to other agencies. This is authorized in section 214 of the Public Health Service Act which is in the other committee print, that is, "Compilation of selected public health laws."

Mr. ROBERTS. Going back to your chart B, is there any place in your statement where you have made an effort to detail or set forth the additional programs that have been placed under your jurisdiction since the beginning of 1945, as shown on chart B?

Dr. TERRY. In the committee print, Mr. Chairman, there is a listing of these new program activities—I will get the page in a moment—and the particular year in which these program activities were begun.

On pages 18 and 19 of the background committee print, Mr. Chairman, there is a listing, beginning with 1944 at the time the Public Health Service Act was revised.

Mr. ROBERTS. I think it might be well, since your statement is an introductory statement, and since the committee print will not be in the record, if you would read into the record, with such comment as you might care to make, beginning with 1944, the chronology which reflects the expansion of the functions and responsibilities.

Dr. TERRY. You would like me to do that now, sir?

Mr. ROBERTS. Yes.

Since your statement is going to be the one that introduces the service and is the broadest one, this should be done.

Dr. TERRY. Mr. Chairman, beginning with 1944, the Public Health Service Act consolidated much of the preexisting authority of the Public Health Service and broadened its authority in research and training, and authorized grants for tuberculosis.

There have been very significant developments with the addition of other programs since that time. In 1946, the National Mental Health Act was passed and the Office of Vital Statistics was transferred to the Public Health Service from the Census Bureau. One of the very significant programs which was also created at that time was the Hill-Burton program, or the National Hospital Survey and Construction Act.

These were all in 1946.

In 1947, the first training grants were made available through the National Cancer Institute. The Cancer Institute had been created prior to 1944; in 1937.

Then in 1948 the Water Pollution Act was passed. The National Heart Act permitted establishment of the National Heart Institute. The National Dental Research Act authorized the National Institute for Dental Research. This was a beginning, there having been a hiatus from 1937 until 1948 in terms of the creation of additional institutes as a part of the National Institutes of Health. That same year, the Microbiological Institute was established by administrative action.

In 1949 the mental hygiene program was expanded to become the National Institute of Mental Health.

In 1950, two institutes were established; namely the National Institute of Neurological Diseases and the National Institute of Arthritis and Metabolic Diseases.

There were other developments, but probably the next most significant development was in 1954 when the hospital construction program was broadened to include the categorical programs, such as nursing homes and chronic disease hospitals.

In that same year, in support of the early water pollution control activities, the Robert A. Taft Sanitary Engineering Center was established in Cincinnati.

In 1955, several quite important events ensued in terms of new programs. For instance, the responsibility for the medical care of American Indians and Alaskan natives was transferred to the Public Health Service from the Department of the Interior. Prior to that time we had, in effect, assisted in the care of these beneficiaries, but we had done it on the basis of personnel assigned to that Department. The Congress in 1955 gave the Public Health Service the direct and complete responsibility for the care of the American Indians and Alaskan natives.

The Air Pollution Control Act was also passed in 1955, as was the Mental Health Study Act. By administrative action, the Cancer Chemotherapy National Service Center was established in the Cancer Institute.

The following year, 1956, the Health Research Facilities Act was passed which placed another construction program within our area of responsibility.

In addition, the National Library of Medicine was established by transfer of the library of the Office of the Surgeon General of the U.S. Army to the Public Health Service.

In that same year, 1956, the National Health Survey Act was passed and the water pollution control program was broadened in its scope and in terms of our responsibilities.

In 1958, grants to schools of public health were first authorized. We also created the Division of General Medical Sciences in the National Institutes of Health and the Division of Radiological Health in our Bureau of State Services.

In 1959, the Division of Health Mobilization, with responsibilities in areas of civil defense related to health, was established in the Public Health Service. The sanitation facilities construction program for the Indian health activities was authorized.

In 1960, grants were authorized for the support of institutional research and research training programs in research institutions, universities, hospitals, and other nonprofit institutions. The International Health Research Act was enacted. We created the National Center for Health Statistics, bringing the various segments of the Service together which are active in this area.

In 1961, the Community Health Services and Facilities Act was passed. I think this was one of the most important steps that has been taken in recent years since the Congress specifically recognized the need for more attention and more support in terms of applying existing information to the benefit of our people; in other words, the application of research information in a practical sense.

In addition, the Federal Water Pollution Control Act was amended in 1961 providing more specific and broader responsibilities in this area.

Last year, Mr. Chairman, in 1962, two new Institutes were authorized as a part of the National Institutes of Health, the National Institute of Child Health and Human Development, and the National Institute of General Medical Sciences. As you realize, the latter merely elevated a division of the National Institutes of Health to institute status.

However, the National Institute of Child Health and Human Development was entirely new, an entirely new program and, as a matter of fact, there are no specific appropriations for this new Institute. The manner in which we are operating is that programs which fall into this category have been transferred from other institutes in the NIH in order to make the nucleus of a going program.

Mr. ROBERTS. In that connection, where is the Center for the Aging now? Is it over in the Child Health and Human Development Institute?

Dr. TERRY. That is right, sir.

The Child Health Center and the Center for Aging Research which were previously located in the Division of General Medical Sciences have been moved to this Institute.

In addition, Mr. Chairman, in 1962, the Congress enacted the Vaccination Assistance Act and also enacted legislation in the support of health for migratory farmworkers.

The air pollution control legislation was extended. As a part of our regrouping and reorganization within existing program areas in the Public Health Service, the Division of Research Facilities and Resources was established in the National Institutes of Health. This pulled together many of the programs in the National Institutes of Health which were not categorical; that is, heart, cancer, or any other specific area, but were basically supporting resources for medical research.

I admit that I have not covered all of the developments which have occurred, Mr. Chairman, but I think these are the highlights of our new program areas and the reorganization adjustments which have taken place since the Public Health Service Act was enacted in 1944.

Mr. ROBERTS. I think, with the understanding, Dr. Terry, that you will remain for questions from members, unless there are specific questions for the Surgeon General at this time, we will move on to Dr. David Price and let him make his presentation and your other associates, so that we can move the hearing along.

Is that agreeable?

Mr. BROTZMAN. Yes, sir.

Mr. O'BRIEN. Yes, sir.

Dr. TERRY. I expect to remain throughout all of the Public Health Service participation in these hearings and will attend as much as I can when other witnesses are testifying so that I will make myself available at any time, sir.

Mr. ROBERTS. We are grateful to you.

Dr. PRICE. Mr. Chairman and members of the committee, in scheduling these hearings, this committee recognized that health conditions, needs, and opportunities are changing rapidly in this country. The Surgeon General has described the past accommodation of the Public Health Service to these changes, and other witnesses are prepared to interpret the significance of progress in science and medical technology as determinants of the nature and emphasis of national public health programs in the years immediately ahead.

There are other national trends outside the immediate fields of health and the medical sciences toward which it is my role to direct attention. These, too, are strong forces to shape the future. I wish to identify several trends in such subjects as population, economics, social problems, and political organization, and to interpret their significance for public health planning.

The United States now has an estimated population of 188 million. By 1970—7 years from now—it will, by some estimates, have reached 214 million. That amounts to an increase, each year, equal to the population of a city the size of Chicago. This means that the output of health manpower, the production of health facilities, and the capacity to render health services must be expanded simply to keep up with the expanding population.

The composition of the population is also changing. An increasing proportion is under 17 or over 65 years of age. Our population is

growing older and younger at the same time. By 1970, about half of our population will fall in these two age groups. This will increase the health needs out of proportion to the overall population growth since these two groups are larger consumers of health services than other age groups.

It will also increase the problem of financing the increment in services because these age groups tend to be less productive economically.

Average per capita disposable income is rising. In terms of 1962 dollars, it has risen from $1,295 in 1940 to $2,052 in 1962. People are demanding and getting more health services. Thirty years ago the average person saw a physician two or three times a year. Today, the average is five.

Total expenditures for health and health care reached an alltime high of about $29 billion in the fiscal year 1960–61. This constituted 5.7 percent of our gross national product. Some 2.2 million people are employed to render these services. In fact, the provision of health services can be regarded as one of our largest industries.

Scientific advances have made medicine more effective. The product is better and its usefulness to all age groups is accordingly greater. Higher income levels and health insurance are more and more making it possible for the need for medical care to become an effective demand.

If the country is to meet this demand—and it is inconceivable that it will not—we shall have to give continuing attention to the oragnization of our medical care resources.

Where people live is also changing. More than one-half of our people now live in 184 metropolitan areas. This is expected to rise to two-thirds by 1970. Our planners expect that by 1970 there will be a virtually unbroken string of 175 metropolitan areas extending from Boston to Norfolk. Much the same is expected along the Great Lakes from Milwaukee to Buffalo, and on the west coast from San Diego to Seattle.

The problem of delivering health service in these metropolitan areas is complicated since the principal health facilities tend to be in the central cities.

The people who once used and supported the facilities are moving to the suburbs. The people remaining in the central cities are economically unable to support the facilities. The suburbs, though economically better off, are split into many small communities and poorly organized.

Increasingly health problems must be dealt with on a basis which covers several political jurisdictions. Changes in local political organization or new mechanisms of planning and cooperate action among diverse political subdivisions must be devised.

While undergoing urbanization our Nation is becoming more industrialized and mechanized. The physical environment in which man lives and works therefore takes on new health significance. Thousands of chemicals are in use in our factories, in agriculture, and in the home.

It is estimated that some 400 to 500 new chemicals find commercial application each year. Many of these are toxic, others potentially so. Some of them find their way into water, into air, or into food, usually in minute amounts. Their effects on man are incompletely understood and risks must be assessed and, where necessary, controlled.

Accidents now are the leading cause of death in the age groups from 1 to 35. They account for about 92,000 deaths annually. About 9 million of our people have a physical impairment due to accidental injury.

The economic impact of illness and disability changes as patterns of disease and disability also shift. The long-term downward trend in the incidence of many communicable diseases continues. Cardiovascular diseases and cancer are now the two leading causes of death. Patients with mental illness continue to occupy about half of all the hospital beds in the country. Admissions to mental hospitals have been increasing but the average duration of stay in the hospital has been shortened.

The net effect is a decline from 499 in 1955 to 440 in 1960 in the rate of resident patients per 100,000 population. To further this trend will require substantial increases in investments and services both within the hospitals and within the community. Economics therefore has a place in planning health services.

If the resources that could be expended for health were unlimited, the economic aspects of the expenditures might not matter. But since resources are limited, increasing attention must be given to research in the economics of health service.

Thank you.

Mr. ROBERTS. Going back to your statement on page 3, I think you point up quite well the change that is so evident, in that our country was once one of rural communities or areas, is now more than 50 percent urbanized, and the trend continues at a rather rapid rate, does it not?

Dr. PRICE. It certainly does.

Mr. ROBERTS. And you point out this problem of new chemicals, the toxic effect of many of them that find their way into water, air, and food. You also point up as the No. 1 problem the problem of accidents, being the No. 1 cause of death in the age group from 1 to 35 and accounting for 92,000 deaths annually.

What are we doing in the Public Health Service in the field of trying to discover the effects of chemicals in pesticides, and in detergents, and in various other things that are used in the home?

Dr. PRICE. Mr. Chairman, one of the other members of our staff is prepared to describe to the committee our activities in the environmental field and, with your permission, I would like to defer the reply to this question to Dr. Robert Anderson, who is going to make the presentation to the committee on that subject.

Mr. ROBERTS. I think we might very well move to Dr. Anderson and let him make his statement at this time on environmental health.

Then, after we finish with the entire program, I think the committee will have some questions.

Dr. Anderson.

Dr. ANDERSON. Mr. Chairman and members of the committee, following the Surgeon General's opening statement before you and his general description of the environmental health activities of the Public Health Service, it seems to me that I can most simply begin a more detailed summary of the functions of our environmental health programs by describing them as the Service's efforts to enable us to continue to live with ourselves.

The health hazards of our environment today—pollution of the water and air, the presence of radioactivity, the fumes, dusts and other haz-

ards of the work place, and the necessity for constant vigilance to guarantee safety and cleanliness of food, milk, and the general sanitation of the community—all have been created by our human activities.

These hazards are byproducts that we have made for ourselves while making a better civilization. Now, we must analyze and control these byproducts if we are to live and enjoy the benefits of the advances we made while creating the hazards.

Some of these problems are not new, of course, and our efforts to alleviate them have been going on for a long time.

More than 50 years ago, the Service began investigating the contamination of river waters. Soon after that, we began to work on the methods for handling chemicals and dusts in the manufacturing process, the prevention of silicosis, and analysis of other occupational diseases.

Decades ago, in our work on the communicable diseases, such as typhoid and malaria, it was apparent that clean water, good garbage disposal, and other means of controlling disease carriers were important to the abatement of illness. That early experience in fighting specific diseases gave us much knowledge that is valuable in efforts to control environmental hazards today.

But it is not just oversimplifying to say that today we live in a different world. The members of this committee have heard many times, I know, facts and figures on how so many facets of our Nation have changed so radically since the end of World War II; how our population—rapidly growing in total numbers—has migrated to the cities, moving into more concentrated groups and bringing about air pollution both from their home fires and auto exhausts, needing more elaborate facilities for safe water and food, and needing more complex systems for disposal of their wastes.

You know how our technology has created literally hundreds of new industries to make us a richer and more sophisticated nation but which also are dumping bigger quantities of wastes into the air and rivers; you know how this same research-minded industry has invented literally thousands of new chemical formulas for more and better consumer products but which also require the disposal of complex new wastes.

The technological progress of our Nation is far outdistancing our ability to know all we need to know about the health aspects of its products. It is daily presenting us with new knowledge, new techniques, new manufacturing processes, new products, and new byproducts, all at a tremendous rate.

This accelerated accomplishment in scientific research and technology has become the most prominent feature of our national life. The speed of this development has not only been the reason we are so far behind in our coping with environmental hazards, but also it has led to our failure to recognize many of them.

For us in environmental health, the important thing is that there is no question but that this scientific and technological progress will continue because it is essential to our survival, and similar growth taking place elsewhere in the world will force us to continue.

Thus, unlike those who came before us, we are unlikely to have the change to adjust to the world as it is—including our environment—because we will continually have thrust upon us new changes. The challenge is to prepare for that environment before it arrives.

At the same time, while medical research in our postwar world gave us new understanding of the nature of man's body processes and diseases and how to treat them, it became apparent that these environmental factors probably were being overlooked and inadequately evaluated.

For some years now, the developing nature of this health problem has been recognized. Health officials, physicians, and others from many walks of life have called attention to the fact that we could not let go unattended the increasing health hazards of the technological revolution that was enveloping our whole Nation.

Members of this committee have heard this problem reviewed in the hearings leading to passage of air pollution legislation, for example, and are familiar with the Public Health Service's plans for attack on some of those problems.

In recent years, national advisory committees to the Surgeon General, in examining the programs of the Service from different points of view, all recommended action in the environmental health field.

The report of House Appropriations Committee in 1960 dealt extensively with the nature, the range, and with the size of the environmental health problems. It also devoted considerable attention to the types of activities which need emphasis in the management of these problems.

Also in the spring of 1960, a thorough study of the mission and organization of the whole Public Health Service was completed and made recommendations for reorganization of the Service to provide a more adequate structure to meet present and expected health problems, including environmental health. At the direction of the Surgeon General, we have taken the steps which are permissible under law, to put these recommendations into effect.

In August of 1961, the Surgeon General established a committee of national leaders in the environmental sciences, with Dr. Paul Gross, immediate past president of the American Association for the Advancement of Science, as chairman.

For several months, this Committee intensively reviewed ongoing and proposed environmental health programs of the Public Health Service, agreed on long-range objectives, and gave special attention to manpower requirements, the role of intramural and extramural research efforts, the relative size of our programs, and the relationship of Public Health Service programs to those of other Federal agencies.

The main points of this report are covered in the more detailed material I have submitted. I also have with me copies of the complete report, if they are desired.

In addition to these, other study groups having no connection with the Public Health Service programs have examined environmental health problems. The most recent report of this nature, that of the Committee on Natural Resources of the National Academy of Science, deals extensively with that subject.

Without exception, these groups of knowledgeable people, mostly outside of the Federal Government, have expressed strong concern because we know so little, and are moving so slowly in the identification and control of environmental hazards.

We feel that the report of the Gross Committee was a most significant document, and I would like to discuss further its importance.

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First, however, I should briefly outline for you the current programs and activities of the environmental health divisions of the Service so that you may have background for discussion of the broad problem.

As I said earlier, we have already taken those steps permissible under present law to provide greater emphasis to environmental health. Functional assignments within the Bureau of State Services have been made to group the environmental programs into a framework of closer association and much of the planning for programs to fill gap areas has been done.

Presently, five control programs and the Arctic Health Research Center represent the major divisional elements. Each of the programs has laboratory support from our Cincinnati laboratory or from regional laboratories and the mission of each program gains from related extramural research.

Let me briefly review these divisions and local programs for you.

The air pollution program has three principal aims:

(1) To improve our knowledge of the causes and effects of air pollution, and the means of controlling pollution to keep it within acceptable limits;

(2) To help with the actual control of air pollutants through technical assistance to States, communities, and industries; and

(3) To stimulate all levels of Government, industry and the public to give increased attention and greater resources to the prevention and control of air pollution.

As evidence of the width and breadth of our air pollution activities, the program has assisted half a dozen major cities in the extensive study of their pollution problems during the last few years and has also dealt with the problem of auto exhausts. One result is that the auto manufacturers are installing crankcase emission controls on all new cars beginning this year.

Our occupational health program has three main objectives:

(1) To develop better techniques, materials and equipment for the detection and control of occupational disease;

(2) To stimulate community and industrial efforts toward occupational health services; and

(3) To study closely the health status of the labor force and the total impact of the working environment on health.

The Division of Occupational Health studies have touched almost every major industry in America—from textiles to battery manufacturing—and its work in skin diseases, a leading occupational health problem, has reached into almost every segment of American industry. Its newer studies are concerning themselves with the toxicology of the hundreds of new chemicals now in use in manufacturing processes.

The Division of Radiological Health has, in the relatively short but intensive development of its program, undertaken three major tasks:

(1) A nationwide system of environmental radiation surveillance;

(2) An evaluation of the biologic effects of radiation; and

(3) The development of sound radiation standards, and practical measures for health protection.

The activities of the Division now span the Nation and bring it regular and reliable and detailed information on the levels of radioactivity in water, both in streams and from drinking water, air, milk, the gen-

eral diet of a portion of the population, and on other sources of radiation, such as medical and dental X-rays.

The Division of Water Supply and Pollution Control administers the Federal Water Pollution Control Act (Public Law 660 of the 84th Cong.) as amended in Public Law 87–88 under delegation from the Secretary of the Department, except for the enforcement functions which are exercised by the Secretary. This act assigns broad program and leadership responsibilities. Principal program areas include—

(1) The development of comprehensive pollution control programs for all drainage basins of the country;

(2) The collection of basic data on water quality;

(3) Enforcement of water pollution abatement actions;

(4) The conduct and support of research pertinent to its mission; and

(5) The encouragement by all and every means, and in cooperation with other agencies at all levels of the best development of our national water resources.

The construction activities of the Division under this act will be reported to you in another presentation by Mr. Pond.

The environmental engineering and food protection program has broad responsibility for programs of milk, food, and shellfish sanitation; interstate carrier sanitation, drinking water supply and solid wastes disposal; general community sanitation, and urban environmental health planning. Principal activities include:

(1) The support of intra- and intramural research, demonstrations, and training;

(2) The providing of technical and other assistance to Federal interstate, State, and local agencies, and industry; and

(3) The development of standards and program guides to further State and local and industrial programs.

The Service's model ordinance for food service establishments is now the basis for laws in 37 States and 1,100 county and municipal health jurisdictions; the automatic food vending machine industry came to us for help in perfecting a code shortly after organizing as an industry. Our milk sanitation model ordinance and code, the oldest of all, is a byword in the milk industry.

In addition to these five programs, the environmental activities of the Bureau include the Arctic Health Research Center, which concentrates on the health problems of residents of the far north. In its 15 years of operation, the Center has contributed a great deal to knowledge of the health problems of the Arctic, and played an effective part in disease control programs. Its aims are:

(1) To expand knowledge of, and search out solutions to health problems of a low-temperature environment;

(2) To utilize the unique research potential of the Arctic, its biosystem and its peoples, to carry out research that will be applicable elsewhere; and

(3) The provision of a facility in the Arctic—sub-Arctic to serve as a focal point for health research in low-temperature areas.

This facility is the only facility in the Western Hemisphere devoted to civilian health problems of peoples living in cold-temperature climates.

Back to the Gross report: Two basic conclusions of the Gross report are that there is an essential unity to the problems of environmental health, and that there is unquestionably the necessity for a Federal role of leadership in this field.

The Gross report said:

> A national need exists for establishment and maintenance of a vigorous and integrated effort to maintain controls over the human environment compatible with projections of change in both population and the environment itself * * *. The broad scope of the problem of environmental health relates to virtually all of man's activities * * *. The complexity of the problem requires that the Public Health Service's programs be designed with a total perspective toward the environmental health of the Nation.

Put more simply, we now recognize that all of the factors in the environment are interacting with each other on man and we must comprehend all of the factors and the results of all of the interactions. At the same time, man—the receiver—is also reacting differently under varying conditions and according to the different nature of the individual. Thus, we must also comprehend the variations of individuals.

The big need, as we see it, is an integrative program which will permit total assessment, both in breadth and depth, of the multiple effects of environmental impacts, in the work place, in the home, in recreation, and in effect everywhere. The pesticide problem that you mentioned, Mr. Chairman, currently high in the public eye, is but one illustration.

The Gross report noted that the Public Health Service is unique in the number and scope of its responsibilities, within the Federal Government and the Nation, in the field of environmental health.

In line with our wide range of interests, we are now ready to initiate new programs which will be directed at the normal and abnormal physiology of man under environmental impact. This research, to be conducted in our own laboratories and in academic and other facilities outside of the Service, will require talents in biochemistry, physiology, toxicology, pharmacology, and related bio and physical sciences and which will be used in a human ecology framework.

The results will provide the true working base for control actions. Unless we can soon be at such a state of capability, the health official will face the dilemma of either holding back new technological developments or desperately anticipating future health problems which could have been avoided or modified had health research accomplished the technological development.

The urgency of the need for valid scientific knowledge is apparent from another perspective. Environmental health programs, which are necessarily broad in scope, impinge on economic systems. For example, use of atomic energy on a broader basis is inevitable because it is the most powerful applied science tool we have; thus, we must reckon with the possibility of increased radioactivity in the environment of the future.

Requirements for cleaner air affect the location of industrial plants as well as manufacturing processes; clean water costs money, increasingly more because the water problem is becoming more complex; and the use of new chemicals and new processes in manufacturing requires new methods of protecting the workers in contact with them.

Thus, our problem is not only to identify and analyze environmental health hazards and then develop methods for control, but also to then

be prepared to help assess the economic costs of those controls against the price to health of letting the hazards continue to exist.

We may be criticized because the steps we propose are too restrictive or too expensive, and are said to be out of balance with the health risks involved. These situations reflect our need for knowledge, for it is clear that existing tools are crude for predicting the consequences of environmental changes which may reach millions of people.

It is clear, too, that health measures, themselves, can possess their own undesirable consequences. Particularly in the field of environmental control measures is it necessary to know as much as we can about the effects and consequences of such measures.

What, for example, are the consequences of controlling malaria and encephalitis, and half a dozen other diseases by the widespread use of insecticides? What is the total effect of eliminating rodents with poisons which may persist in the environment?

What health risks are posted by preventive countermeasures against radiation as compared to radiation, itself?

What do we know of the chronic effects of contaminants in our air or water, and on what basis do we make decisions to control them?

These decisions are readily reached where the risk on one side of the fulcrum is known and is great—for example, the real risk of malaria versus the ill-defined threat from insecticides. It is much more difficult where risks are real but not subject to quantitation, or where socioeconomic factors are involved.

The decisions get increasingly difficult; yet they influence our likelihood of surviving other types of stress.

If reasonable balances are to be established, so that the risks we take are in proportion to economic and social impact, or so that the short-term gain is not made to our long-time detriment, we should at least know what the risks are. We cannot progress in a chemical and technological world without full understanding of the biological potential of its properties.

Thank you, Mr. Chairman, and members of the committee.

Mr. ROBERTS. Thank you, Dr. Anderson.

These hearings are being held on the bill H.R. 2410, which, as you know, would authorize the Surgeon General to reorganize the Public Health Service.

If the legislation were to be enacted, and I would like to direct the question both to you, Dr. Anderson, and also to Dr. Terry, what reorganization is contemplated insofar as the administration of the environmental health programs is concerned?

Dr. TERRY. Mr. Chairman, the plans in this direction are as follows: The present Bureau of State Services, which includes our community services programs and our environmental programs, would be abolished. In place of this, we would create two new bureaus, a bureau of community health, which would include all of those programs related to our work with the States in relation to public health and community health activities, and also establish a new bureau of environmental health, the Bureau of Environmental Health, to include our programs in water pollution, air pollution, radiological health, occupational health, and environmental engineering and food sanitation.

I might remark further, Mr. Chairman, that in terms of the administrative responsibility which we have at the present time, in many respects to a functional degree we are already operating in this way.

It is true that Dr. Anderson is our Chief of our Bureau of State Services. On the other hand, Dr. Anderson's activities at the present time are confined to the area of environmental health and more strictly speaking he is in charge of our environmental health activity.

On the other hand, Dr. Christensen, who is the Deputy Chief of the Bureau of State Services, is the person who is in charge of our community health activities, so, to a large extent, from a functional standpoint, we are already operating in this way, Mr. Chairman.

Mr. ROBERTS. Mr. O'Brien.

Mr. O'BRIEN. I have one question.

If some of the environmental health programs involving extramural research, research grants and other grants, and also enforcement activities, do you feel that it is desirable that one and the same agency carry out these different functions?

In other words, is a good researcher necessarily a good policeman, or do you think that these activities should at least, to some extent, be divided?

Dr. ANDERSON. In our programs, Mr. O'Brien, we have research of two sorts. One is research in which we support the research of people outside of governmental agencies, in universities, research institutions, maybe even industrial organizations, through contracts and grants.

In those instances that research is largely related to a specific talent which that institution has in the field and may be devoted to a specific problem on which we seek to obtain a solution.

On the other hand, part of our program is intramural research wherein our researchers are dealing more closely with the immediate problems, solving problems present in the practical world around us today.

We have separated these activities, where we can, where there is an enforcement or regulatory activity within the organizational units, let's say controlling food sanitation or controlling water pollution.

We have separated the enforcement activity from the research activity by placing them in different branches. However, we have kept the overall direction of the program focused upon its primary purpose, namely, that of achieving water pollution control now and in the future.

I, personally, feel that it is highly desirable not to remove or not to separate too far organizationally research functions that are in-house functions from enforcement activities because there is a feedback, back and forth.

The problems that are experienced in the enforcement area can be referred to the research groups very easily and simply for solution. On the contrary, the researchers frequently can, because they are working on applied problems, go out and take cognizance of field needs and develop new methods for approaching them.

For example, one of the problems in the water pollution field has been to identify the pollution problem existing in streams. One kind of organism that is used to identify pollution is an enteric organism that is present not only in people, but it is also present in cattle. It is found in streams, and up until recently it was not easily possible to differentiate between the two kinds of organisms, namely, those that

were arising from people, where the danger of typhoid fever or the danger of hepatitis might be present, and those arising from cattle along the banks.

This problem came to the attention of the people in our own research program in our laboratories at the Sanitary Engineering Center in Cincinnati. They worked out techniques which enable us to identify and differentiate the enteric organisms which are coming from humans from those coming from agricultural pollution.

I think if the separation is not too great it is valuable to have research and regulatory activities reasonably related to each other organizationally. Otherwise, the mechanisms for coordination and feedback get to be quite complex.

Mr. O'BRIEN. Thank you, Doctor.

Mr. ROBERTS. All right.

Dr. Terry, you might present your next witness.

Dr. ANDERSON. Mr. Chairman, I had a longer statement that I would like to submit for the record, if I may.

Mr. ROBERTS. Without objection, that may be included.

(The statement referred to is as follows:)

ENVIRONMENTAL HEALTH IN THE PUBLIC HEALTH SERVICE

(U.S. Department of Health, Education, and Welfare, Public Health Service)

INTRODUCTION

First health milestones

Man's concern for reaching a comfortable relationship with his environment is older than recorded history. Over 25 centuries ago the ancient Chinese expressed the need for "man to seek harmony with and merge with his surroundings." The early Greeks, who provided the names of Esclepius and Hygeia from their mythology, and who had such a profound effect upon our civilization, began at about the same time to apply themselves to an understanding of nature. The intellectual contribution of this group to all fields was the dominant feature of their time, yet throughout this classical world the concept of a sane life in a healthful environment was preached. The teachings of Hippocrates undoubtedly influenced the early sanitary laws, which describe the principles of quarantine and isolation, and the basic essentials of community sanitation. It was not until the 17th century that new truths began to significantly influence the practice of public health.

The most effective methods for avoiding disease came out of the attempts to correct, by social measures, the problems brought about by industrialization. The workers of the 19th century encountered health and social problems of such magnitude that reform movements developed almost spontaneously and simultaneously all over the Western World. The reformers of that time firmly believed that disease always accompanied dirt, pollution, hunger, and wants, and that health could be restored by "bringing back to the multitudes pure air, pure water, pure foods, and pleasant surroundings." Though naive in modern scientific terms, the philosophy was immensely effective and science has since shown the concept to be sound. This period, too, witnessed the birth of the germ theory of disease. Of the giants of that time, Jenner, who with his smallpox vaccine provided the first specific disease control method; and Pasteur, who led the way to specific environmental controls, made fundamental contributions employing scientific methods. In this country, Shattuck completed his work for the Sanitary Commission in Boston and submitted his classic report, a blueprint for the promotion of public health—perhaps the most significant single document in the history of public health.

The recent years

The present day patterns for environmental health programs began to take shape at the turn of the 20th century. The Curies had discovered radium; cholera and typhoid had been related to water quality; yellow fever had been shown to be mosquito borne; and plague, introduced in 1900, became established in this country. Early control programs, conducted by the Public Health Service, laid the pattern for local, State, and Federal relationships which exist today.

While our present day environmental health programs antedate the turn of the century, the first engineering program in the PHS came with efforts to control waterborne typhoid fever, and in 1910 investigations into the relationship of typhoid fever to sewage pollution of streams was begun. In 1912, a laboratory for stream sanitation investigation was established at Cincinnati, and occupational health programs were initiated. A year later our program on the quality of drinking water used on interstate carriers was established. In 1914, malaria control programs were initiated, and in 1925, in response to a typhoid outbreak, our shellfish sanitation program was created. The period until the Second World War was one of gradual expansion of research and control programs, and the growth of State-Federal relations in health programing.

World War II brought substantial increases in environmental health activities which were directed primarily at problems of the times. Explosion of the first nuclear weapon introduced only one of a new set of health problems, which since the war have grown sufficiently so that we in the health field have really entered a new age.

Post-World War II

The mushrooming developments since the last war are adding a complexity to our environment which seems to increase at a rate faster than our growth. This growth has produced new knowledge in medical sciences which has changed our life expectancy, and may in time change our biological characteristics. In the face of increased life expectancy, society now encounters new health problems, chronic diseases and impairments caused or aggravated by environmental factors. Because of improved economic status and social attitudes, the public now considers significant health problems which have been ignored in the past. And our inventive and vigorous technology does not wait while we solve our present problems. Instead it constantly multiplies and changes, and complicates our work by its extent and diversity. Our big job, as we see it, is one of minimizing the damaging effects which we recognize are part and parcel of our growth, in order that we may take full advantage of its potential.

Public Law 410, the last legislation to deal comprehensively with the Public Health Service, was adopted at a time when the dimensions of the postwar boom could not be anticipated. In spite of this, the comprehensive nature of the act has permitted us to move in many of the directions we have needed to go. As problem areas have built up, however, legislation has been directed at specific segments of our environment. Two categorical programs of the environmental health field have thus been affected; namely, the water pollution program and the air pollution program. The legislation, which has been of great significance to these programs, is discussed in more detail in subsequent sections of this paper.

We recognize, of course, that more needs to be done. The very significant technological gains will continue to advance our environmental frontiers, as well as build up problems within them. Our approaches will have to change—significant new areas of endeavor require attention—and we shall have to acquire a better understanding of the biology of man in order that we can move ahead without acquiring a health deficit in the process.

ENVIRONMENTAL COMPONENTS

The effects on himself, of the changes man has caused in the balance of natural forces, and in the creation for his own purposes of a series of new microenvironments, are not at all understood. We recognize a continuing worldwide pattern of movement of population to cities; this is only one of the striking changes which are accompanying technological and industrial growth. Another change, of which we know little, is that we are increasingly exposed to toxic products and byproducts of this industrial age. We recognize, but know little of the short- or long-term effects of the impacts of these environmental components, both physical and biological, which daily assault us. We are an adaptable species, and we have the advantage of being able to change aspects of our environment to meet our needs. However, we are beginning to see that some of the changes we have made have, knowingly or unknowingly, created hazards to our well-being. In considering the external environment, three major areas are of health concern:

Physical components

Among the physical components of the environment are the nonliving things, and the physical forces which affect man. These include among others light, radiation, air, water, chemicals, noise, and vibration. Our exposure to these may come in a number of ways, directly, indirectly, and in combination. Perhaps

of greatest concern are the chemicals—many are toxic, many potentially so. Large numbers are entering our economy and are used with no knowledge of their biological implications. Experiences with some convince us that some chemicals in trace amounts produce marked physiologic effects; radiation sources will increase—we are increasingly exposed to energy and medical applications. Air and water contain the products and by products of our modern technology, and in many ways the self-generated characteristics of the process speak for an accelerated rate of change.

Biological components

Our concern with technology and economic growth must not obscure the fact that we have unsolved problems in the biosystem. The living things of the plant and animal world, as sources of food or clothing, as sources of disease, or as our competitors are poorly understood. We are an interreacting part of this system, yet we take action to influence it with inadequate regard for the consequences. Drugs and pesticides have provided us with dramatic means of influencing our biological environment. Their use has revolutionized the control and treatment of disease, and changed productivity in many parts of the world. Yet these have produced adaptations in the organisms to which they are applied. The development of resistant strains, disturbed natural balances, and unwanted exposures have too often been a result of their use. It is abundantly clear that the interaction of all biologic species among themselves, and with the physical forces must be understood if we are to apply controls to the environment.

Social components

Powerful socioeconomic factors exert great influence on patterns of disease. In recognition of this, research on health problems has stratified populations on social or economic bases, in order to achieve a better undersanding of the disease process as it affects communities. We recognize that a community's freedom from health impairments depends in large measure on its social and cultural patterns. A well-organized and enlightened community administration can, over a period of years, so raise the general living standards so that improvements in health follow from this factor alone. In the modern industrial community social circumstances are complex and are of significance to many environmental progarms. Thus, increased emphasis must be given to the interplay of conditions—cultural values, mores, social groupings and services, adaptability, and psychological reactions to change, as well as economic factors—the ability to support facilities and services, the economic status of people and their ability to afford the products of technology.

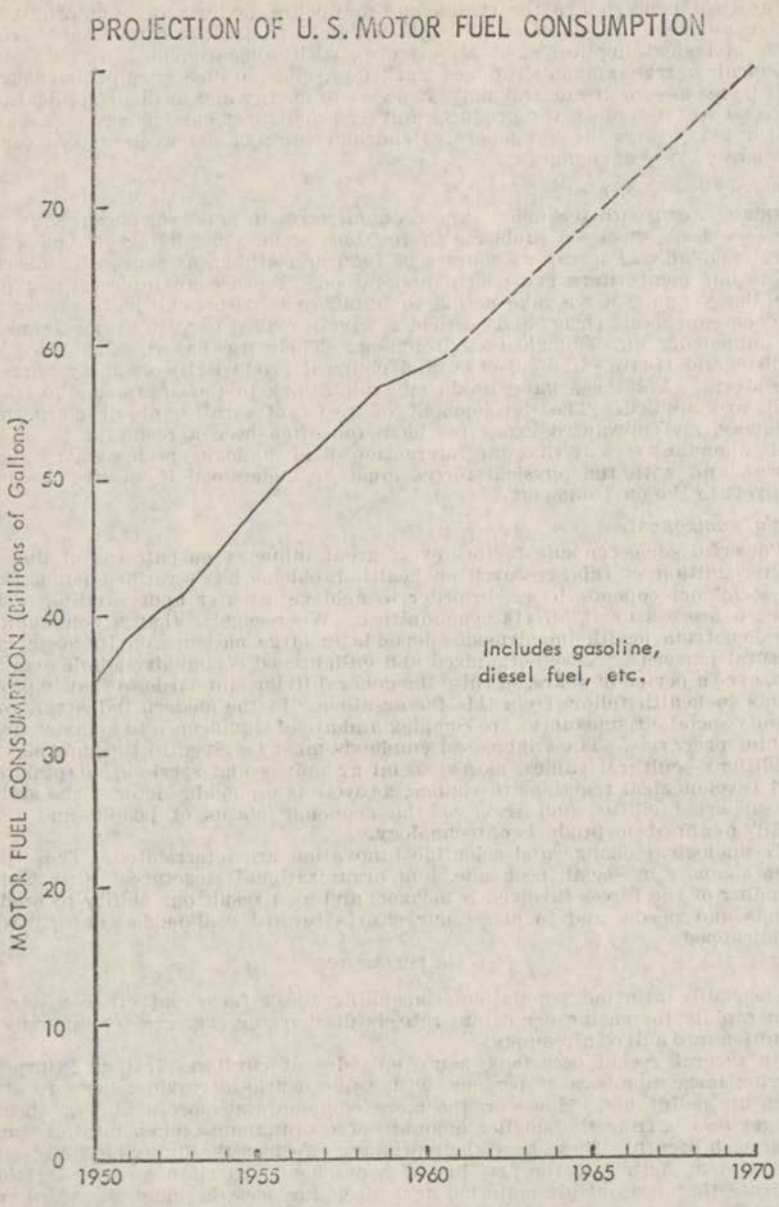
Technological change and scientific innovation are interrelated. These produce changes in social, economic, and organizational structures. Our understanding of the forces involved is meager, and as a result our ability to predict trends and needs, and to direct our efforts toward well-denfied objectives is handicapped.

AIR POLLUTION

A steadily growing population, consuming fossil fuels and other materials at a rapidly increasing per capita rate, is discharging ever greater amounts of pollution into a fixed air supply.

On several recent occasions, acute episodes of cardiorespiratory injury involving large numbers of persons, with some deaths occurring, have resulted from air pollutants. However, the more common and more significant health danger occurs from the smaller amounts of contaminants taken into our lungs with each breath. These have their primary effect on the lining of the respiratory system, acting, in the first instance, as chemical irritants. Investigations indicate that irritant air pollution agravates, inreases the incidence of, or contributes as a cause to: (1) Acute upper respiratory infection, including "the common cold"; (2) and chronic bronchitis; (3) chronic constrictive pulmonary disease (including pulmonary emphysema); (4) bronchial asthma; and (5) lung cancer.

Air pollution can and does produce eye irritation and odor nuisances in some areas. These effects are undesirable even though the pollutants responsible may not, in some cases, directly cause more serious physiological effects and the significance of airborne concentrations of cumulative systemic poisons, such as lead, is not yet established. Nevertheless, these and other pollutants cause millions of dollars of direct and indirect property damage each year adding a serious economic aspect to this growing health problem.



Source: Public Health Service, MOTOR VEHICLES, AIR POLLUTION AND HEALTH, 1962 (Historical data only)

THE BIOCLIMATE

Man's activities have altered the balance of a relatively stable ecosystem. Atmospheric pollution, land use, agricultural and plant husbandry practices, changes of energy and water balance at the earth's surface have produced changes which can be demonstrated in both biological and physical ways. Land

uses affect the water cycle, thus affecting temperature and humidity; vegetation changes result in changed pollen and microbial profiles. The most drastic effects are produced by urbanization. Location, surface alterations, heat production, and atmospheric changes affect population concentrations, and the total impact has been adverse in most cases. It is clear that our cities—those at moderate and high latitudes, at least—have caused undesirable deteriorations of climate, the few favorable effects being far outweighed by increases in cloudiness, air pollution, changes in illumination and ultraviolet radiation. Present construction practices have aggravated rather than improved the situation. Climatic aspects—particularly medically significant characteristics—should be a consideration in city development and redevelopment, and should influence spatial relationships, location of facilities, and industries. Consideration of these, coupled with community action against air pollution, would serve to improve the bioclimate.

BIOLOGICAL

The biological environment includes the living things with which we must deal. Among those of significance are the infectious agents, the allergens, toxic and beneficial plants, and plants which we use as food or which may invade our surroundings. Animals play an important role—for food, as pets, as beasts of burden, or as sources of disease. The relationship between these and man may be direct or indirect, for toxins or infections may assault him directly, or he may be affected by processing, transport, or storage methods.

Man may also cause changes in the environment that may operate to produce subtle effects, not readily apparent, or produce changes which are obvious and may persist. Adaptations, which frequently are temporary responses to the environment may permit accommodation to many undesirable components, yet these adjustments may conceal long-term effects. Other adaptations may be permanent and result from the selection of genetic types. Since ecological systems are integrated and unstable, it is essential that man in applying controls has a thorough understanding of the biological consequences of his actions.

CHEMICALS

Man has always had to live in and adapt himself to a complex chemical environment. The products of the highly developed technologic era in which we live, however, have greatly intensified the hazards of this environment.

The success of synthetic chemistry has multiplied the number, variety, and complexity of the chemicals to which we are exposed. It is estimated that 12,000 new chemicals are developed each year, with 400 to 500 finding commercial application. The constant introduction of new substances and the intricate interactions of new processes pose problems of synergistic, and additive, as well as individual effects.

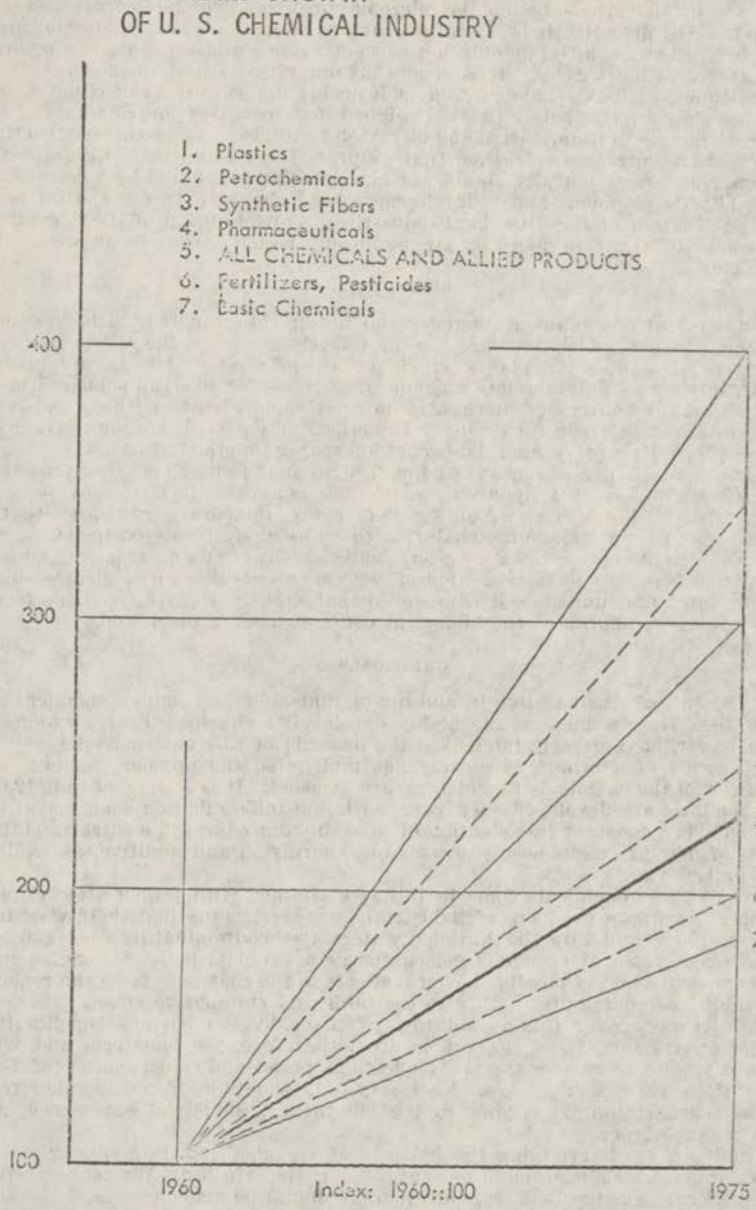
Many of these chemicals come in intimate contact with people at work and at home. As waste products of industrial processes, many find their way into the atmosphere and into the Nation's waterways, contaminating food sources. The increasing use of economic poisons poses a problem both of toxic occupational exposures and of possible harmful effects to the consumer from the residue. Food additives contribute further to the total and cumulative effect.

Public concern over this is not always offset by the obvious benefits that chemicals have introduced. There is need, therefore, for long-term and well-designed studies to answer the many questions posed and to determine total impact of these various exposures. Necessary data should be pieced together from various sources: animal studies in the laboratory, industrial experience, and consumer experience.

In addition to determining the hazards of chemicals, it is necessary to establish and vigorously promote measures for their safe use. We cannot return to a simpler, less hazardous era, but progress should be made as safe as possible.

DRINKING WATER

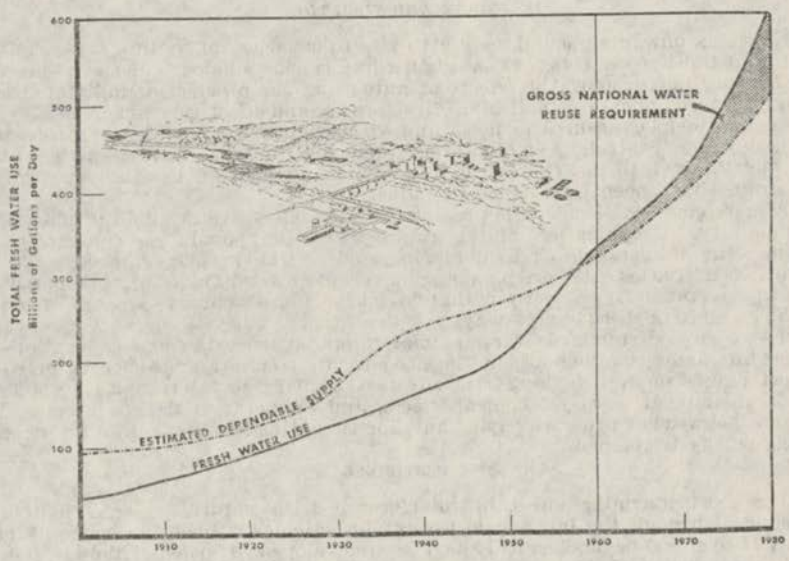
Our increasing population demand for water presents serious problems both of quantity and quality. In 1950, 62 percent of the population was served by public water supplies. In 1960 this figure rose to 75 percent and by 1970 it is expected to reach 85 percent. The problems of drinking water quality will be complicated by the marked increase in population, urbanization, and industrialization which result in increasing discharge of wastes to both surface and ground water sources.



Source: CHEMICAL WEEK, 24 December, 1960

Evidence that despite modern day treatment methods, both chemical and biological contamination of finished waters is apparent. Detergents and viruses are two examples of unacceptable and dangerous substances which appear in finished drinking water supplies. The new PHS drinking water standards have recognized these increasing environmental hazards by establishing limits for detergents, trace elements, organics, and radiochemicals.

A major need is to provide public water supplies for some 9 million people living in small communities served by inadequate individual supplies. A broad drinking water research program is needed to investigate the health effects of trace elements, develop better treatment methods, discover treatment methods for removal of new exotic contaminants being introduced into water sources, and to study the quality changes which take place in distribution systems. Such studies are urgently needed to satisfy expanding needs of our communities for water.



FOOD

The food and beverage industry ranks fourth in size among all industries in the United States. The American public now spends $1 billion per month in restaurants and is increasingly patronizing commercial catering and delicatessen operations. The automatic food dispensing business has increased from a $10 million level in 1954 to more than $200 million in 1960. The retail value of the U.S. food supply is now approximately $80 billion per year and it will continue to expand as the population grows.

The technology of food processing, packaging, and distribution has undergone dramatic changes in the last 15 years. The major trend is toward centralized processing and widespread distributions of commercially prepared convenience foods. Because of consumer demand for convenience products, modern foods are no longer simple commodities: they are compounds and blends of products obtained from worldwide sources and subjected to multiple processes, which may introduce unrecognized health hazards. Also chemical, microbiological, and radiological contaminants continue to present new hazards.

HEAT AND COLD

Exposure to extreme heat or cold may result in profound physiologic and psychologic disturbances or death. Problems of adaptation to extremes of heat and cold were first met by those who had to work or fight in the tropics, the desert, and the polar regions. Because of the great disparity in conditions encountered, however, specialized knowledge acquired from these experiences may at best have only limited application to civilian situations in temperate zones.

As we move from extreme thermal conditions and gain increasing control of our temperature, gaps are apparent in our knowledge of what is tolerable. We know that unseasoned workers cannot perform in extremely hot environments

without great loss of efficiency or even death. To work in extreme cold requires elaborate methods of protection. What problems are added when chemical or other physical stresses are present in the same environment? What are the effects of borderline thermal stress? What harmful or beneficial effects do certain ranges of temperature produce? Do we know enough about standards for heating and air conditioning in schools, offices, and home to assure that present practices are conducive to optimal health?

The problems of heat and cold cannot be separated from larger problems of climate and its effect on man and his environment. Temperature, humidity, radiant heat, and air movement are all forces that work with other aspects of the chemical and physical environment.

NOISE AND VIBRATION

Noise, as unwanted sound, may give rise to a variety of auditory, psychological, and nuisance effects. Even when these can be singled out, as in the case of hearing impairment, the effects of aging and the problem of individual susceptibility complicate establishing direct cause-and-effect relationships.

Occupational exposures to noise and virbration are probably most amenable to study and control. Certain levels and types of noise have been identified as detrimental to hearing, and a growing number of health conservation programs have been established in industry.

A more complex situation is presented by the effects and control of noise in a community. Urbanization and a rapidly growing population constantly increase the numbers of individuals exposed to the noise generated by their multiple activities. Urban planners in recent years have been confronted by growing community concern with two major noise sources—jet aircraft and vehicles on high-speed expressways.

The need for standards for maximal tolerable noise in various locations is becoming acute, making urgent the need to discriminate more clearly between overt effects on health, long-term effects secondary to interference with sleep and communication, psychological effects, and temporary nuisance effects. We do not know what price we pay, if any, for the adjustments made to an increasingly noisy environment.

PESTICIDES

The most alarming effect of interference with natural systems has been produced through the large-scale uses of insecticides. Since the end of World War II over 200 basic chemicals have been developed for use as killers of household and agricultural insects, weeds, rodents, soil organisms, and other forms. These, in a variety of formulations, under a greater variety of names, are broadcast over large segments of the environment. They are unfortunately nonselective, and produce wanted and unwanted effects—"good" and "bad" insects are destroyed, natural balances are upset, and we are faced with environmental contaminants which find their way into our air, water, and food.

The production of synthetic pesticides has grown more than fivefold in the past 15 years. We now produce over two-thirds of a billion pounds annually in this country. We have reason to believe that wide-scale manufacture and use elsewhere in the world may add to the exposure of even our own people.

We now find evidence in people of contact with pesticides. The entire range from acute to nonsymptomatic exposures are common. The low-level background, which now is difficult for anyone to escape, poses real health problems for the future.

THE RADIATION PROBLEM

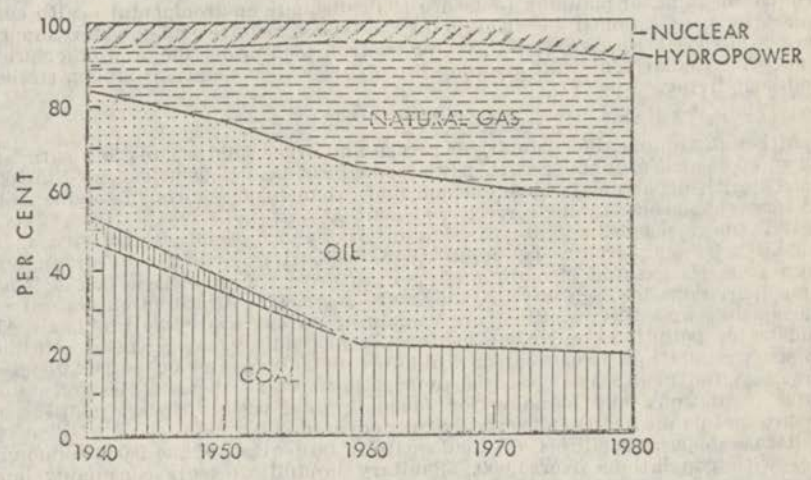
Man is exposed to three main sources of radiation. The first of these is natural or "background" radiation. Fallout from nuclear weapons and reactor byproducts and wastes make up another large source of exposure. In addition, there are the X-rays and radioactive materials used in medicine, scientific research, and in industry.

Man and the lower forms of life have developed in the presence of natural radiation sources. We are, however, greatly concerned with the health effects of manmade radiation. Part of this concern arises from the rapidity of increase in these sources, part from the fact that we do not yet know the extent of the health threat to the population. The most serious effect of acute radiation is damage to the bone marrow and tissues of the digestive tract; acceleration of aging and a shortening of the lifespan; and the induction of cancer. Radiation exposure to the reproductive organs can result in an increase in genetic mutations.

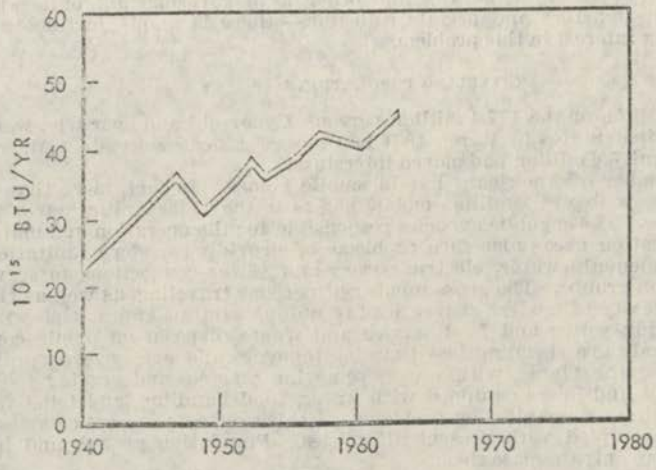
The effects of small doses are less clear. We must assume, however, that any radiation is harmful, that damage is irreversible, and that radiation damage is cumulative throughout a person's lifetime.

If we are to deal successfully with radiological health problems we cannot wait for mortality and morbidity attributable to ionizing radiation. Clinical evidence of radiation damage accumulates too slowly, and radiation in the environment is increasing to rapidly, to permit the luxury of delay.

U. S. ENERGY CONSUMPTION



PERCENTAGE CONSUMPTION BY SOURCE



TOTAL CONSUMPTION

Source: National Academy of Sciences, Energy Resources, 1962

RECREATION

Increase in leisure time and in social and economic gains of our population is reflected directly in the need for increased recreational opportunities, particularly outdoor recreational pastimes, sports, or related activities. The length of the average workweek will drop in the future and much of the new free time available will go to outdoor recreation activities. Qualified authorities have estimated that by the year 2000 current available recreational facilities should be doubled.

The mobility of urban populations across the Nation has generated a demand for recreation in outlying areas. This complicates greatly the planning for and provision of facilities. The development of existing and new recreational areas require meaningful planning to assure that adequate environmental health considerations are applied to such factors as space requirements, water supply, sewage disposal, refuse disposal, vector control, food protection, and other problems. Particularly difficult are those involving water contact, camping, trailer, and boat living.

SOLID WASTES

Although ridding the comunity of refuse and other solid wastes in a satisfactory and healthful manner is clearly a concern of health agencies, few State or local health departments have devoted more than token efforts to solving solid waste problems or planning corrective measures.

With more people, and increased industrial and agricultural activity, more wastes are being produced. Solid waste disposal is generally unsatisfactory across the Nation and in many metropolitan areas the problem is acute. Continued urbanization, scarcity of land, more restrictive air pollution control requirements, and less isolation, are combining to aggravate the problem. Air and water pollution control, agricultural, and public works agencies continue to enact regulations from a categorical interest standpoint which restrict disposal practices, but health agencies need to meet the broad responsibilities for standards, regulations, and planning for adequate solid waste disposal facilities to insure that public health interests are fully covered.

Refuse disposal facilities are inadequate in 90 percent of the 9,000 communities with populations over 1,000. Sanitary landfill sites are consuming land areas at a rate of 5,000 acres per year. In many areas, the problem of locating disposal sites, without posing a threat to water quality, is a vital concern.

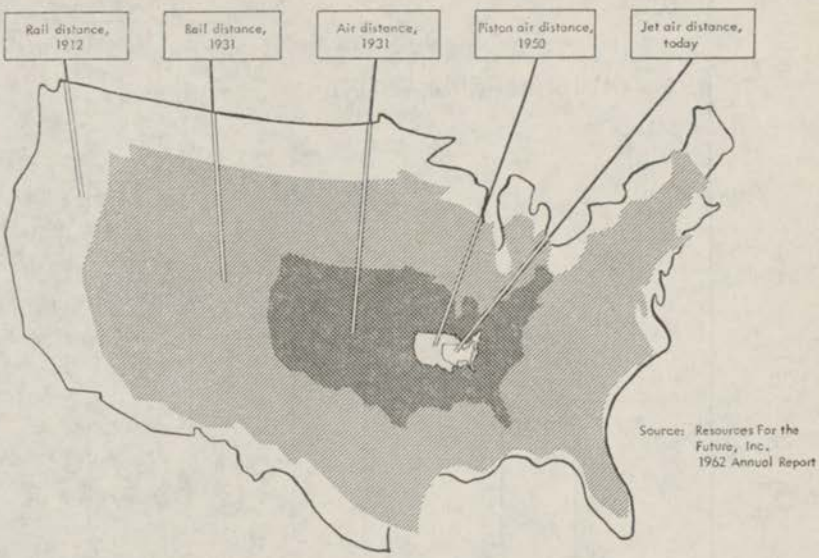
A total of $2.8 billion is spent annually for the collection and disposal of solid wastes—$1.5 billion by municipalities and other local governmental units and $1.3 billion by contractors and private collectors—there is ample justification for the increasing interest in this problem.

TRAVELING POPULATIONS

About 35.5 million of the 177.4 million persons 1 year old and over who were living in the United States in March 1961 had moved at least once since March 1960. Of this total, 5.8 million had moved interstate.

A growing number of Americans live in mobile homes. In fact, more than 3 million persons now live in 1 million mobile homes in the 15,000 trailer parks in the United States. Those public agencies responsible for the operation and maintenance of recreation areas also face problems of providing modern sanitation facilities with adequate water, electric power, and sewer connections to serve tourist population groups. The gross number of persons traveling, as well as the speed and complexity of modern travel, lead to unique sanitation problems with regard to drinking water and food service and waste disposal on public conveyances. Aircraft are spending less time in stopovers and are creating problems in servicing the planes with water, removing wastes, and serving food. Interstate vessels and buses equipped with water, food handling, and toilet facilities are creating new sanitation problems. Health officials in particular are increasingly preoccupied with present difficulties. Population growth and increased leisure can only increase them.

OUR SHRINKING NATION



URBAN GROWTH

Two-thirds of the entire U.S. population now live in 212 metropolitan areas. In the last decade, 84 percent of the population growth was adjacent to, but outside the core cities. This tremendous growth in urban population, resulting from inmigration and natural population increases, has had a direct and immediate effect on maintaining health facilities in these areas. Physical facilities which were not originally designed to carry present loads are facing problems of expansion or obsolescence. Many housing developments served by septic tanks and private water systems constitute positive evidence of the fact that the problem of extending water and sewer lines to serve the expanding fringe areas has been beyond the resources of many communities. Similar situations exist with regard to air pollution, solid waste disposal systems, recreational areas and open space.

The 1960 census revealed that more than 11 million homes were dilapidated or lacking in one or more basic plumbing facilities. An additional 5 million residences are facing serious deterioration. The hygiene of housing is a neglected area.

Unless positive action is taken with purposeful planning and capital investment in needed facilities, increasing amounts of waste products, concentrated in areas with growing populations will result in the creation of serious health hazards. As stated in the Gross report, "these threats are of an insidious nature, a form of creeping paralysis which, if not recognized and corrected, can lead to urban stagnation and death as surely as the most violent epidemic."

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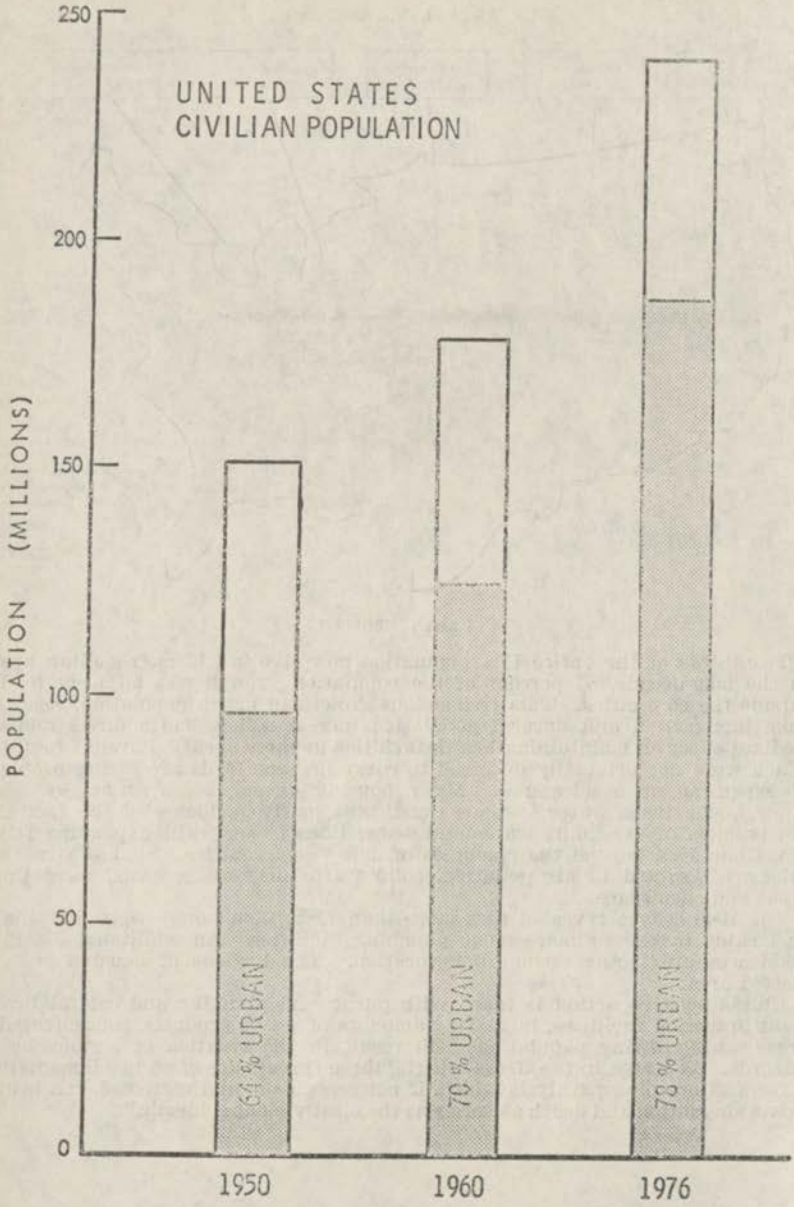


SOURCE: National Planning Association
REGIONAL PROJECTIONS TO 1976, February 1962

WATER POLLUTION

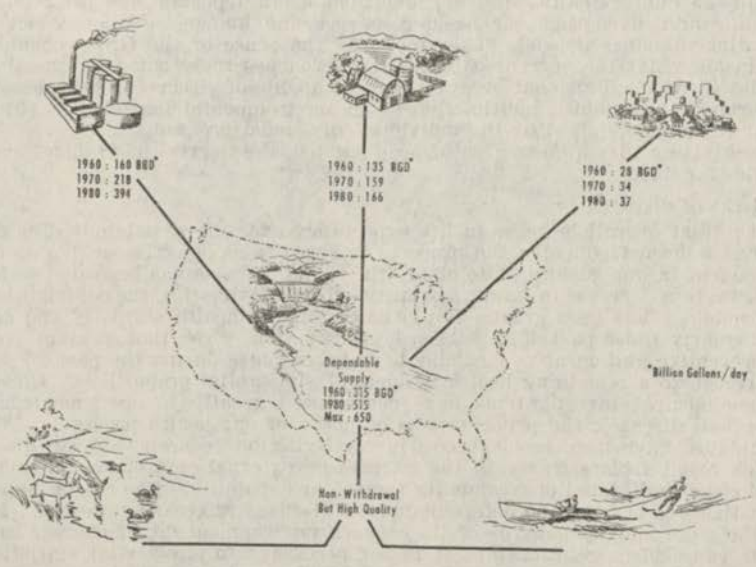
The national water pollution problem is directly related to population and economic growth, new technological developments, growth of urban complexes and changing land practices.

Since 1900, the percentage of the population served by sewers has risen from 32.2 to 57.4 percent and the population equivalent of municipal wastes discharged to streams, treated and untreated, has increased threefold to 75 million. The concentration of population and industry in urban centers is resulting in the discharge of large volumes of complex wastes into often limited water resources. Although much progress has been made since 1956, there are still more than 5,000 municipal sewage treatment facilities to be constructed, and more than this number of industrial waste treatment facilities needed. A major need is to develop entirely new waste treatment methods which will provide for maximum reuse of water.

The rapid growth of industrial production (800 percent since 1900) has resulted in an even greater increase in organic waste production (1,000 percent). In 1960, the "population equivalent" of organic wastes (of animal or vegetable origin such as meatpacking, food canning, paper, textiles) was estimated at 150 million. In addition to organic wastes, industry produces large amounts of inorganic wastes (principally of mineral and chemical origin) resulting from the mining, processing, and manufacture of a wide variety of mineral, metal, and chemical products. Inorganic wastes have different adverse effects on water quality from organic wastes, causing tastes, odors, color, hardness, corrosiveness, and some are toxic.

Each year additional millions of acres of land are withdrawn from agricultural use for streets, highways, airports, shopping centers, housing, and other buildings. The runoff from these hard-surfaced areas carries with it all of the accumlated deposits—oils, organic matter, trash, soil and industrial dusts, other air pollutants, fertilizers, and pesticides. Probably the most important emerging land drainage problem involves the tremendous increase in the use of agricultural pesticides and fertilizers. Pesticide use is now well over 500 million pounds annually and fertilizer production over 50 million pounds. A substantial and increasing amount of these are finding their way into the Nation's streams.

WATER USE: TODAY AND TOMORROW



THE WORKPLACE

Although varying greatly in degree, from dermatitis to systemic poisoning, health hazards are associated with practically every occupation. In recent years, society's acceptance of the need for a healthful workplace has extended beyond the traditionally dangerous mining and manufacturing industries. Increasingly, all aspects of occupational activity are coming under scrutiny. The definition of what constitutes a healthful working place is also changing. Concern now extends beyond averting acute and disastrous illness to reducing less dramatic but nonetheless costly sickness, absenteeism, and decreased efficiency. Thus, more attention is being directed to delayed effects of low-level exposures over a long period of time and to their possible relation to chronic disease.

Occupational areas claiming more attention include agriculture, with its increasing dependence upon a great variety of synthetic chemicals. Even office work has experienced an increase in potential hazards from technologic innovations. The old problems of extremes of pressure and temperature are being examined anew in relation to manned spaceflight, undersea exploration, and increasing urbanization with the need for extensive underground tunneling. Problems of noise and vibration are also being intensified.

In addition to continuing accelerated research on occupational health problems, more vigorous efforts are required to promote the application of knowledge already available. It is estimated that basic industrial hygiene control measures are lacking in over half the industrial plants in this country, and shortages of trained occupational health personnel compound this problem.

THE BASIC APPROACH

Technological innovation and growth are expanding so rapidly in this country that it is becoming increasingly difficult to develop specific control methods for environmental pollutions resulting from this expansion. Other methods must be sought—methods sufficiently fundamental to permit generalizations to be made. To meet this challenge, it will be necessary to supplement our present efforts, directing a portion of our overall program toward acquiring this basic understanding, while proceeding with categorical approaches directed at primary areas of established need. This was the essence of the request of the House Appropriations Subcommittee in 1959 that the Public Health Service make a thorough study of environmental health problems, and of the most efficient organization of its facilities to meet these needs. The subsequent organizational study ("Final Report of the Study Group on Mission and Organization of the Public Health Service") identified, as an important new program, one which would strengthen the basic resources and knowledge upon which the operating divisions depend. This, too, was the sense of the Gross committee conclusion "that the current categorical approaches represented by the Public Health Service's divisional programs are incapable of either (*a*) the necessary cognizance of combined multiple effects of environmental impacts, or (*b*) the depth of effort required by the individual divisional programs."

Recognizing that a clear area of need existed, the Service has taken steps to provide for this.

Patterns of disease

The great overall increase in life expectancy over the past hundred or more years has been frequently and properly referred to as objective evidence of improvement in our general state of health. This increase has been due in large measure to a decrease in infant mortality. In achieving this, the contribution of epidemiology has been great. Improvement in the health status of the adult, particularly those past 45, has been less dramatic. Even though giant strides in preventive and curative medicine have taken place during the past 25 years, we recognize a remaining health problem of substantial proportions. Classical epidemiological investigations have contributed greatly to our knowledge of infectious diseases, the prime targets of many of our health programs. These techniques have been less effective in clarifying our concepts of the diseases which result from stresses, in the internal or external environment, which exceed either individual or community reserve or capability. The reason is partly that time factors and the determinants for disease are greatly different. Many of the more glaring hazards of the modern environment do, of course, have a clear cause-effect relationship; it is not necessary to study vital statistics to perceive this. However, the bulk of the problem relates to insidious onsets of

impairments, seemingly of no specific etiology, and apparently not related to a single precipitating episode. Unfortunately, diseases of this nature, at clinical stages, usually represent advanced and generally irreversible processes.

The challenge now is to develop new epidemiologic approaches, directed at the determinants of health as well as disease. It is essential to do this for better understanding of the normal state of well-being, and it is necessary to develop and employ new, preclinical sensors. Research which takes recognition of social factors must be initiated, employing new concepts, particularly as they may involve computer technology, large and complex population studies, new disease determinants, and new time factors. We may expect such studies to be large; to require considerable time; and to be expensive.

Modes of action

Rapid advances have occurred in theoretical knowledge in the physical and chemical sciences in the recent past. This has been true to a less optimal degree in the technical offshoots which bear on the biosciences. The biological sciences themselves, although the subject of much intense effort, have failed to produce answers to many questions of great importance to the environmentalist. This is particularly true where some measure of the biological effect of stressful events must be made. Are the chemical, or physical, or biological insults to the body independent of each other? Are they independent in a time series? Or do they produce cumulative, or synergistic, effects? How does the biological reserve or the adaptability of the body influence the outcome? How variable within an individual, and from person to person, is the reserve or the ability to adapt or compensate? Questions such as these cannot be answered at present. To simply do more of the same things we are now doing will not provide answers.

One of the important steps which must be taken is toward acquiring better and more comprehensive knowledge of the normal functioning of the living organism. Only with such a background can we recognize metabolic deviations promptly. Further, it is not reasonable to apply present methodology step by step to each of the myriad environmental hazards around us. Our base of knowledge must be sufficiently broad, and our techniques sufficiently sensitive, so that we can predict.

In addition to epidemiological methods, those of toxicology and pharmacology must be applied to the newer environmental health problems. The task of these methods will be to explore and identify biological implications of harmful, or potentially harmful, substances. Underlying these should be bio-chemico-physical studies directed at improved methodology—the development of preclinical sensors based upon the most sensitive methods available. Research should be initiated on the effects at the cellular level and on structured cell systems employing new methods which hold great promise for the future.

New resources

Data analysis procedures, and operations research methods—including computer techniques considered impractical a few years ago—are now being applied to problems in biology. Application of these techniques to broadened concepts of epidemiology, where ecologic systems can be treated as total problems, is badly needed. Until such methodolgy can be applied to the epidemiology of environmental health, it seems unlikely that we can bring together the biological, social, engineering, and other factors important to an appraisal of the total problem.

At the present time, computers are being used to simulate biological phenomena at many levels of complexity. Procedures involve the use of available knowledge to formulate a first approximation, the development of a hypothesis, and a determination of whether performance resembles known evidence. But when applied to the simplest of ecological systems, problems of such complexity are encountered that present techniques are inadequate. It is clear, however, that this is only a temporary impasse. New interdisciplinary sciences are being developed. Increasing sophistication on their part will provide the needed parameters and the mathematical models essential to this application.

DIVISION OF AIR POLLUTION

While limited efforts had been made by the Public Health Service, prior to 1955, to cope with emergency air pollution problems—such as occurred at Donora, Pa., in 1948—no Federal air pollution program as an entity existed until the passage of Public Law 84–159 in 1955. At that time, the Public Health

Service established an engineering air pollution program which began limited technical assistance and research activities into the sources, nature, concentration, and control of air pollutants. Laboratory facilities for parts of this work were developed at the Robert A. Taft Sanitary Engineering Center, with the remainder being undertaken through contracts and grants. A medical air pollution program was begun at the same time, for the primary purpose of evaluating health effects of air pollution. Lacking facilities at the beginning with which to conduct research, this work was inaugurated almost entirely through grants and contracts. By 1960, sufficient progress had been made, and problem area defined, to justify combining the two programs into the present Division of Air Pollution which was estaiblshed on September 1, 1960, and under which a coordinated activity provides a much more effective approach to the overall problem.

While continuing to make use of the research resources of educational institutions and other private or public agencies through contracts or grants, the Division has also strengthened its own research capabilities. The passage of Public Law 86-493 (1960), provided a particular stimulus to research, accelerating the development of facilities and personnel for the study of motor vehicle pollution problems.

Of importance to the planning and development of the program was the report issued in 1960 by the Surgeon General's Task Group on National Goals in Air Pollution Research, a distinguished outside group, which clearly set forth the respective roles of the Federal Government, the States and communities, and industry in air pollution research.

In brief, the task force held:

That "the Federal Government should be largely responsible for research of a broad nature and of general applicability * * * and for the training of specialized personnel" and should have "primary responsibility for development of information required to establish air quality standards and for the collection and distribution of information." That "the States and communities have a responsibility to support research on problems of primary interests to them * * *." That "the major contribution to be expected of industry relates primarily to the development of adequate and economical control equipment and procedures" and that "the cost of research involved in the development of control processes and equipment is largely the responsbility of industry." That "funds from private sources, such as research foundations and philanthropic organizations, may also be available" and "that the role of the universities and nonprofit research institutes will largely be confined to the conduct of research, the education and training of personnel, and the provision of consulting services." That "the full costs of enforcement will fall on the States and communities, and that the entire cost of control of industrial sources must be borne by industry." And finally that "all such costs are ultimately borne by the public, so that * * * it becomes a matter of how much society is willing to pay for research, control, and enforcement to maintain a clean and healthful environment."

In December 1962, the Second National Conference on Air Pollution was held. President John F. Kennedy, in a message read at the opening session said: "It is imperative that this Nation act to preserve now, and for the years ahead, the purity of its air. The pollution of this priceless resource continues to jeopardize the economic vitality of our Nation and the health of millions of our citizens. This fact we can neither condone nor tolerate; we can and must, instead, resolve to use every appropriate means in a concerted effort to clear the air of its burden."

Attending the Conference were approximately 1,400 professional and lay representatives of public groups, universities, industry, and local State and Federal Governments from both legislative and executive agencies.

A fundamental change from the previous Conference, held in 1958, was evident. At the first conference the basic question was: "Is air pollution a significant problem, except for a few areas of the country?" At the 1962 Conference this was not even considered debatable. There was full consensus that air pollution is an important problem of nationwide significance. There was also general agreement that most air pollution is unnecessary, being preventable or controllable. Clean air can be obtained, usually at less cost to the public than it is now paying for dirty air.

Of greater importance was the overwhelming body of evidence accumulated which substantiates the adverse effects of air pollutants on health. There was full agreement at the Conference that more must be done to reduce air pollution.

Air must be regarded as an important and limited natural resource, whose quality must be conserved in the common interest. As a minimum, its quality must be sustained at a level which can be breathed with safety by all segments of the population, including individuals already in impaired health as well as the more susceptible groups. Over and above this minimum the citizens of the United States should be able to have, and can afford, air which is not only safe but pleasant to breathe.

The Federal program

Scope, philosophy, and objectives.—The Public Health Service air pollution program to date has been based on the philosophy that the basic responsibility for the regulatory control of air pollution rests with the States and local governments, and that the Federal role should be a supporting one of research, technical assistance to public and private organizations, and training of technical personnel.

The basic objectives of the program are threefold: (1) To improve the status of knowledge about the causes and effects of air pollution and about the means of controlling it within acceptable limits; (2) to apply present and future knowledge to the actual control of air pollutants through technical assistance to States, communities, and industry; and (3) to stimulate all levels of government, industry, and the general public to devote increased attention and greater resources to the prevention and control of air pollution.

In carrying out the Public Health Service program, the Division of Air Pollution, in addition to its own resources, accelerates its research by using the resources of many other organizations. These include Federal agencies, universities, and other research facilities. Contracts, grants, and cooperative projects are all employed for such purposes.

Industrial groups also participate directly with the Division of Air Pollution in some of these cooperative undertakings.

As examples, a joint project on measurement and evaluation of opacity of plumes from powerplant stacks is underway with the Edison Electric Institute. Another to study emission from the chemical industries has just been started with the Manufacturing Chemists Association. For several years, there has been close liaison with the Automobile Manufacturers Association, including joint support and planning of various research activities on air pollution related to motor vehicles. Out of these coordinated efforts has come the recent action of the industry of incorporating crankcase emission control procedures on all new vehicles this year, and intensified efforts to find effective methods for further reducing vehicular pollution.

State and local agency cooperation is exemplified by their assistance in collecting samples for the National Air Sampling Network of the Division of Air Pollution. This network now numbers 250 stations, including at least one urban and one nonurban sampling point at every station. Fifty of these stations now sample gaseous, as well as particulate, pollutants. In nine cities, more comprehensive automatic sampling and analysis of gaseous contaminants is recorded continuously around the clock. These networks provide continuing information to assist States and communities in evaluating and dealing with their specific problems.

Technical assistance (role of the Public Health Service)

In a large majority of the jurisdictions which need control activity, State and local programs are nonexistent at present, or are grossly inadequate. Nationally, technical work in the field directed toward appraisal of problems and development of solutions is at a level far below that required for maintenance of an acceptable level of air quality. Over the next few years, the broad objectives of the technical assistance activity will be to assist States and communities in appraising overall problems and in developing "tailored" control programs, and to provide technical consultation on specialized problems. Cooperative Federal-State-local demonstration projects will be used to foster and facilitate program development and to provide some of the information upon which to base program design. In general, the Public Health Service activity will be directed toward helping initiate programs and toward providing tools and techniques in a form useful in attaining this end. The provision of Federal grants to State and local agencies would furnish the stimulus necessary for the State and local control activity and would render the initial support for surveys to determine needs.

In the more distant future, as State and local programs develop, greater emphasis can be given to assistance in the more technical aspects of air pollution control.

Present non-Federal programs

State agencies.—In 1961 there were only 17 States budgeting $5,000 or more for the administration of air pollution control programs. These are listed in table A. Of the $2 million total for these 17 States, 57 percent was spent by California. Most of these States engage in programs of technical assistance and development of local programs. Less than half "enforce" regulations. Six States monitor air quality on a statewide basis, and five review and approve plans for certain new installations which may cause air pollution. New York has recently adopted rules which require that the air pollution control board approve plans, before construction begins, for certain installations; provision is made to delegate such plan approval to qualified local agencies. One State, California, has set up a program for regulation of emissions from motor vehicles. Nine States have adopted laws which authorize cities or counties to operate air pollution control agencies with authority transcending municipal boundaries or otherwise to undertake interlocal cooperation. Two States (Oregon and California) have adopted standards for ambient air quality. Thirteen States have conducted statewide surveys to develop bases for programs, and four others are underway. Other activities of State agencies include training, dissemination of information, nuisance abatement work, provision of laboratory services to local agencies, study of pollutant emissions, and research on effects of pollution on man's health. However, only a few States engage in more than a few of these activities.

Local agencies.—Data obtained from local agencies indicated the existence of 85 local air pollution control programs with annual budgets in 1961 of at least $5,000. From table B it will be seen that 34 of these had budgets of at least $25,000. The median per capita annual expenditure of these was 14.1 cents while the median for the other 51 was 7.8 cents. The median staff for all local programs was 1.3 per 100,000 population. Total expenditures for local programs was slightly over $8 million.

TABLE A.—*State air pollution programs, 1961 (those spending $5,000 per year or more)*

State	Land area (1,000 square miles)	Population 1960 (millions)	Type of program [1]	Budget, fiscal year 1961	Personnel 1961
California	157	15.7	Technical assistance and research	$661,000	45
			Motor vehicle pollution control	500,000	17
Colorado	104	1.8	Technical assistance	10,000	[2] 4
Connecticut	5	2.5	do	7,200	1
Delaware	2	.4	Comprehensive	[3] 18,000	1
Florida	54	5.0	Technical assistance throughout State	12,000	1
Special district			Comprehensive in Polk-Hillsborough Counties.	50,600	7
Hawaii	6	.6	Comprehensive	10,000	2
Maryland	10	3.1	Conduct studies	37,700	3
Massachusetts	8	5.1	Comprehensive	20,000	1½
Metropolitan Boston.			Regulatory program operated by the State.	52,000	8
Michigan	58	7.8	Technical assistance and studies	20,000	[2] 19
Minnesota	80	3.4	Technical assistance	5,000	[2] 2
New Jersey	8	6.1	Comprehensive	104,000	14
New York	48	16.8	do	228,220	20
Ohio	41	9.7	Technical assistance and studies	95,000	7
Oregon	96	1.8	Comprehensive	63,000	8
Pennsylvania	45	11.3	do	60,000	9
Texas	264	9.6	Technical assistance and studies	[3] 22,800	1 [2] 4
Washington	67	2.9	do	24,000	3
Total		103.6		2,039,920	148 [2] 29

[1] Comprehensive includes regulation (control) technical assistance, studies, etc.
[2] Part time.
[3] 1959 estimate.

TABLE B.—*Local air pollution control agencies in the United States (with annual budget of $5,000 or more, February 1961)* [1]

	Population, 1960 (thousands)	Staff [2]	Budget (thousands)	Per capita budget (cents)	Staff per 100,000 population
Agencies with budgets of $25,000 or more per year:					
1. San Francisco Bay area, California	3,364	31	$560	16.7	0.9
2. Los Angeles County, Calif.	5,970	373	3,402	57.0	6.3
3. Orange County, Calif.	698	11	117	16.8	1.6
4. Sacramento County, Calif.[3]	500	[4] 4	50	10.0	.8
5. San Bernardino County, Calif.[3]	498	[5] 8	[3] 259	52.0	1.6
6. Riverside County, Calif.	302	4	67	22.2	1.3
7. San Diego County, Calif.	1,001	4.5	79	7.9	.5
8. District of Columbia [6]	746	6	[4] 42	5.6	.8
9. Polk-Hillsborough County, Fla.[7]	592	4	50	8.5	.7
10. Chicago, Ill.	3,512	[5] 52	[4] 364	10.4	1.5
11. Indianapolis, Ind.	469	6	38	8.1	1.3
12. Jefferson County (Lousiville) Ky.	606	11	63	10.4	1.8
13. Baltimore, Md.[6]	922	10	70	7.6	1.1
14. Boston metropolitan district, Massachusetts.[7]	1,998	8	52	2.6	.4
15. Detroit, Mich.	1,654	20	180	10.9	1.2
16. St. Louis, Mo.	747	13	118	15.8	1.7
17. Newark, N.J.[6]	403	10	63	15.6	2.5
18. Buffalo, N.Y.	530	6	59	11.1	1.1
19. New York, N.Y.	7,710	74	734	9.5	1.0
20. Niagara Falls, N.Y.	102	3	28	27.4	2.9
21. Syracuse, N.Y.	215	5	36	16.7	2.3
22. Cincinnati, Ohio (area) [6]	542	18	165	30.4	3.3
23. Cleveland, Ohio	870	23	236	27.1	2.6
24. Cleveland Heights, Ohio	62	[5] 4	[4] 28	45.3	6.5
25. Columbus, Ohio	469	7	50	10.7	1.5
26. Dayton, Ohio [6]	258	7	55	21.3	2.7
27. Allegheny County, Pa.	1,629	18	217	13.3	1.1
28. Philadelphia, Pa.	1,971	23	166	8.4	1.2
29. Providence, R.I.[6]	206	8	31	15.0	3.9
30. Knoxville, Tenn.[6]	110	2	25	22.7	1.8
31. Harris County, Texas [6]	1,243	[4] 6	[4] 42	3.4	.5
32. Salt Lake City, Utah	198	[4] 4	[4] 30	15.8	2.0
33. Richmond, Va.	218	4	25	11.4	1.8
34. Milwaukee County, Wis.	733	15	128	17.5	2.1
Summary for group	[8] 40,929	[8] 802	[8] 7,629	[9] 14.1	[9] 1.6
Agencies with budgets of less than $25,000 per year:					
1. Birmingham, Ala.	341	2	12	3.5	.6
2. Denver, Colo.	494	2	15	3.1	.4
3. Dade County, Fla.	935	[5] 1	5	.5	----------
4. Atlanta, Ga.	485	1	13	2.7	.2
5. Cicero, Ill.	69	[5] 1	5	7.2	----------
6. Peoria, Ill.	103	1	8	7.8	1.0
7. East Chicago, Ind.	58	1	11	19.3	1.7
8. Evansville, Ind.	140	1	10	7.2	.7
9. Des Moines, Iowa [6]	208	[5] 2	11	5.3	----------
10. McCracken County (Paducah) Ky.	57	1	[4] 12	20.9	1.8
11. Dearborn, Mich.	112	[5] 2	5	4.5	----------
12. Grand Rapids, Mich.	175	[5] 2	6	3.4	----------
13. Monroe, Mich.	23	1	[4] 6	26.1	4.3
14. Wayne County, Mich.	2,666	[11] 1	20	.8	.06
15. Minneapolis, Minn.	478	1	11	2.3	.2
16. Omaha, Nebr.	300	2	[3] 20	6.7	.7
17. Camden, N.J.	125	[5] 1	[4] 7	5.6	.8
18. Hillside Township, N.J.	21	[5] 3	[4] 5	23.8	----------
19. Perth Amboy, N.J.	38	1	13	34.2	2.6
20. Trenton, N.J.	114	1	5	4.4	.9
21. Illion, N.Y.	10	[5] 1	[4] 5	49.0	1.0
22. Rochester, N.Y.	316	1	10	3.2	.3
23. Tonawanda, N.Y.	84	[5] 2	[4] 15	17.9	2.4
24. Watertown, N.Y.	33	[5] 1	[4] 7	21.2	3.0
25. Asheville, N.C.	59	3	16	27.2	5.1
26. Charlotte, N.C.	201	2	19	9.5	1.0
27. Winston-Salem, N.C.	111	2	12	10.8	1.8
28. Akron, Ohio	288	2	16	5.6	.7
29. East Cleveland, Ohio	38	[5] 1	[4] 7	18.4	2.6
30. Sandusky, Ohio	32	1	[4] 7	21.9	3.1
31. Toledo, Ohio	316	2	12	3.8	.6
32. Youngstown, Ohio	166	2	17	10.3	1.2
33. Zanesville, Ohio	39	1	5	12.8	2.6
34. Eugene, Oreg.	50	[5] 1	10	20.0	2.0
35. Portland, Oreg.	371	[5] 1	17	4.6	.3
36. Erie, Pa.	138	2	15	10.8	1.5
37. Lehigh Valley, Pa. (area)	278	1	14	5.0	.4
38. East Providence, R.I.	42	1	8	19.1	2.4

See footnotes at end of table.

TABLE B.—*Local air pollution control agencies in the United States (with annual budget of $5,000 or more, February 1961)* [1]—Continued

	Population, 1960 (thousands)	Staff [2]	Budget (thousands)	Per capita budget (cents)	Staff per 100,000 population
Agencies with budgets others than $25,000 per year—Continued					
39. Pawtucket, R.I.	81	[4] 1	[4] 5	6.3	1.2
40. Columbia, S.C.	96	1	6	6.3	1.0
41. Chattanooga, Tenn.[6]	128	2	16	12.5	1.6
42. Kingsport, Tenn.	26	1	[4] 7	26.6	4.9
43. Memphis, Tenn.[6]	492	2	13	2.6	.4
44. Nashville, Tenn.	167	2	13	7.8	1.2
45. Roanoke, Va.	97	1	11	11.4	1.0
46. Seattle, Wash.	552	1	[12] 12	2.2	.2
47. Tacoma, Wash.	147	1	[4] 8	5.4	.7
48. Wheeling, W.Va.	53	2	17	32.1	3.8
49. Fond du Lac, Wis.[6]	33	1	[4] 7	21.4	3.0
50. Green Bay, Wis.[6]	63	1	[4] 7	11.2	1.6
51. Madison, Wis.	126	2	14	11.1	1.6
Summary for group	[8] 10,475	[8] 74	[8] 548	[9] 7.8	[9] 1.0
Summary for all agencies	[8] 51,404	[8] 876	[8] 8,177	[9] 10.8	[9] 1.3

[1] Table prepared largely from data collected in early 1961.
[2] Not including clerical personnel.
[3] 1960 fiscal year.
[4] Estimated.
[5] Part time.
[6] Staff believed to spend considerable time on work other than air pollution.
[7] Operated by the State in which located.
[8] Total.
[9] Median.

The Public Health Service estimates that significant air pollution problems exist in urban areas encompassing 73 million people, with an additional 34 million living in places having minor air pollution problems. At least 60 percent of the total population are thus exposed to undesirable levels of pollution.

Many of the local air pollution control programs are very limited, and inadequate to cope with the problems facing them. Few have sufficient information concerning pollution sources, or contaminant levels in the air, and in the few instances where plans for new installations are reviewed, these are usually limited to combustion equipment.

Areas needing further research

Identification and measurement of pollutants.—Although some progress has been made in identifying and measuring general classes of pollutants, there is a need for more intensive research in this field of endeavor. There is also a real need for intensive research into methods for identifying and measuring the individual substances that make up these classes. Simpler and less expensive procedures are needed for this purpose. Our knowledge is far from complete regarding air pollutants: Their identify and quantity, the specific sources from which they derive, factors governing their dispersion and chemical and physical changes in the atmosphere, and their effects, singly and in combination.

Continuing source appraisals.—We are concerned with pollution arising from domestic, municipal, and industrial sources. These pollutants in general are the end products of combustion, the products of incomplete combustion, and the emissions from various types of process industries. Technological development alters and will continue to alter the types of emissions from chemical processing and from manufacturing and other industrial sources, thus emphasizing the need for continuing source appraisals.

The role of motor vehicles.—One ubiquitous source of air pollution is the motor vehicle. In all urban areas, motor-vehicle emissions are already a significant source of pollution. Current trends in their use suggest that motor vehicles may become an even more significant source. The interrelationship between hydrocarbons and oxides of nitrogen, when photochemical air pollution (smog) is produced in the presence of sunlight, needs further elucidation. The role of particulates in the formation of smog, and the mechanism by which smog irritates the eyes and causes damage to vegetation, will require further research. The potentials for reducing motor-vehicle emissions through modifications of engines, as well as other approaches, need active and intensive study.

Photochemical smog.—The formation of ozone and other oxidants characteristic of photochemical smog is known to result from reactions among gases at concentrations of a very low order, at which they originally may be relatively innocuous. Identification and determination of the relative importance of each participating primary pollutant in the photochemical processes is necessary. Changing technology necessitates fundamental studies in photochemistry. Identification of primary reactants associated with secondary toxicants will facilitate the development of more effective and less costly controls. Knowledge of the intermediate and secondary products must also be acquired to determine biologic effects.

Meteorology.—A fundamental scientific problem is that of establishing siutable relationships between meteorological parameters and dispersive capacities. These relationships are necessary to predict the three-dimensional distribution of airborne material, under a wide variety of weather conditions, emitted from sources of known characteristics. Objective determination of reasonable emission rates, and the degree of control required for single sources in a given community, are dependent to a considerable extent on this research.

Economic losses.—Estimates of losses due to air pollution to date have been largely guesses. Studies are required that will provide a sound basis for future estimates of national losses from (1) damage to crops and livestock, horticultural products, and other types of vegetation; (2) corrosion of materials and soiling of surfaces; and (3) interference with ground and air transportation. Economic losses due to the expense of illness and diminished productivity resulting from air pollution are completly unknown, as are the effects of pollution upon the general well-being of healthy individuals.

Studies are also required to identify specific causative agents of economic damage, their mechanisms and rates of action, their effective concentrations, and the costs of control, as a further basis for development of adequate control measures and acceptable levels of pollutants in community air.

Control procedures.—There are control methods available for many of the known sources of pollution. In many cases, however, effective control methods are not yet feasible, either by process design and modification or through the installation of specific equipment. Considerable expansion of research is needed on the fundamental aspects of control, including such concepts as the development of mass transit facilities and regulation of land use, as well as on the development of applicable devices, so that the use of control methods will be more widespread and more acceptable from an economic viewpoint.

Sulfur oxides.—A major class of pollutants requiring further research in all aspects outlined above are the oxides of sulfur. As a common constituent of liquid and solid fossil fuels, as well as of many commercially important ores, sulfur is oxidized and discharged from many combustion sources and numerous industrial processes. Identification of sulfur compounds in the air, their roles in atmospheric reactions, the limitations of the atmosphere to disperse them satisfactorily, and methods for preventing their large-scale discharge as pollutants are subjects urgently in need of intensified investigation.

The control of air pollution

The consensus arising from the 1962 National Conference on Air Pollution was the need, nationally, for a more effective control of air pollution. There was no agreement as to the timing and method for accomplishing such control. Some favored a continuation, on an accelerated basis, of the present approach in which all control authority rests in State and local agencies. Others felt that this should be supplemented by providing for Federal action in instances where unsatisfactory situations persist. There was general agreement on the gross inadequacy of most State and local programs and of the importance of providing them with greater support. The urgent need for more trained personnel was likewise recognized.

ARCTIC HEALTH RESEARCH CENTER

In 1948—following reports of two American Medical Association teams which visited Alaska in 1946 and 1947, and hearings conducted by the House Appropriations Committee in 1948—an appropriation was made for fiscal year 1949 for technical assistance to Alaska and for health investigations. To conduct the latter, a laboratory was established in Anchorage in July of 1948, under the authority of the Public Health Service Act, as amended. On May 24, 1950, this laboratory was designated the Arctic Health Research Center.

This Center created in response to an obviously great need was located in the Division of General Health Services (later Community Health Services) until the beginning of fiscal year 1962, when it was transferred to the Office of the Chief, Bureau of State Services, as a part of its environmental health program.

Alaska, with a small white population prior to World War II, did not have a full-time health commissioner until 1945. Meanwhile, 150,000 military personnel had been sent to the territory at the height of World War II operations, and a defense buildup following the war brought in many construction workers and their families and an increase in all Federal and territorial activities.

The magnitude of the health problem in the outlying areas, which had been serious for a long time, was by then better documented and more fully understood. A report by the Alaska Department of Health, for example, stated (1950) that 90 percent of the water supply in the territory was surface water, and that only 10 percent of the population and 20 percent of the schools and other institutions had satisfactory waste disposal. The tuberculosis death rate was the highest documented tuberculosis mortality in the world. Periodically, in the 19th century and early decades of the 20th century, epidemics had so ravaged Eskimo and Indian villages that many of them had been abandoned.

The Center has now been in operation nearly 15 years. As knowledge of one disease has been acquired and applied—for example, knowledge of the northern life cycle of parasite—the presence of another disease has become known and required new attention. The arctic and subarctic lands and waters are still largely unexplored so far as the natural reservoirs of such diseases as brucellosis and tularemia are concerned. Because of the peculiar conditions of the environment, there still is much research to be done in developing practical techniques to control the transmission of disease, the Center seems to have only begun its work.

The principal health problems in Alaska are indicated by the titles of the Center's sections: Animal-borne diseases, epidemiology, biochemistry and nutrition, physiology, environmental sanitation, and entomology. While the specific problems studied have changed through the years, the sections have continued because the need for them still exists.

There have, for example, been successors on the part of the Alaska State Department of Health and Welfare and the Public Health Service in the control of tuberculosis, and partial success in other public health activities, but the environment has changed very little. Permafrost, nutritional insufficiency in some areas, close association with animals (as in hunting and trapping), a frontier life conducive to accidents, and many other factors—socioeconomic and biological as well as physical—continue to promote poor health. In 1960, Alaska still had the unenviable distinction of having the highest mortality of all 50 States among children under 1 year of age and in the 1- to 4-year category. To learn the specific preventable factors involved, the Center's epidemiology section has been studying, for 2 years, maternal and infant morbidity and mortality in 27 Eskimo and Indian villages in west Alaska.

The responsibilities encompassed by the term "Arctic health research" are threefold: (1) expansion of knowledge and the solution of man's health problems associated with a low-temperature environment; (2) contribution to other medical and biological research by utilizing the unique research potential of the arctic and subarctic environments, including especially the indigenous population, with its isolation, unique culture, and long adaptation to the Arctic; and (3) provision of a health research facility in the arctic-subarctic region of the North American Continent as a focal point for (*a*) the low-temperature aspects of U.S. health research and (*b*) cooperation with other nations of the world in northern research, particularly Canada.

The motivation of U.S. effort to extend the knowledge of low-temperature environments as they affect health rests upon the need to develop the full potential of Alaska and upon the opportunity, by keeping pace with other nations active in northern research, to take advantage of work done elsewhere. Motivation is also provided by the location of Alaska between the Old and New Worlds. It is a hub for so-called over-the-pole and the trans-North Pacific air traffic linking northwestern Europe, North America, and eastern Asia. It holds potential for undersea transport. It lies in one of the fallout paths of the Northern Hemisphere. A terra incognita cannot be permitted in so vital a location.

Until World War II, white and nonwhite populations were nearly equal in number in Alaska. By 1950, in contrast, the former was over 2½ times the

size of the latter. By 1960, 77.2 percent (174,546) was white and 22.8 percent (51,621) nonwhite. In total population increases, 1950–60, Alaska ranked third among the States (after Florida, and Nevada), with an increase of 75.8 percent; 57,000 by natural increase and 41,000 by immigration. While the total population in 1960 (226,167 of which 34,167 were military) was not large it is the rate of increase that intensifies the health problems. Moreover, the native population (Aleut, Eskimo, Indian) is growing faster that the nonnative. (See table A.) In summary, the rate of natural increase for Alaska is nearly twice that for the United States.

In a general way, Alaska's two types of society—village and city—correspond to its two principal types of population: the native who constitutes 83.5 percent of the nonwhite; and the white consisting largely of newcomers to Alaska. The differences between the two chief elements of population are demonstrated in table B. This shows that the nonwhite population (especially the Eskimo, Aleut, and Indian) is younger than the Alaska white population, is not nearly so well educated in formal schooling, has larger households (usually in much smaller space) and more dependents per head of household, holds chiefly jobs requiring little education, and has, accordingly, lower income.

The State as a whole is going through a crucial and economically precarious period of urbanization. The native peoples increasingly are moving to large villages and towns, and are trying more and more to live an urban-type life, while fewer outsiders are settling in the bush to trap and mine gold. See table C, regarding increase of urban population.

The cities already have a high standard of living and the villages are struggling to raise their standard, yet in the health field, for example, the State has no medical school or Veterans' Administration hospital and had no mental hospital before 1962. (Mental patients were hospitalized in Oregon.) The Alaska Department of Health and Welfare is still in the initial 5 years of statehood, and is struggling to effect an organization equal to its new responsibilities. State institutions cannot be expected to mature in so short a period. As a result, the Department of Health, Education, and Welfare and the Department of Defense have carried nearly all the weight of health research required for this northern frontier population.

The rural nonfarm population in Alaska consists of many isolated villages as well as the suburban developments and new country settlements. Eighty percent of the nonwhite adult population, but only 56 percent of the white, is rural nonfarm. Since the former is characterized by large families and crowded homes, periodic work with low annual income, nearly everywhere lacking private medical care, which cannot be supported in such circumstances, and since this village population is, because of its racial composition, the responsibility of the Federal Government, it is to be expected that it requires the type of care that can be provided only by Government field hospitals. It should be expected also that such a population cannot support for example, experimentation on village water systems and food protection, even if it had the necessary skills. Occupational hazards and radiation hazards from fallout on the food sources are examples of the complex problems that are far beyond the competence of communities that are not yet even organized in the utility districts and boroughs (the latter in lieu of counties) that the State will ultimately have. Although the State agencies will assume more and more responsibility as time goes on, they do not plan to have in the near future the research facilities required by the kinds of environmental health problems—especially the new problems—characteristic of the Arctic.

The technological revolution has had the most basic impact on frontier Alaska, as on many other formerly isolated areas, through new rapid communication and transportation. Since this is not an industrial State, and the health problem areas of Federal concern are even less industrialized than the relatively healthy cities, mechanization of industry has not changed their life so much. But lacking roads in the North's great areas of small population density, they have gone from dog-team mail and freight direct to airplane and radiophone. Increased and more rapid mobility spreads communicable diseases faster, but, on the other hand, medical research and service can be brought to all parts of this farthest northern State more quickly and more often.

Like the technological revolution, the socioeconomic revolution in Alaska—actually a basic cultural change—has both positive and negative health aspects. People congregated in large villages of 350 to 1,500 can be reached better by such public services as schools and clinics. On the other hand, they create difficulties—or increase those characteristic of the region, such as contamination of soil, water, and some of the local food sources. The northern community that

is too large to be protected adequately by household sanitation alone, yet is not large enough to support a city system of water supply or waste disposal, becomes a special problem in public health research. Similarly, a hotel or residence school located in the open country, especially if located on permafrost, has problems unlike those of either the individual settler family or the town.

Even while some Alaska residents are building the most modern hotels and restaurants, others are hunting caribou or seal, trapping muskrat and netting fish in primitive conditions that facilitate transmission of disease from animal hosts to man. The Center has tried to meet the needs of the two groups that these people represent: for example, by perfecting a means of constantly circulating water to prevent freezing in household pipes and city mains for the urban dwellers; and by trying to improve fish storage for the village dwellers.

Despite unexpected demands, most sections of AHRC have managed to progress on long-term plans: for example. methodically searching for the sources of enteric disease organisms or identifying the extent and causes of nutritional deficiencies. Similarly, a search for arthropodborne viruses is being initiated. In a region to which the health sciences are new, such comprehensive surveys are essential. For example, it was necessary to identify the biting insects of Alaska. Now the entomology and virology can be combined.

Commercial use of a nonrenewable resource such as petroleum has both direct and indirect significance for health agencies. It provides income for the State government through the sale of mineral leases; by providing a local source of gas and fuel oil, it helps to lower prices, important since the general high price level in this non-self-supporting region is an obstacle to development; it induces quick temporary growth of local populations, with temporary community health needs for which no institutions are prepared; and without good controls, it may cause local pollution of water.

Somewhat different opportunities and problems are presented by a renewable resource industry that is growing rapidly in southwest Alaska: shellfish preservation by freezing or canning. Although the Center and other agencies have done some work on shellfish poisoning, the extent and nature of this health threat are not well known.

The economy of Alaska needs processing industries, and various ones have been proposed. Technological advances in the prevention of water pollution and air pollution in the next few years—which presumably would be incorporated in new factories, here as elsewhere—cannot be counted on to eliminate all dangers. No technological advances will get rid of permafrost (permanently frozen subsoil) that is many hundreds of feet thick or make the winter days lighter or less cold or rid the vast area of Alaska of mosquitoes and biting flies.

Although the social environment is more amenable to change than the physical environment, we must accept the probability that the educational and economic lag of the nonwhite population is so great that it will not soon be overcome. Most of the broad types of research that have been conducted by the Center in the past 15 years, therefore, can be expected to be necessary in the next 15 years. The work already accomplished is the best indication of the kind and value of work that will be done, provided that staff of the same competence can be maintained. Construction of a new facility, presently requested, is important in this regard.

The small staff of AHRC has made numerous significant contributions, both in solving known problems and in extending the limits of knowledge essential to the identification and eventual solution of less obvious problems. Some specific accomplishments are:

(1) Identification of (*a*) several species of parasitic worms that infest man in the Arctic and subarctic, (*b*) their other animal hosts and life cycle, and (*c*) their distribution, although the last is not yet completely known. Hosts, not formerly suspected, of Trichinella, Diphyllobothrium, Echinococcus, and other parasites have been found. Association of parasitism with chronic anemia has been tested in the area most seriously affected and found to be not so important as diet, answering a longstanding question.

(2) Because of the problems of sanitation in frontier communities built on permafrost, dimensions of the reported enteric disease problems had to be found: epidemiology, causative organisms, and influential factors such as viability of bacteria and helminths at low temperatures in soil, water, and animal host. These objectives have been largely accomplished by the cooperative effort of the Armed Forces Epidemiological Board and the Arctic Health Research Center.

(3) One of the most spectacular accomplishments has been the control of tuberculosis in Alaska by concentrated effort of AHRC and the Tubercu-

losis Branch of PHS and the Alaska Department of Health. The mortality rate in the native population was reduced in 8 years from 500 per 100,000 population in 1952 to 25.5 in 1960. Besides this comprehensive experiment and demonstration in public health practice, the Tuberculosis Branch and the Center are testing the effectiveness of isoniazid in the prevention of tuberculosis.

Policy and operational trends

The Center is expected to continue to cooperate with the other medical research and service agencies in Alaska in various ways.

(1) It is represented on—and has taken the lead in—an Interagency Research Advisory Committee, along with the Office of the Surgeon General of the Alaska Command, the Alaska Department of Health and Welfare, and the Division of Indian Health, Public Health Service. This Committee evaluates proposals for medical research using human subjects, coming from inside or outside the State, for example from universities, and arranges agency cooperation needed by the projects that it approves. It often can thus avoid unnecessary duplication of research.

(2) The Center, on contract with the Air Force, has performed various research services in sanitary engineering, for example by conducting tests on experimental waste disposal systems at remote military sites.

(3) Largest and longest (8 years to date) has been the native village sanitation program, supported by the Division of Indian Health. The State health department trains and supervises sanitation aids in more than 20 villages while the AHRC makes the necessary studies of existing and experimental water supply and waste disposal systems (and, in the past, housing) in remote villages.

(4) Members of the AHRC staff have worked profitably with staff physicians of the DIH hospital center in Anchorage and its field hospitals. The hospitals have reported cases that Center specialists could follow up in field studies, and the latter have given consultation on clinic patients. Relations with the area office of DIH and its Anchorage hospital have been invaluable for the AHRC.

(5) The Chief of the Zoonotic Disease Section is a member of the Biology Advisory Committee for the Atomic Energy Commission, and the Center has conducted environmental zoological studies on Project Chariot for the AEC.

(6) The former Chief of the Physiology Section has directed projects in animal physiology for the University of Alaska.

Relations with the university are expected to be much closer in the future. There is agreement that the Water Pollution Control Laboratory authorized for Alaska will be built on the university campus near Fairbanks. A new building for the Center is proposed for the same site and will become a Federal component of the proposed University Center for Arctic Research.

The university faculty contains special competence in geophysics and geology, knowledge of Alaska wildlife and its management, animal physiology, and anthropology. It is presently organizing a graduate program in zoophysiology (on a grant from the Public Health Service), which is planned to be part of an Institute of Arctic Biology for which the university is seeking funds. Association of the University of Alaska, the Water Pollution Control Laboratory and the Arctic Health Research Center will permit each to supplement and enhance the work of the others.

The most needed new emphases or new directions of health research were stated by a task force, representing four segments of the Public Health Service, which, in 1962 ,thoroughly reviewed the Center's work and prospects. It recommended (1) redirection of the Entomology and Physiology Sections into applied research and (2) the creation of a Radiobiology Section.

The Center's Entomology Section already is planning work with the Epidemiology Section in a systematic search for arthropod-borne viruses.

With or without creation of a separate Radiobiology Section, the Center is expected to work in the field of radiobiology, in cooperation with the Service's Division of Radiological Health and with the AEC. Because of peculiar conditions on the northern tundra, and because of the limited range of local animal-food resources, there are questions of possible concentration of radioactivity in the diet of the local people, which must be investigated promptly. This is only one example of the work for which the Service has a responsibility and which it can do best in a field center located within the region of this responsibility.

TABLE A.—*Comparative birth rates, death rates, and rates of natural increase,*[1] *1960*

Place	Birth rate	Death rate	Rate of natural increase [2]
Alaska	33.2	5.6	27.6
Nonnative	29.8	4.7	25.1
Native	47.8	9.4	38.4
United States	23.6	9.5	14.1
Mountain region	27.0	8.2	18.8
Pacific region	22.9	8.4	14.5
Canada	26.8	7.8	19.0
Norway	17.4	9.0	8.4
Sweden	13.6	10.0	3.6
Finland	18.5	8.9	9.6

[1] "Crude rates," not adjusted for facors such as sex ratio or age of the population.
[2] This means, e.g., that 27.6 persons are added for every 1,000 persons in the total population or a natural increase rase of 2.76 percent per annum.

NOTE.—The youth of the population, both nonwhite and white, is noteworthy. What seems to be a remarkably low death rate among the whites is explained by the custom of elderly whites leaving Alaska upon retirement. Hence, in 1960, deaths due to the 3 top killers in the United States—heart disease, cancer and vascular lesions (strokes)—ranked 1, 4, and 5 in Alaska, instead of 1, 2, 3; and this was the first year in which heart disease exceeded accidents.

Source: Statistical Abstracts of the United States, 1961, Department of Commerce, Washington, D.C., p. 921; GeorgeRogers and R. A. Cooley, Alaska's Population and Economy, vol. 1: Analysis, 1962, Division of State Planning, Office of the Governor, Juneau, Alaska, table 17, p. 95.

TABLE B.—*General, social and economic characteristics of white and nonwhite population, Alaska, 1960*

	White	Nonwhite
A. Total population, by race	[1] 174,546	[1] 51,621
Eskimo and Aleut		28,637
Indian		14,444
Negro		6,771
Japanese, Filipino, and Chinese		1,769
B. Males per 100 females	136.9	116.0
C. Percent age distribution:[1]		
Under 5 years	14.2	18.4
5 to 9 years	11.1	14.8
10 to 14 years	7.8	10.6
15 to 19 years	7.0	9.6
21 years and over	57.5	44.9
Median age	24.5	18.2

	1950	1960	1950	1960
D. Percent distribution,[1] years of school completed by persons 25 years old and over:				
None	0.7	0.3	30.6	17.6
1 to 4 years	1.9	.9	25.8	21.0
5 to 6 years	2.8	1.9	13.8	14.1
7 years	3.5	2.7	5.7	6.2
8 years	16.5	10.5	10.0	11.3
9 to 11 years	18.7	20.5	7.1	12.3
12 years	31.4	36.9	5.0	12.1
College:				
1 to 3 years	15.3	14.9	1.5	4.1
4 or more years	9.2	11.4	.6	1.2

See footnotes at end of table.

TABLE B.—*General, social and economic characteristics of white and nonwhite population, Alaska, 1960*—Continued

	White	Nonwhite
E. Population per household	3.21	4.94
F. Percent distribution, household relationship:		
In households	87.9	91.1
Head of household	27.3	18.4
Wife of head	20.6	14.8
Other relative of head	38.4	55.0
Nonrelative of head	1.5	2.9
In group quarters	12.1	8.9
G. Number of children ever born, per 1,000 women, 15 to 44 years old	1,890	2,616

	Number	Percent	Number	Percent
H. Urban and rural residence, total population 14 years old and over:				
Urban	50,878	42.8	6,009	20.2
Rural nonfarm	66,947	56.3	23,639	79.3
Rural	1,139	.9	146	.5
Total	118,964	100.0	29,794	100.0

	White	Nonwhite
I. In labor force, percent of total 14 years old and over:		
Urban	70.6	61.8
Rural nonfarm	74.3	39.6
Rural farm	59.5	----------
J. Occupation group of employed persons, number in group:		
Total employed	50,536	7,707
Professional, technical and kindred workers	8,923	367
Farmers and farm managers	238	14
Managers, officials, and proprietors, except farm	6,137	327
Clerical and kindred workers	8,685	580
Sales workers	3,011	205
Craftsmen, foremen, and kindred workers	7,834	714
Operatives and kindred workers	4,265	1,494
Private household workers	1,623	546
Service workers, except private household	4,251	1,348
Farm laborers and farm foremen	77	35
Laborers except farm and mine	2,621	1,150
Occupation not reported	2,871	927

	1950 [4]	1960 [4]	1950	1960
K. Income, persons 14 years and over, percent distribution:				
Without income	17.7	18.4	32.0	28.9
With income	82.3	81.6	68.0	71.1
$1 to $499 or less	6.6	8.3	35.9	20.7
$500 to $999	9.3	6.5	25.0	18.1
$1,000 to $1,499	17.7	11.5	12.7	13.7
$1,500 to $1,999	8.0	6.1	6.9	7.7
$2,000 to $2,499	7.4	5.3	5.6	7.1
$2,500 to $2,999	6.1	4.4	3.4	5.1
$3,000 to $3,999	14.0	8.9	5.4	7.9
$4,000 to $4,999	11.3	9.3	2.4	6.7
$5,000 to $5,999	8.6	8.1	1.5	4.0
$6,000 to $6,999	5.1	6.7	.7	3.0
$7,000 to $9,999	4.3	14.7	.4	4.7
$10,000 and over	1.6	10.3	.3	1.4

[1] Figures on race yield different totals from those used for other characteristics. For former, see "Akaska: General Population Characteristics" (PC(1) 3B Alaska), table 15, of "U.S. Census of Population 1960."
[2] Based on following totals: White, 174,649, nonwhite, 51,518.
[3] Based on total reporting.
[4] Actual years of income: 1949 and 1959.

Source, except as noted: "U.S. Census of Population 1960," "Alaska: General Social and Economic Characteristics" (PC(1) 3C Alaska), tables 37, 47, 49, 51, 52, 58 ,67. Bureau of the Census, Department of Commerce, Washington, 1961.

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TABLE C.—*Urban population as percentage of total population, 1910–60*

Year	Alaska	5 Mountain States	United States
1910	9.5	40.8	45.8
1920	10.0	39.7	51.4
1930	13.2	42.4	56.2
1940	24.0	45.8	56.7
1960	37.9	56.9	63.3

Source: George W. Rogers and Richard A. Cooley, "Alaska's Population and Economy," vol. 1 (analysis), table 7, p. 47, 1962.

DIVISION OF ENVIRONMENTAL ENGINEERING AND FOOD PROTECTION

The Division of Sanitary Engineering Services, the parent Division for many environmental health programs, was created on April 5, 1954. The Division of Environmental Engineering and Food Protection, which has evolved from this was established under its present name on July 1, 1961. It is responsible for nationwide programs of milk, food, and shellfish sanitation; interstate carrier sanitation; water supply and solid wastes disposal; general community sanitation; and environmental health planning in metropolitan areas. Consumer protection programs of States and communities are improved and strengthened by new knowledge made available by this Division to staffs of these agencies.

The Division carries out its mission to improve and protect public health and general welfare by (1) conducting research, investigations, demonstrations, and training; (2) administering a research grants program; (3) providing consultation and technical services to other Federal, interstate, State, and local agencies, and to private industries and organizations; and (4) developing program guides, model codes, ordinances, and standards.

Metropolitan areas now have unprecedented health problems of water supply, waste disposal, housing, recreation, food supply, transportation, and social and economic stress. Each year, more elaborate food processing, to enhance appearance and improve keeping qualities; the use of new preservatives and colors; and new sources of chemical or radiological contamination make the problem of milk and food protection progressively more complex. With more people, more industry, more processing, and more waste, the problem of solid waste disposal is becoming more critical.

The Division encompasses a broad spectrum of program activities. The public health significance of these programs varies somewhat, and of necessity requires different direction and judgment. For this reason, it is necessary to identify several categorical programs within the Division.

Interstate carrier sanitation

The Division's interstate carrier activities have a legal basis in the Public Health Service Act. The interstate quarantine regulations were first promulgated in 1894, to prevent the interstate spread of diseases. The quality of the water supply provided on railroad and vessel conveyances was the major concern until early 1940, when regulations were promulgated covering food sanitation, sewage and waste disposal, and ratproofing for all modes of transportation.

Within the past 20 years, there has been a tremendous growth in air travel. During this same period, the shipbuilding and shipping industry have seen a very sharp increase followed by a gradual decline. In 1949, there were 1,083 aircraft in service which carried almost 17 million passengers; by 1960, there were 1,848 aircraft in use transporting almost 58 million passengers. Of the latter, over 300 were high-speed jets, each carrying close to 120 passengers and presenting problems in servicing the plane with water and disposing of sewage, and serving the passengers safe and satisfying meals. Approximately 50 vessels per year have been delivered from U.S. shipbuilding yards during the past 20 years, practically all of which were required to comply with Public Health Service santitation standards, including ratproofing. Since 1930, by agreement with the Maritime Administration, all vessels constructed under its subsidy program must be constructed in accordance with Public Health Service standards.

Water supply program

The water supply activity of the interstate carrier program is concerned with the application, under Public Law 410, of the Public Health Service drinking

water standards, which govern the quality of water taken from municipal supplies for use on interstate carriers. These water supply systems currently number about 850 and serve an estimated 1,500,000 passengers traveling on interstate carriers each day, as well as 85 million people residing in the communities for which the supplies are the public source of drinking water.

The effect upon the health of the American people of the Public Health Service drinking water standards has been enormous. Following their adoption in 1893, and subsequent revisions, we have witnessed the decline of typhoid fever and dysentery in the States, the establishment of sanitary engineering divisions in State health departments, the present regional organization of the Public Health Service, and the upgrading of the Nation's drinking water supplies in general.

The States, other Federal administrations, and research investigators in government and universities have requested assistance in solving drinking water problems. The Navy in 1960, requested help in dealing with a stubborn problem of toxic antimony in a water supply on Okinawa. Scientists at the University of Alabama, are obtaining public water supply quality data from the Division for use in studies on arthritis. Samples from water supplying a missile tracking station in Santiago, Chile, have been flown in for analyses in a case of suspected transmission of infectious hepatitis. We are engaged in an evaluation of the role of drinking water supplies in the rapidly rising occurrence of infectious hepatitis, which in 1961 totaled over 70,000 reported cases in the United States alone.

The technological revolution has caused the appearance in the environment of new chemical agents, which must be carefully limited in drinking water. Changes in the 1962 drinking water standards take cognizance of this need. Application of the new standards to the Nation's carrier water supplies will continue to be a major project of the Division. Since the passage of Public Law 410, the drinking water standards have been revised twice to reflect the needs of these times of changing environment. Incorporated in the 1962 standards for the first time are limits on detergents, organic chemicals, radiochemicals, and certain trace elements.

The standards are now used as a base in development of the international drinking water standards, which are playing a vital role in the upgrading of the world's public drinking water supplies.

Milk sanitation

The milk sanitation program, initiated 40 years ago to assist States and municipalities to institute effective programs for the prevention of milkborne disease, is one of the oldest activities of the Public Health Service. Current program objectives are: (1) To encourage the establishment of effective and well-balanced programs in each State; (2) to encourage the adoption and the uniform application of adequate milk sanitation standards by States and municipalities; (3) to encourage industry support of, and day-to-day compliance with, State and local milk sanitation programs; (4) conduct research and field investigations; (5) to provide technical and training assistance to State and local milk control authorities and to industry representatives in the resolution of problems having public health significance; and (6) to cooperate with the States, communities, and industry in a voluntary program for certification of interstate milk shippers.

The development of recommended sanitation standards, technical procedures, and other program guides for use by interested States and municipalities, and the updating of these are fundamental parts of the PHS milk sanitation program. Guides published to date include model ordinances and codes for fluid milk and milk products, model inspection forms, and a standard rating procedure, by which States can evaluate the effectiveness of community milk sanitation programs.

Basic factors affecting program growth or development

Population growth and the shift in population from rural to metropolitan areas have increased the demand for fluid market milk, bringing about increased movement of milk in interstate and intrastate commerce. This trend has been influenced by technological advances which have made possible the safe movement of high quality milk to almost any point in the Nation. Some examples of emerging problems of milk sanitation, which require intensification of research and technical assistance activities, include: The increased use of pesticides, contamination of our milk supplies by radioactive fallout, necessitating surveillance and studies of countermeasure techniques; and the approaching ultrahigh tem-

perature pasteurization processes, which dictate public health evaluation of thermometric control systems.

The established cooperative State-Public Health Service program for certification of interstate milk shippers is an outstanding and unique example of Federal, State, and industry cooperation in the resolution of environmental health problems of mutual concern. Designed to provide State and local authorities with reliable information on the sanitary quality of milk and milk products in interstate commerce, the program provides for a voluntary certification system which is operated by the States with the full support of the dairy industry, with "checks and balances" responsibility a function of the Public Health Service.

After a decade of operation, this voluntary cooperative activity continues to grow and gain prestige and national stature. The January 1, 1963, list of certified interstate milk shippers includes the names and milk sanitation ratings of 890 shippers—more than a fivefold increase in the number of shippers in 10 years—which are located in 42 States and the District of Columbia. Approximately 10 billion pounds of milk, valued at almost $500 million moved in interstate commerce under this program in 1962.

Food sanitation

For more than a quarter of a century, the Public Health Service has, at the request of State and local health agencies, provided leadership and consultative assistance in the development and maintenance of programs for the prevention and control of foodborne illnesses. In 1934, the Service developed a model sanitation ordinance and code for food service establishments, which has been widely adopted. This recommended ordinance and code has been periodically revised in order to incorporate new technical knowledge and information on improved food protection practices and administrative procedures. The most recent revision was made in 1962. The model ordinance and code is the basis for food sanitation laws or regulations in 37 States and over 1,100 county and municipal health jurisdictions, and has a population coverage of more than 125 million persons. Model poultry and vending machine sanitation ordinances and codes have also been developed in response to further State and local health agency requests for assistance. Manuals, training aids, and program guides have been developed as supplements to the ordinances and codes, and are widely used by State and local health agencies and industry.

Currently the Public Health Service is assisting State and local personnel in effecting early application of updated recommendations contained in the 1962 "Food Service Sanitation Manual." Plans are underway for field projects designed to demonstrate application of the technical and administrative provisions of the new ordinance and code. A new procedure, long needed by States for use in evaluating local food service sanitation programs, is currently under development. Public Health Service research on the interrelationship of biological and environmental factors involved in the growth of pathogens in food is providing data helpful in improving food protection measures. Current studies on the application of the principle of thermal diffusivity (a physical constant derived from specific heat, density, and thermal conductivity) to the safe heating and cooling of food, hold promise for further improvements in food protection techniques. Results of research and investigations are made available promptly to States, communities, industry, and other Federal agencies, including Food and Drug Administration, U.S. Department of Agriculture, and the Army, Air Force, and Navy.

Despite the progress which has been made in controlling foodborne illnesses, outbreaks continue to occur at an alarming frequency. It has been estimated that over 1 million cases of foodborne illness occur annually in the United States. Of concern is the frequency with which outbreaks of gastroenteritis of undetermined etiology are reported. In addition, rapid changes in technology in a dynamic food industry continue to introduce new and complex problems requiring public health evaluation.

Shellfish sanitation branch

Since 1925, the Public Health Service has cooperated with the States and the shellfish industry in a program designed to insure that shellfish shipped in interstate commerce will be safe to eat. Oysters, clams, and mussels have a unique potential for the transmission of disease, due to their production from estuarine waters and the fact they are consumed without cooking. Conventional food sanitation measures are not applicable to this class of food. Public Health Serv-

ice responsibilities include research, standards development, monitoring of State programs, and a semimonthly publication of a list of State-certified shippers. The States participate in a varying degree through the use of production standards and the Public Health Service list of shippers. Control measures were extended through international agreement to Canadian production (1948) and Japanese production (1962). The Public Health Service program is coordinated with the Food and Drug Administration and the Fish and Wildlife Service through formal agreements.

The prevention of disease transmission by shellfish is based on sanitary standards for shellfish-growing waters. Numerous relocations of production areas have been necessary, due to natural causes and pollution resulting from (1) increased population in coastal areas, (2) chemical wastes, (3) nonuniformity and inadequacies in the levels of State shellfish sanitation program, and (4) international interest.

There has been an enormous population growth in the coastal areas, with resultant problems of sewage pollution of shellfish-growing areas. The construction of sewage treatment works prevents the gross effects of pollution, but cannot provide fully reliable protection for adjacent shellfish-production areas. Technical and other limitations of sewage treatment make it increasingly difficult to assure safe shellfish in areas contiguous to sewage treatment operations. Because of the increasing recreational use of coastal areas, there has been a vast increase in the number of boats, many with toilets, which discharge untreated sewage directly to the coastal waters. New problems are being encountered in protecting shellfish from radioactive contaminants, viruses, pesticides, and herbicides, all of which may be consumed and concentrated by the shellfish.

Many chemical or petrochemical industries have located in tidewater areas, because of advantageous transportation and water-supply facilities. There has been a concurrent increase in the total volume of industrial wastes and in the complexity of these wastes. Shellfish have an unusual ability to concentrate many metals or other chemicals. (In Japan, almost 100 cases of poisoning have been attributed to shellfish which had accumulated mercury from an industrial waste.)

Environmental health planning—Metropolitan areas

Public Health Service activities to assist State and local communities in the field of urban environmental health planning were initiated in 1958. Urbanization and industrialization in the United States continue to augment and aggravate environmental factors affecting health. Because of the wide range of these environmental problems, which are often interrelated and made more difficult to solve because of fragmented and overlapping local political jurisdictions, it has been necessary to evolve appropriate comprehensive approaches to environmental health assessment and planning. In addition—through methodology research, technical assistance, and training—public health officials, particularly sanitary engineers, are being aided in participating in local planning activities.

Two-thirds of the entire U.S. population now live in 212 metropolitan areas, and 84 percent of the population growth from 1950 to 1960 was adjacent to, but outside, the core city. The 1960 census further reveals that of the 113 million metropolitan residents, nearly one-half, 55 million, reside outside the central cities. More than 80 million people live in 79 intercounty areas. Twenty-six of the intercounty areas include territory in two or more States.

To accomplish the mission of assisting States and local units to identify and plan to overcome environmental health deficiencies, the Public Health Service has established a basic competence in environmental health planning. The methodology followed to implement the assistance program is twofold: first, by studies and research projects in representative situations in order to accumulate the information needed in developing standards and criteria; and, second, by rendering technical consultation to State and local agencies to stimulate more effective use of environmental health resources in metropolitan planning and development.

A series of conferences has been conducted in 14 States, demonstrating methodology of evaluating health activities in relationship to future needs. The "Environmental Health Planning Guide," developed by the Division, is a pilot instrument for self-evaluation of local problems, and has served as a basis for the above conferences, as well as for a number of technical assistance projects and field studies.

In the housing hygiene field, there are many health aspects that deal with construction: safety, temperature, ventilation, light, space, noise, water supply,

and waste disposal. Assistance can be given to every level of government: Federal on national housing and urban renewal programs; State and local on housing codes and their enforcements; and housing quality and neighborhood appraisal techniques.

Solid wastes engineering

The Public Health Service has considered refuse storage, collection, and disposal part of its general sanitation activities for many years. Problems of diseases related to rodents and flies, air pollution, water pollution, accident prevention, and general nuisances traditionally have been associated with this field and have indicated the need for adequate refuse practices.

The common practice of feeding raw garbage to hogs, and its proven relationship to human trichinosis, prompted a Public Health Service interstate quarantine regulation prohibiting the interstate shipment of garbage for this purpose. In 1952, with a nationwide outbreak of vesicular exanthema, a disease of hogs, renewed efforts were directed to this problem by the Public Health Service and the U.S. Department of Agriculture.

The solid wastes engineering activities in the Public Health Service have only recently been identified as a specialized field needing individual attention appropriate to the scope and intensity of the emerging problem.

Significant accomplishments include the development and demonstration of sanitary landfill techniques, collation and assembly of technical information relating to the field; preparation of technical manuals; cooperative efforts with the Department of Agriculture in devising methods and equipment for heat-treating garbage; study of the effects of the communitywide installation of garbage grinders; development of manuals of practice with the American Public Works Association and the American Society of Civil Engineers; and demonstration of the benefits of including refuse-handling facilities in community planning activities.

Most communities are becoming perplexed as to the long-term solution of these problems. Requests for technical assistance and information are increasing. There is an urgent need for research, technical assistance, and training in this field in order to satisfactorily cope with the immediate problems of many metropolitan areas.

Recreational sanitation

Health and sanitation programs of the Public Health Service are directly involved with the field of recreation. Environmental health safeguards and the application of sanitation standards and criteria to outdoor recreational areas and facilities must be incorporated for proper protection and enjoyment of such areas. Federal, State, and local agencies and other national organizations having recreation interests have been guided by the advice and recommendations of the Public Health Service in such fields as water supply, sewage disposal, refuse disposal, swimming and bathing sanitation, plumbing, insect and vector control, water pollution abatement, and food service facilities.

The Public Health Service has been identified closely with National Park Service recreation activities since 1922, serving as technical consultants on matters of sanitary engineering design, construction, and operation in the 186 national parks. Participation with the Federal Interagency Committee on Recreation, and in national conferences of recreational associations and groups, has continued over several years. Close working relationships are maintained with Federal agencies having responsibilities for the management of outdoor recreational areas. These include, in addition to the National Park Service, the U.S. Forest Service, Bureau of Reclamation, Corps of Engineers, Fish and Wildlife Service, and others.

Useful accomplishments include manuals of practice relating to water supply, sewage disposal, refuse disposal; and various other sanitation activities have been developed to include recreational aspects: membership and participation on the Federal Interagency Committee on Recreation since its creation in 1946: and technical services to national recreation associations, Boy Scouts of America, American Camping Association, and other groups identified with recreation.

DIVISION OF INDIAN HEALTH (BUREAU OF MEDICAL SERVICES)

The responsibility for the Indian health program was transferred on July 1, 1955, from the Bureau of Indian Affairs, U.S. Department of the Interior, to the Public Health Service, U.S. Department of Health, Education, and Welfare.

The transfer legislation, Public Law 83-568, referred specifically to "conservation of the health of Indians."

Based on the 1960 census, there are approximately 552,000 Indians, Eskimos, and Aleuts in the United States. About 380,000 of this population—residing in 24 States and living on or near reservations, trust lands, or in native villages of Alaska—represent Public Health Service beneficiaries. The Alaska component of this group totals 43,000.

Health background

The infant death rate of Indians is about twice that of the general population in the United States. More significant, however, is the sharp rise which occurs after the first 28 days of the first year of life, when the Indian mother and baby have returned to their home environment from the hospital. In 1960, the infant death rate during the period from 28 days to 11 months after birth increased to 29 per 1,000 live births—or four times higher than the general population. This is due primarily to respiratory, digestive, and infective and parasitic diseases. It represents a decline of 35 percent since 1954.

In 1960, the Indian population, exclusive of Alaska, had a death rate of 28 per 100,000 from gastritis, enteritis, and related diseases—7 times higher than that of the general population. In 1961, these diseases ranked among the highest of the notifiable diseases in the Indian population, with a rate exceeding 4,100 per 100,000 population.

In 1960, influenza and pneumonia combined to form the third leading cause of death among the Indian population, in contrast to sixth position in the general population. In 1961, both diseases were high on the list of notifiable diseases among Inndians, with respective rates exceeding 2,200 for pneumonia and 600 for influenza.

In 1961, dysentery—amebic and bacillary—among the Indian population was more than 20 times higher than in the general population. Infectious hepatitis among Indians increased to 211 per 100,000 population, 5 times higher than in the general population. The significant rise in trachoma in recent years can, in part, be attributed to the lack of available safe water supplies in the home for personal hygiene purposes.

Historical background

Until the past decade, little attention was paid to basic environmental health problems among the Indian people. The occasional visits of physicians and nurses to inspect Indian homes, and a limited education program in the schools, was the primary extent of sanitation work with the Indian people. Starting in the mid-1930's, the Public Health Service district offices provided engineering services to the Bureau of Indian Affairs on the design of sanitary facilities at governmental installations such as schools, hospitals, and agencies. There were also a few contracts with local health departments to provide public health services to several Indian groups.

In 1950, the Public Health Service assigned an engineer officer to the Bureau of Indian Affairs to provide consultation in environmental health matters and to survey field conditions. Three years later a professionally staffed sanitation activity was initiated on a limited scale.

Indian sanitarian aid concept

To bridge the problem of acceptance of modern sanitary practice by Indian groups of different cultures and traditions, the Indian sanitarian aid concept was developed.

Selected Indians, respected in their groups, are employed by the Federal Government. They are given intensive training in the basic elements of communicable disease transmission, sanitary practice, and health education tehniques. After 4 to 6 weeks of training and orientation, they are assigned to work on reservations with the Indian people. The sanitarian aid's primary duties can be grouped into five major areas:

(1) Conduct individual home surveys to record sanitary conditions in housing, water supply, waste disposal, food sanitation, and related environmental factors. This information is then compiled into an illustrated comprehensive baseline report depicting sanitary conditions and needed corrective action for the entire Indian reservation. The accompanying chart summarizes conditions on 23 Indian reservations selected at random from reports made during the period 1956-62. The sample population of 41,000 represents more than 10 percent of the total Public Health Service bene-

ficiary group of 380,000 Indians, Eskimos, and Aleuts. Grossly overcrowded housing, unsafe water supply sources, lack of piped water in the home, and grossly inadequate excreta disposal facilities all contribute to the high indices of preventable diseases noted previously.

(2) Improve sanitary practices and conditions at Indian homes and communities through an educational and promotional approach by home visits and at community meetings.

(3) Demonstrate effectiveness of sanitary measures, such as residual spraying for fly control, cleanup campaigns, and modified sanitary land-fill practices.

(4) Provide sanitary inspectional services at trading posts, slaughtering operations, and Indian gatherings for celebrations which may last for a week and involve up to 50,000 Indians at one time.

(5) Serve as a key member of the reservation public health team. In this capacity, the aid arranges for rabies control clinics; participates in field investigations of environmental factors attributable to high caseloads of preventable diseases among Indians who reach PHS clinics or hospitals; and assists in conduct of food service courses.

In the conduct of his work, the Indian sanitarian aid receives technical support and program guidance from professional sanitarians or sanitary engineers. Experience has shown that efficient operations can be obtained when one aid is assigned to a population group of 1,500 to 2,000, representing about 400 homes, and when 1 professional is available to support 3 or 4 aids.

Since 1955, this activity has been expanded so that some services are now provided to about 65 percent of the beneficiary population, although in some areas such as Oklahoma, the Navajo Reservation, and Alaska, the extent of coverage is limited. An inservice program of more advanced short-course training has been instituted for the sanitarian aids, with modifications adapted to program changes.

Construction of sanitation facilities for Indians

Public Law 86–121, commonly known as the Indian Sanitation Facilities Act, was signed in 1959. This act amended Public Law 83–568 to clarify the authority of the Surgeon General to make such arrangements and agreements with Indians and others regarding contributions toward the construction and responsibilities for the maintenance of water supply, waste disposal, drainage, and other essential sanitation facilities for Indian homes, communities, and lands as in his judgment would best assure the future maintenance of such facilities in an effective and operating condition. The legislative history of the act recognized that the authorized construction work was essential to meet a health need.

The program is being administered so that, for each project, the following elements will be included:

(1) Joint planning with Indian beneficiaries and other interested agencies and groups.

(2) Active Indian participation and contribution.

(3) Design of facilities based upon practical local situations and cultural factors in the beneficiary group.

(4) Construction work using contract, force account, and voluntary labor as deemed most practicable and in accordance with the formal project agreement with the tribe.

(5) Organization for operation and maintenance of completed community facilities. (Existing organizations are used where possible, but often a separate organization must be established, service charges developed, and an operator trained.)

(6) Training of individual families in operation, maintenance, and utilization of completed household facilities.

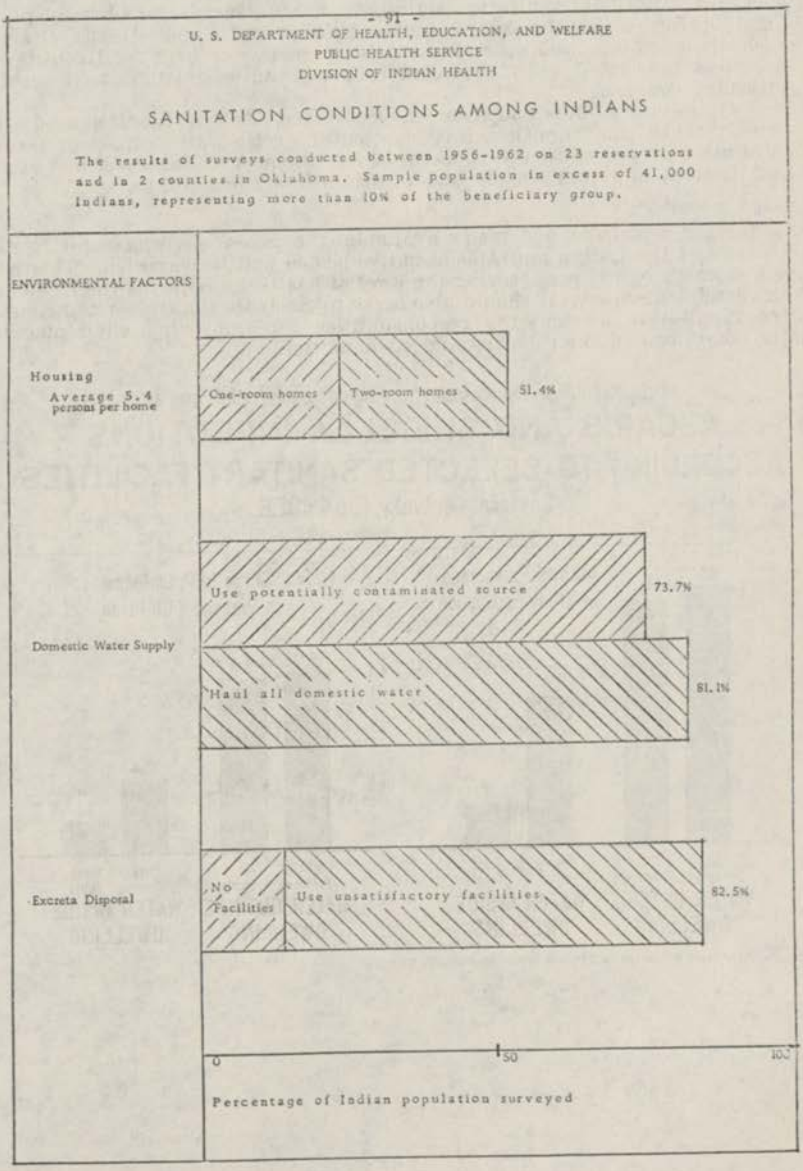
(7) Transfer of completed facilities to beneficiaries or to local political subdivisions by formal agreement.

In effect, this program represents a public works activity in a public health setting. It stresses self-help and participation by the Indian people with the goal of obtaining better maintenance, care, and utilization of facilities. It requires staff not only competent in sanitary engineering, but also with a knowledge of the Indian people, their culture, and their traditions. It requires direct working relationships with tribal governing bodies; with the Indian people; with other disciplines of the local health unit; with contractors; with Bureau of Indian Affairs officials; and with State health departments.

The reduction in diarrheal disease that can be anticipated from providing running water in the home and sanitary waste disposal facilities is shown in the accompanying chart based upon a Public Health Service study in mining communities in eastern Kentucky (1954–56).

Since enactment of Public Law 86–121 in 1959, 168 construction projects have been undertaken. In addition, a number of small emergency projects and investigations have been completed. The accompanying table shows the distribution of projects and the number of Indians and Indian families to be served upon completion of all authorized projects.

The estimated Federal funds needed to meet the sanitation facility deficits of the Indian beneficiary group are shown on the accompanying bar chart. Projects authorized to date represent 13 percent attainment of the goal.



Indian participation and contribution toward these projects has been substantial. It has included tribal funds, materials, labor, and services. Last year (fiscal year 1962), the value of Indian contributions toward the program represented about 40 cents for each 60 cents in Federal funds applied to the work.

Related environmental health activities

Integrated with both the Indian sanitarian aid and sanitation facility construction activities are several functions essential to the total environmental health program. They include:

(1) Assistance to tribes in the development and adoption of sanitary codes and ordinances.

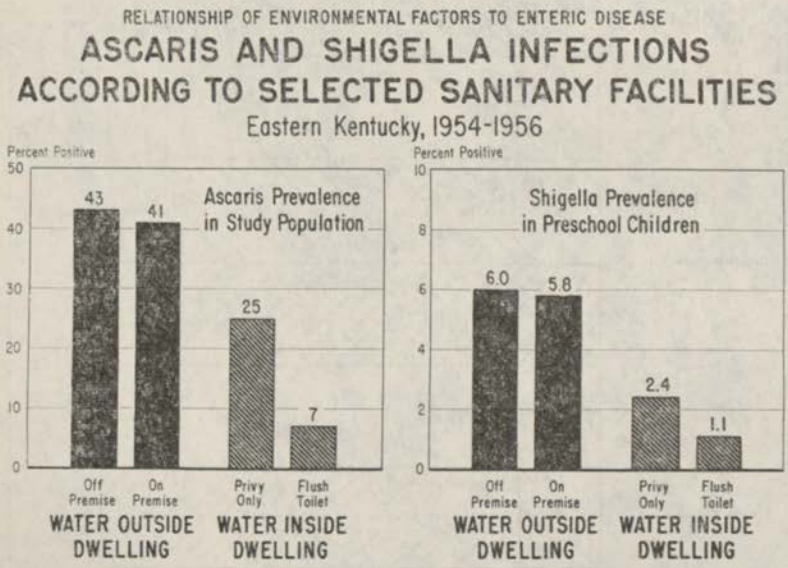
(2) Participation in investigation of communicable disease outbreaks and institution of corrective environmental control measures.

(3) Institutional sanitation activities, such as surveys of physical plant and operations at Bureau of Indian Affairs and Public Health Service schools, hospitals, and other installations; review of plans and consulting services associated with new construction; and conduct of food service training courses.

(4) Special studies and technical assistance, such as the design of low-cost "transitional" housing, investigation of Arctic water supply problems, evalution of procedures for control of fish tapeworm in Alaska, and study of disposal of liquid wastes under extraordinary conditions.

Looking ahead

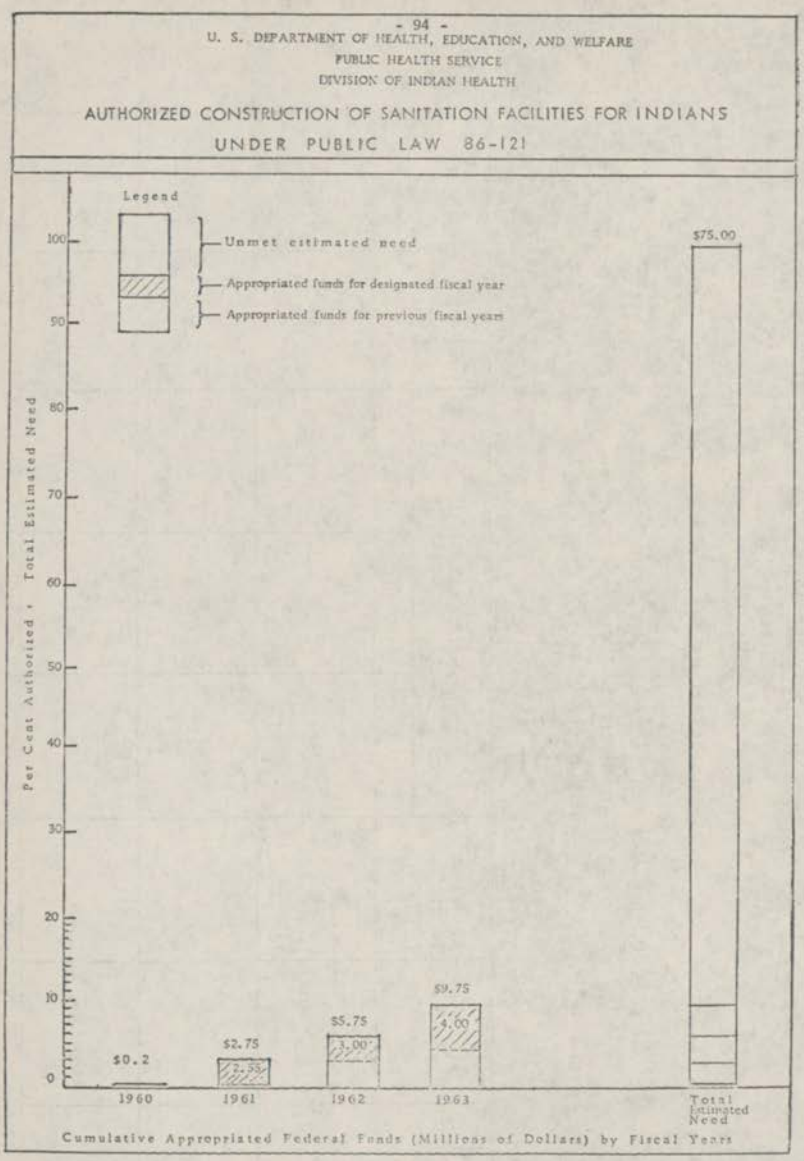
As further resources are made available, the gross environmental health deficiencies of the Indian and Alaska native people will be corrected. This will have a salutary effect in improving the level of health by reducing the incidence of preventable diseases. It should also serve to motivate the Indian and Alaska native families to assume the responsibilities for improving environmental health conditions in their homes and communities.



U. S. DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE
PUBLIC HEALTH SERVICE
DIVISION OF INDIAN HEALTH

SUMMARIZATION TABLE
OF
INDIAN SANITATION FACILITIES CONSTRUCTION PROJECTS
AUTHORIZED UNDER
PUBLIC LAW 86-121

FISCAL YEAR	FEDERAL APPROPRIATION	NUMBER OF CONSTRUCTION PROJECTS	DISTRIBUTION OF PROJECTS			APPROXIMATE HOMES TO BE SERVED	ESTIMATED POPULATION TO BE SERVED
			States	Reservations	Locations		
1961	$2,550,000	46	15	26	48	4,400	24,000
1962	$3,000,000	57	16	29	59	4,800	26,000
1963	$4,000,000	65	17	30	69	5,800	31,000



DIVISION OF OCCUPATIONAL HEALTH

The activities of the Division of Occupational Health are directed toward four main objectives: (1) To develop improved techniques, materials, and equipment in the detection and control of occupational disease; (2) to stimulate effective community and industrial efforts toward occupational health services; (3) to assist Federal, State, and local agencies, health practitioners, labor unions, management, and workers in the application of preventive techniques and in the development of preventive services to workers; and (4) to determine the health status of the labor force and the total impact of the working environment on health. These aims are accomplished through laboratory and field studies; demonstrations, consultation, and educational activities; training programs; and grants mechanisms.

The U.S. Public Health Service was one of the first groups in this country to undertake research in the field of occupational health. Pioneering studies were made in the mining and steel industries in 1910. Notable also among early studies was an investigation of unsanitary conditions and the high rate of tuberculosis among the workers in the garmentmaking industry, which helped pave the way to the abolishment of the sweatshop.

In 1914, recognition of the importance of industrial hygiene in public health led to the establishment of the Office of Industrial Hygiene and Sanitation, the forerunner of the present Division of Occupational Health, which was established on September 1, 1960.

Since the inception of the occupational health program in the Public Health Service, thousands of workers have benefited from studies of such problems as chest diseases in the mining, granite, cement, and cotton textile industries; lead poisoning in the pottery, storage battery, and other industries; radium poisoning in the watch industry; pneumonia in the steel industry; lung cancer in the chromate-producing industry; industrial fatigue; illumination; and noise. The Division's study of skin diseases, a leading occupational health problem, has reached into practically every segment of American industry.

An outstanding feature of these studies has been the development and application of the epidemiologic approach to occupational diseases. Teams of environmental specialists and physicians study simultaneously the work environment and the health status of workers, relating them in quantitative terms. This approach has become recognized the world over as an indispensable tool in defining and controlling occupational health problems.

While great strides have been made in the control of occupational disease in the past half century, the health problems of the Nation at work have increased in number and complexity, proceeding in pace with industrial change.

During the early years of public health activity in this area, gross health impairments from massive exposures to a few harmful substances, such as lead, mercury, and quartz, dominated the field. Today we are confronted with myriad and subtle actions and interactions associated with a much more varied and changing work environment.

In recent years, scientific advances have opened up new avenues of inquiry, revealing relationships between occupation and health previously unrecognized. Thus, concern today also extends to disturbances which are less dramatic than the rapidly fatal or disabling diseases once so common, but which may subtly take a long-term toll of the health and productivity of a large number of employees. For example, chronic pulmonary diseases, skeletomuscular disorders, unusual responses to infection, and unexpected hypersensitivities are believed to be frequently associated with remediable conditions in the work environment.

Diffuse and difficult to personalize, and varying greatly from occupation to occupation, health problems related to work nonetheless involve over 70 million workers. It is conservatively estimated that 400,000 cases of frank occupational disease occur each year, with many more instances of borderline or unrecognized illness.

Dominant in this occupational health complex are reactions to toxic chemicals. The problem of predicting hazards and preventing injury to workers is intensified each year by the steady increase of new chemicals as well as new processes. Industry supports essential testing programs, but there is a continuing need for basic research on testing methods, mechanisms of action, and the detection of susceptibility and early toxicity.

Physiologic and psychologic stresses on the worker are also creating greater problems, as knowledge of the interrelationships between man, the machine, and the environment fails to keep pace with technologic advances. Man, with his unchanging cell complexes and his fixed organ systems and reaction times, is being forced to cope each year with faster and more demanding mechanisms.

Simple morbidity or mortality measurements are far too crude to detect early or subtle effects on the health of exposed workers. Modern occupational health research adds to traditional methods precise physiologic appraisals, biochemical measurements of enzyme activity, and, in some instances, studies of behavioral patterns. Methods have to be tailored to individual problems, based on what has been learned in the laboratory.

To keep abreast of modern technology, the Division of Occupational Health has had to strengthen its competence in a variety of biological, physical, and social fields. Through the addition of specialized personnel to the staff in the past couple of years, the Division's studies have achieved new scope and depth.

Illustrative of this broadened scope, a new section on physiology was recently established and staffed in the Division. Its area of study includes pulmonary function, thermal stress, fatigue, physical and mental work capacity, and neurophysiologic responses to noise and vibration. A more thorough and persistent consideration of the psychological component of occupational health problems has also been made possible by recent additions to the staff.

The new direction permitted by these additional resources is reflected in a changing emphasis in the noise studies being conducted by the Division. Long interested in the effects of industrial noise on hearing, the Division is now probing psychologic and neprophysiologic effects. A current project seeks to determine whether learning and performance of a complicated task are adversely affected by noise. Heat stress studies underway are similarly concerned with the effects of heat on worker fatigue and efficiency, as well as on more obvious impairments of health.

In toxicology, a promising area of exploration is opening up with recent work on predictive tests of hypersusceptibility to hemolytic chemicals and drugs. Such tests are based on the detection of inherited deficiencies of specific enzymes. If it is found that susceptibility to other chemicals can similarly be detected, it would have great significance for industry, where approximately 1 million workers are involved in the manufacture of industrial chemicals and several times that number are exposed to chemicals through handling and use.

Emphasis is also being placed on a series of studies to determine early effects of exposure to various chemicals through detection of changes in tissue and blood enzymes, and other substances. These "biochemical profile" studies are part of the Division's continuing research to develop techniques for evaluation of toxicity prior to permanent damage.

The recent strengthening of the Division's statistical competence has permitted expanded studies of occupational morbidity and mortality. Currently, mortality records of workers in the asbestos products industry throughout the country are being examined. This technique will be extended to other industries, both as a means of obtaining quantitative data on the incidence of suspected occupational disease, as well as for detecting unidentified hazards in the working environment.

These actuarial explorations are vital in the face of the lack of adequate reporting of occupational diseases. Of the 50 States, 28 have laws requiring medical reporting of occupational diseases, but only 3 States receive 100 or more reports per year.

The problem of toxic exposures of workers increases each year, as 400 to 500 new chemicals annually find commercial application. In the past 10 years the chemical industry has expanded at a rate almost double that of the total industrial expansion of the country. Over 50 percent of the products now sold by the chemical industry were unknown or not in commercial production just 22 years ago.

The major concern lies not in the plant of the major producers of chemicals, for the industry has set an exemplary record of protection for its workers. The difficulties arise at the point of use, where adequate safeguards are frequently lacking. Concern lies in the widening gap between the new materials being created and an understanding of their effects on living systems. It should become axiomatic that these materials must be as well understood for their biological potentialities as well as for their physical and mechanical properties.

Illustrative of the growth of new materials, plastics production has risen from a 1947–49 base of 100 to 284 in 1958. The Division of Occupational Health has helped in plastics development by its studies of the health effects of the epoxy resins and resultant control recommendations. By applying the recommended procedures, numerous industries are now safely using the versatile epoxy resins. The Division's studies have also contributed to more effective safeguards for toluene diisocyanate, used extensively in the plastics industry. Due in part to this research, the American Conference of Governmental Industrial Hygienists has recommended a downward revision of the threshold limit of toluene diisocyanate to 0.02 part per million parts of air.

The use of pesticides, insecticides, and other economic poisons that have tremendously increased agricultural production has similarly been dependent on studies of their toxic effects and the effective use of safeguards. The Division of Occupational Health has worked with the Communicable Disease Center in the support and conduct of toxicologic research and field studies to protect both the workers engaged in the manufacture of these poisons and those involved in their use in agriculture.

In addition to chemical hazards, the industry of the future, with its emphasis on automation, electronic operations, and nuclear energy, can be expected to produce new health problems. We must be alert and informed on new physiologic and psychologic stresses and their effects, as well as on new chemical and physical hazards.

Automation will undoubtedly reduce or eliminate many occupational disease hazards, but at the same time introduce a whole new set of problems. There may be greater exposure to noise in some instances, resulting from greater use of electrical motors and equipment in the factory. More nervous strain may possibly also be expected from the character of automatic operations. The effect of errors is more serious, the responsibility of the maintenance worker is higher, and the machines are more complex. Eye attention is also intensified by the concentration and close work and the focus on control dials, lights, and panels. As the need lessens for physical effort by workers tending automatic machines, a growth of the health problems associated with the sedentary worker may be expected. We may also expect psychological hazards to the worker from isolation, boredom, and even from increased leisure.

A number of developments will be dictated by the changing age characteristic of our labor population. By 1970, the total labor force is estimated to reach 85.7 million. The most dramatic change expected in the 1960's is the sharp rise in the number of workers under 25 years of age, reflecting the high birth rate of the 1940's. Women workers, who now comprise one-third of the labor force, will also increase. The number of women workers 25 years of age and over is expected to rise by 3.6 million.

The increase in each age group will be accompanied by its own set of problems. For example, the younger worker group generally is quite mobile and has a tendency to gravitate to the newer industries. The age and mobility of this group, combined with the long latent period for evidences of ill effects from certain occupational exposures, may well serve to cloak hazards inherent in those newer operations. There is also the problem of educating each new generation of workers to have an awareness and healthy regard for potential hazards and to observe proper precautions.

The changing age distribution in the work force will not reduce, and may well aggravate, the problem the of adjustment and continuing production of the older worker. Division plans call for studies to determine optimal rest-work regimens and compensatory allowances for middle aged and older men doing hard physical work. Aging will also be studied as a factor in altering skills and inability to do physical tasks.

Another factor influencing program development is the growing shortage of trained medical, nursing, and engineering personnel to carry on occupational health activities. The Division is carrying on an intensified program to aid in developing professional resources and to help personnel in the occupational health field keep abreast of new processes and materials used in industry and how they affect the worker's health.

Emphasis in the Division's training programs is on short-term courses not provided elsewhere. Courses range from those covering basic industrial hygiene principles to those that treat highly specialized areas, such as advanced courses in the evaluation and control of heat stress and noise.

In addition, the Division has intensified its program of technical assistance and consultation to State and local agencies that have direct legal responsibilities for worker health protection. During 1962, field consultations and technical services were provided on over 300 different occasions in 50 States, and to various Federal agencies. More than one-third of these services resulted from requests for assistance in the investigation of suspected occupational diseases or hazards to health in industry; the others dealt with administrative and informational aspects of occupational health programs. Consultative assistance provided during the year included evaluation of occupational health conditions at the Goddard Space Flight Center and Wallops Island Test Station. A thorough study of occupational health problems and needs was also conducted at the request of the Governor of one of our States as the basis for an action program. Requests for assistance continue to increase with increasing industrialization.

The fact that management is increasingly obliged to bear all or part of the costs of illness, occupational or nonoccupational, has certain implications. The immediate effect has been to place increased emphasis on the prevention of nonoccupational diseases, since these represented the greatest share of sickkness costs and absenteeism. In response to this need, the Division has strengthened

its demonstration and consultative services to employers, professional personnel, and others interested in the establishment of preventive health programs for employees.

During the years, the Division has built up, and consistently strives to maintain, an excellent rapport and working relationship with the various professional associations, with management and labor groups concerned with occupational health, and with governmental agencies in the field. It enjoyes considerable prestige both for its impressive record of pioneering study and for its objective, impartial service.

The Division's major interdepartmental relations are with the Bureau of mines have been carried out by the Division and the Bureau of Mines. Similarly, the Department of Labor. Numerous cooperative studies of health hazards in mines have been carried out by the Division and the Bureau of Mines. Similarly, because of their related interests, the Division, with its responsibility for the control of occupational health hazards, and the Bureau of Labor Standards, with its concern for the prevention of accidents in industry, have worked together on various projects and have issued joint publications.

Since the establishment of the American Conference of Governmental Industrial Hygienists 25 years ago, the Division has been active in the conference's various projects, including the Threshold Limits Committee. Threshold limit values have now been established for about 300 substances, and, through its toxicologic studies, the Division contributes knowledge toward the establishment of values for new substances and the revision of old limits. Various cooperative projects are also carried out with the other professional organizations in the field.

DIVISION OF RADIOLOGICAL HEALTH

The Division of Radiological Health was established by the Surgeon General on July 1, 1958.

The new Division was assigned the mission of developing a comprehensive radiation health program in the Public Health Service, in collaboration with other related programs of the Department of Health, Education, and Welfare. As a part of this mission, the Division became responsible for strengthening the role of the States and communities in the field of radiological health.

In the development of a comprehensive program in this field, at least three major tasks were undertaken by the Service. There were (and are): (1) A nationwide system of environmental radiation surveillance; (2) a nationwide evaluation of the long-term effects of radiation; (3) development of realistic radiation standards and model regulations for health protection. In support of these objectives, it was necessary that adequate programs of research and technical training be developed, and that the State health departments be helped to develop radiological health capabilities consonant with State needs.

The Division of Radiological Health has made good progress in all phases of its primary mission. Evidence of broad public and official support of the Division's mission and programs is reflected in the year-by-year expansion of funds authorized by the Congress: $634,000 in fiscal year 1959; $2,576,000 in fiscal year 1960; $7,731,000 in fiscal year 1961; $10,627,000 in fiscal year 1962; and $15,875,000 in fiscal year 1963.

In 1959, the role of the Division was enhanced significantly by: the creation of the Federal Radiation Council by Executive order and Public Law 86–373, with a mandate to advise the President and provide guidance to Federal agencies; a Presidential directive that the Department of Health, Education, and Welfare intensify its radiological health efforts and assume primary responsibility within the executive department for collation, analysis, and interpretation of environmental radiation levels; and the delegation by the Secretary of DHEW to the Public Health Service of the principal elements of these efforts and responsibilities.

The following is a description in some detail of the principal activities of the Division since its establishment:

In view of the increasing levels of radioactivity in our environment—resulting primarily from the operation of nuclear reactors and the testing of nuclear devices—surveillance activities have received major emphasis in the Division during the past 4 years. A small experimental milk monitoring system was expanded to a 60-station pasteurized milk monitoring network, operated in cooperation with State and local health departments in milk sanitation agencies. Already in existence when the Division of Radiological Health was established in July of 1958 were an early "alert" atmospheric radiation surveillance network, over which the new Division assumed control; a national water quality network (now

operated by the Division of Water Supply and Pollution Control); and a national air sampling network (now operated by the Division of Air Pollution).

The drinking water analysis program (operated by the Division of Environmental Engineering and Food Protection, which estabilshed it in 1960) collects data on the radioactivity content (among other components) of water supplies used on trains, airplanes, ships, and other conveyances operating in interstate commerce.

In 1960, the Division of Radiological Health initiated an institutional diet sampling program for the purpose of securing an estimate of the total dietary intake of radionuclides by children and teenagers aged 5 to 18 years; 21 boarding schools and institutions are currently providing diet samples for radioanalysis. In conjunction with this program, a contract was negotiated with Consumers Union of U.S.A., Inc., early in 1962, to sample teenage and infant diets in 30 cities for the presence of strontium 90 and other radionuclides.

A radiation intelligence system is being organized which will ultimately provide, on a continuing basis, data on exposure from all sources of ionizing radiation for various population groups in the United States. In accordance with the objectives of this system, a pilot project was conducted in the summer of 1961 in Montgomery County, Md., to evaluate the effectiveness of household interviewing techniques in assessing radiation exposure to the population. Air sampling stations were installed in nine locations in the county. Samples of drinking water from public supplies and private wells were obtained, and information about food intake and X-ray exposure were secured through household interviews. The preliminary findings of this pilot study were sufficiently encouraging to warrant extension of the methodology on a national scale in fiscal year 1963, using the interview system of the Bureau of the Census.

Surveillance activities were greatly expanded and accelerated in fiscal year 1962, largely as a result of the resumption of nuclear weapons tests by the USSR. Beginning in September 1961, the air sampling stations of the radiation surveillance network were expanded from 45 to 66. Stations of the milk monitoring network began taking samples at least once a week, and in areas of high radioactivity, as often as once a day. Sampling schedules of the Division of Air Pollution's national air sampling network and the Division of Water Supply and Pollution Control's national water quality network were also accelerated.

Within a few days after the USSR action, a Radiation Surveillance Center was established within the Division of Radiological Health to function as a central clearinghouse for the receipt, coordination, evaluation, and dissemination of data received from the various surveillance systems operated by the Division and others. The Center provides immediate assessment of significant changes and trends in environmental radioactivity so that monitoring schedules can be adjusted to needs and possible counter-measures to reduce radionuclide-intake determined or initiated if necessary. Since the Center has been in operation, hundreds of reports have been prepared and distributed to Members of Congress, State and territorial health officers, DHEW regional offices, members and consultants of the National Advisory Committee on Radiation, DRH headquarters and field personnel, other Government agencies and officials, the atomic energy industry, scientific groups and trade associations. Interchange of information with the official health departments of other nations is also emphasized.

In addition to the Radiation Surveillance Center, which provides immediate assessment of current environmental levels and continuing trends, the Division's radiological health data and reports section, established in fiscal year 1960. collects and maintains a permanent official record for the Federal Government of information on the sources and levels of radioactivity in the environment, through publication of a technical monthly, "Radiological Health Data." This publication, which was first issued in April 1960, is distributed to health authorities and investigators in the United States and throughout the world.

Finally, the Division provides regular reports on radiation levels to the Nation's press, radio, TV, and magazines, and to interested citizen groups and individuals.

Surveillance activities of the Division of Radiological Health are largely dependent upon specialized laboratory support. In the past 3 years, three regional radiological health laboratories have been established—at Las Vegas, Nev.; Montgomery, Ala.; and Winchester, Mass.—to supplement the work being carried out at the Robert A. Taft Sanitary Engineering Center in Cincinnati, Ohio, in (1) environmental sample analysis, (2) technical training, and (3) research in radiochemistry, radiophysics, and radiobiology. In addition, a special-purpose laboratory was opened at Rockville, Md., to develop methods for better control of radiation hazards from medical, dental, and industrial X-ray

units and to provide radiological health specialists with the training necessary to perform comprehensive surveys of X-ray units within the States and territories. The Rockville laboratory also processes environmental samples in connection with the operations of the radiation intelligence system and the radiation surveillance network.

In addition to the operation of nationwide environmental monitoring networks, the Division during the 1960–62 period began, or continued participation in, a number of long-term special radiation safety projects, for example, the investigation of river and port environments associated with AEC nuclear reactor operations and the construction and support of maritime and naval nuclear vessels; a special survey of environmental radioactivity in Antarctica; support of offsite nuclear weapons testing; and support of static and launch aerospace nuclear activities.

An environmental sampling program was conducted on the Delaware River during construction of the first nuclear-powered merchant and passenger ship, the NS *Savannah*. A specially trained PHS medical officer was assigned to serve as adviser and alternate ship's surgeon for the vessel.

A laboratory was established at the Naval air facility, McMurdo Sound, Antarctica, to support an environmental survey prior to and during the operation of the PM–3A nuclear reactor. Assessment is being made of radon, thoron, and long-lived fission product radioactivity in the air, water, snow, biota, rock, and soil, of the Antarctic. The PHS environmental surveillance program in Antarctica was expanded in January 1962 to include the Byrd Station, where a nuclear reactor installation is planned for 1963.

An offsite radiological health program was developed for the Air Force Missile Test Center at Cape Kennedy to determine the long-range environmental effects of the use of radioactive materials at the missile center or the area surrounding the test site; to perform emergency monitoring in connection with the destruction of missiles carrying radioactive material; and to provide consultation and advice on the use of radioactive materials at the missile center.

When atmospheric weapons tests were resumed by the United States in April 1962, the Division began operation of a radiological safety laboratory in Hawaii, an offsite radiation safety program, and a fallout assessment center within headquarters of Joint Task Force 8. Offsite monitoring was continued at the Nevada test site in connection with the underground nuclear tests. Public Health Service surveillance activities in Nevada date from a 1954 reimbursable agreement with the AEC to monitor radioactivity levels in air, water, milk, and foodstuffs associated with nuclear weapons tests, conduct community education and public relations programs, carry out liaison functions with State and local health departments, and maintain a special film badge service.

The Division has provided guidance to health authorities and reactor personnel in nuclear waste-management problems related to the operation of the pressurized water reactor at Shippingport, Pa., and the Consolidated Edison reactor at Indian Point, N.Y.

In accordance with an understanding reached between AEC and DHEW on August 1, 1961, documents pertinent to the licensing of major nuclear facilities are made available to the Public Health Service for review and subsequent consultation with the States, at their request, concerning the potential hazards of environmental contamination.

With the rapid multiplication of sources, applications, and users of radiation, it is imperative that the States assume increasing responsibilities for radiation protection and control. Therefore, particular attention has been placed on providing technical assistance to bolster the radiological health competency at the State and local level. An onsite inventory and evaluation of State radiation control programs conducted by the Division in 1960–61 revealed that although some States had made very good progress, much additional effort was needed to develop comprehensive programs.

A major step was taken to strengthen State radiological health programs with the approval by Congress of a system of matching grants to the States—$1,500,000 for the first year, fiscal year 1963.

Technical personnel from the Division are currently assigned as radiological health consultants in each of the Department of Health, Education, and Welfare regional offices. In addition, by the end of fiscal year 1962 the Division had assigned 50 professional staff members to State health departments.

In cooperation with the Council of State Governments and the AEC, considerable progress has been achieved in the preparation and adoption of radiation control enabling acts and regulations. As of June 1962, at least 38 States and

the District of Columbia had formally recognized, and moved to meet, their responsibilities in the field of radiation control.

Since medical and dental X-rays contribute a major share of the total radiation exposure to the individual, Federal-State survey programs have been initiated in a number of States to determine characteristics of the design and use of diagnostic X-ray units that cause unnecessary radiation exposure to patients and/or physicians and technicians. In the past 3 years, program emphasis has been on dental X-ray units. Of the estimated 200,000 X-ray machines in use in this country, approximately 100,000 are owned and operated by dentists, exposing about 185 million dental films a year. This averages out to approximately one dental radiograph per person.

Inspection programs of dental X-ray units have been, or are now being, conducted in 45 States. Current plans call for the expansion of the survey program for medical radiographic and fluoroscopic units during fiscal 1963.

The Public Health Service, in its own hospitals and clinics, takes special precautions to protect patients from unnecessary exposure, and operating personnel from all exposure, during the use of X-ray equipment. A continual monitoring system is maintained in our own installations.

In view of the pressing need for greater knowledge of the sources and biological effects of ionizing radiation, particularly at sustained low levels, the Division's research effort has been continually expanded over the past 3 years. The comprehensive program of fundamental and developmental research now underway includes intramural studies at DRH laboratories, extramural projects under contract with universities and medical centers, and independent investigations supported by extramural grants.

The Division started negotiations for radiation research grants in November 1960. Funding of extramural research grants in the field of radiological health was transferred from the National Institutes of Health to the Division of Radiological Health on July 1, 1961. The number and dollar amount of grants has undergone steady expansion: 42 grants, $886,522 in fiscal year 1960; 58 grants, $1,096,964 in fiscal year 1961; and 64 grants, $1,270,440 in fiscal year 1962.

According to the estimates of the National Advisory Committee on Radiation, 1,200 radiological health specialists and 4,000 radiation technicians will be needed by 1970 to staff radiation protection programs of health agencies. To help meet this need, the Division of Radiological Health provides grants to universities for the training of radiation health specialists; for assistance to junior colleges and other institutions for the training of radiation technicians; for graduate-level traning of PHS commissioned officers and civil service personnel; and for short-course training for public health personnel in government and industry.

Training grants to universities to improve, expand, or establish radiation health specialist curriculums were made available for the first time in fiscal year 1961 by congressional approval of an initial $500,000. Fifteen universities were selected—from applicants requesting almost $2 million—to receive grants for staff, equipment, and student assistance. Fifty-three trainees were supported by the grants program in fiscal year 1961 and 80 in fiscal year 1962. Congressional support of the program was increased to $1 million in fiscal year 1962, and $2 million in fiscal year 1963. Twenty schools were participating in the radiological health specialists training program as of June 30, 1962.

Since September 1961, many thousands of letters and telephone calls have been received by the Division from congressional, press, public, and private sources relating to falout and its health effects. Monthly reporting of surveillance data in Radiological Health Data has been supplemented by frequent issuance of press releases to health authorities and the mass media, particularly with respect to levels of iodine 131 and strontium 90 in market milk.

As part of an effort to increase the reporting of important radiological health research news to the scientific community and the general public, a technical report series has been established which will include findings of specific research projects, literature reviews, and progress or topical reports not only of the Division of Radiological Health but of other environmental health programs of the Public Health Service.

DIVISION OF WATER SUPPLY AND POLLUTION CONTROL

Water pollution control activities of the Public Health Service were carried out under Public Law 410 from 1944 to 1948. In 1948, Public Law 845, the first Federal water pollution control legislation, was passed, and responsibility

for its administration placed in the Public Health Service. The first permanent comprehensive Federal Water Pollution Control Act, Public Law 660, was passed in 1956. The Division of Water Supply and Polution Control was established on July 29, 1959. In 1961, Public Law 660 was strengthened by amendments in Public Law 87–88 and responsibility for its administration in the Secretary of the Department of Health, Education, and Welfare.

Actually, the Public Health Service began studying water pollution and its effects on human health when it investigated waterborne diseases before the turn of the century.

With the introduction of water-carriage disposal systems in the 19th century, dumping raw sewage into lakes and rivers became standard practice. In those early days, it worked well enough. There was plenty of water; the wastes were subject to natural purification processes; and communities were neither so large nor so closely jammed together as they later became.

But as time went on, and industry and population grew, the volume and complexity of wastes grew enormously. They became more and more difficult to deal with in treating water for public consumption.

By the time Public Law 660 was enacted in 1956, the problem had mushroomed to such proportions that the programs this legislation authorized, and directed to be carried out, had become urgent. The law provides a broad base for dealing with both the water resource and the health aspects of water pollution prevention and control. These include development of comprehensive water pollution control programs, enforcement of pollution control, collection of basic data, research, technical training, information; grants for State and interstate program extension; grants for research, training, and demonstrations; fellowships; and grants for the construction of waste treatment works.

The growth of industry in the United States has been phenomenal and this growth rate is expected to continue into the foreseeable future. During the period 1900–1950, industry increased its output of goods by 700 percent. During and since World War II, industry has greatly accelerated its productivity and by 1980 is expected to more than double the 1950 figures—more than 14 times production at the turn of the century.

Industry has spread to all parts of the country, and the major trend is the location of industry within metropolitan complexes. On the other hand, industry is helping to create more complexes, since it attracts the labor market and accompanying service groups. There is also a decided trend of industry to move into water-short areas which presents grave water supply problems, both for itself and the supporting communities. When industry locates in a water-short area, or contributes to a water shortage by its demands, it acquires, or shares in, the responsibility for solving th e resultant water resource problems.

Probably most significant of our population trends is that toward urban living which will greatly accelerate in the years ahead. Serious water supply problems have resulted from, and will continue to be created by our increasing urbanization. Only a few of our large cities are strategically located with respect to a bountiful supply of fresh water. The problems of maldistribution of population and water will multiply with increasing urbanization. We cannot move the metropolis to the water supply, so we must move the water supply to the metropolis.

Another water need is a reflection of our culture and growing economy. Within a generation, the leisure time and incomes of Americans have increased greatly with the result of an annual outlay for recreation of $40 billion, or more than 8 percent of the gross national product. In 1960 an estimated 30 million Americans participated in sport fishing and hunting. The pleasure boating industry, one of the outstanding growth industries, is now a $2 billion a year business, more than three times its total 10 years ago.

According to "Resources for the Future," outdoor recreation in the next 35 years will increase tenfold. Inevitably, because so much of our outdoor recreation is water oriented, this will mean that recreational use which may result in significant pollution, must coexist with industrial, municipal, and agricultural water uses.

Recreational use of waters—swimming, water skiing, and boating—can cause measurable pollution. The pollution resulting from water-contact sports is principally bacterial or viral. Although epidemiological studies have been made, some of considerable duration and scope, the extent of infections traceable to recreational use of waters is not fully known. It has been demonstrated epidemiologically, however, that such infections can occur. A new and perhaps serious problem of pollution is resulting from the growth of outboard motor-

boating and water skiing, particularly on lakes and reservoirs. Public Health Service studies are showing significant concentrations in such waters of oil, lead, and combustion products from outboard motor exhausts. The continued increase predicted for motorboating and water skiing indicates that serious attention should be given to the exhaust problem.

Navigation is an old and continuing source of water pollution in estuaries, harbors, and coastal waters. Ship pollution consists of bilge waters, sanitary sewage, garbage, oils, and whatever can be thrown overboard. Few ships afloat today, even those of recent design, have any facilities for the collection, treatment, or disposal of shipboard wastes. Laws and harbor regulations are very difficult to enforce.

The St. Lawrence Seaway has opened the Great Lakes to 90 percent of the world's commercial vessels. With ships from all parts of the world entering and harboring in waters adjacent to public water supply intakes, the chances are greatly enhanced for waterborne disease transmission, and particularly those diseases from other countries which have long been gone from the American scene or never gained a foothold here.

As a result of scientific and technological developments in recent years, new and difficult problems in water supply and pollution control have been created. Synthetic organic chemicals are relatively new pollutants of increasing concern, resulting from new chemical technology. Included in this category are detergents and other household aids, all the new synthetic organic pesticides, synthetic industrial chemicals of a wide variety, and the wastes from their manufacture. The number, variety, and tonnages of these chemicals is increasing rapidly each year. As pollutants, they are characterized by their toxicity, or potential toxicity, to fish and aquatic life and possibly humans, their often extreme stability and persistence in the water environment, and their resistance to removal by conventional water and waste treatment processes.

Perhaps the most important emerging land-drainage problem today involves the tremendous increase in the use of agricultural pesticides and fertilizers. Pesticides include those chemicals designed for use as insecticides, herbicides, fungicides, rodenticides, miticides, nematocides, fumigants, defoliants, plant growth hormones, and soil conditioner. This land-drainage pollution cannot be collected and treated as can be done with most common types of wastes, but must be controlled during the chemical's application.

Production of synthetic pesticides in 1958 amounted to more than 500 million pounds and most of this production was used by U.S. farmers. Each new pesticide introduced on the market is generally more toxic than its predecessor. Some indication of the magnitude of the problem in the immediate years ahead has been given by an official of American Cyanamid Co.'s pesticides-products department who has predicted a tenfold increase in pesticide output in the next 20 years. This could mean, in 1980, pesticide production amounting to more than 5 billion pounds annually.

Most pesticides are not removed by ordinary water and waste treatment processes. Although there are no recorded incidents of acute toxic effects on humans through water supplies, some pesticides have this potential. As the use of these chemicals increases, chronic effects of their long-term ingestion may well be of greater significance than acute toxicity. Analysis of samples taken in connection with several Public Health Service investigations and the national water-quality basic data network program has shown the presence of pesticides in most of our major rivers.

The U.S. farmer is using more and more chemical fertilizers. The growth of fertilizer tonnage and nutrient content is shown by the following figures:

Growth in U.S. fertilizer tonnage and nutrient content

Year [1]	Tonnage (in thousands)	Plant-food content (percent)
1935	6,345	18.2
1945	13,201	20.0
1950	17,978	22.0
1952	22,052	23.1
1954	22,362	25.8
1956 (preliminary)	21,697	27.5

[1] All years after 1935 are fiscal years ending June 30.

Source: USDA, Agricultural Research Service.

Fertilizers applied to agricultural lands find their way into natural waters principally during runoff and from soil leachings. Stream pollution from agricultural fertilizers, supplemented by the increasing amounts of nutrients from municipal and industrial wastes, is becoming a water pollution problem that may reach national significance. A widespread increase in the growth of nuisance organisms and plants stimulated by fertilizers would have serious degrading effects on water quality and use.

Water pollution from radioactive substances may result from the mining and processing of radioactive ores; from the use of refined radioactive materials in power reactors and for industrial, medical, and research purposes; and from fallout following nuclear weapons testing.

Progress, under the provisions of the Federal Water Pollution Control Act, leading toward containment of public health problems resulting from water pollution are illustrated by portions of the fiscal year 1962 Annual Report of the Division of Water Supply and Pollution Control.

1. There was a 22-percent increase over the preceding year in municipal sewage treatment construction stimulated by the construction grants program. Approved were 754 projects to which the Federal grants contributed $65 million and local governments $332 million, a ratio of about 1 to 5.

2. Grant funds to State and interstate agencies, increased from $3 to $5 million per year under the 1961 legislation, have enabled most of the States to expand their water pollution control programs. Stimulated by these program grants, water pollution control budgets of 33 States showed substantial increases in 1962 over 1961.

3. To maintain continuous intelligence on the nature and extent of pollution, the national water quality network of major watercourse sampling stations was enlarged from 91 to 121, with 300 as the ultimate goal.

4. The 3-step Federal enforcement procedure—conference, public hearing, and court action—has been initiated in 20 situations, 5 in fiscal year 1962. Twenty-four States and the District of Columbia have been parties to these actions. They involve some 250 municipalities and about the same number of industries, mostly in large metropolitan complexes. More than 5,000 miles of major water bodies are affected.

5. Research activities include both intramural projects at the Cincinnati center and extramural research projects supported by grants in some 80 universities and other institutions in about 40 States. Together, they seek answers to such problems as wastes origin; more efficient and economical characterization, treatment and disposal of wastes; improved methods in water quality measurement; and the supplementation and conservation of water supplies. Research grants awarded during the year supported 159 projects totaling $2.67 million.

6. Fellowships totaling $98,000 were established to support scientists and engineers at academic institutions in 16 States and 1 foreign country; 11 demonstration (applied research) grants totaling $300,000 were awarded in 10 States; and 23 grants totaling $693,000 were awarded to institutions in 13 States to establish or expand graduate training programs in the field of water supply and pollution control.

7. Comprehensive water pollution control programs to protect and conserve water quality for all uses for a projected period of 50 years have initiated or expanded in six major river basins. Another in the Arkansas-Red Rivers Basin is nearing completion, with final recommendations for control scheduled to be presented to the Congress in January 1963. In addition, field study projects on problems of national significance have been established with respect to the effects of pesticides on water quality and of recreational uses on water supply reservoirs.

In additon to its legislated programs, the Department has additional responsibilities of providing specialized technical services to other Federal agencies relating to water supply and pullution control. These stem from the Department's membership on the Interagency Committee on Water Resources on U.S. study commissions, its agreements with other Federal agencies, services required by international commissions, and special needs of States and regional jurisdictions.

Technical services under interagency agreements represent a major and expanding activity. Of particular significance in Federal reservoir construction are provisions in the Water Supply Act of 1958 and in the 1961 amendments to the Water Pollution Control Act requiring, respectively, a determination of needs and value of municipal and industrial water supply, and for streamflow regulation for quality control.

Being a national problem, water supply and pollution control generates the need for action at all levels, resulting in a five-way sharing of responsibility. In broad terms, these responsibilities are defined as follows:

1. The State has primary responsibility for water pollution control. It sets the standards in its jurisdiction, and applies its laws and regulations, including intrastate enforcement. It conducts surveys and investigations, collects and analyzes data, provides technical assistance to local governments and industry including training, and does developmental research.

2. Local governments construct and operate municipal sewage treatment works, conduct surveys, provide technical assistance and consultation to industries, and enforce their regulations and ordinances.

3. Industries are responsible for their own pollution. They institute in-plant waste reductions, and construct and operate waste treatment works if separate from municipalities. Industries make alterations in the plant or adopt new processes to reduce or eliminate pollutants. They conduct research to develop or improve waste treatment processes, and to reduce waste pollution.

4. Universities are responsible for conducting research and for training engineering and scientific manpower needed by the other jurisdictions. They also provide technical services and consultation.

5. The Federal Government supplements and supports the programs of the other four.

Regulation.—Most States prefer to use persuasion in getting municipalities and industries to construct needed waste treatment facilities. However, when reasonable efforts at persuasion have failed, all States should vigorously apply their own enforcement measures, and almost all have workable enforcement laws.

Federal enforcement jurisdiction was extended to all navigable or interstate waters by the 1961 amendments to the Federal Water Pollution Control Act. The Secretary of Health, Education, and Welfare is directed to institute Federal proceedings for the control of pollution of such waters whenever requested by the Governor of any State or a State water pollution control agency, or (with the concurrence of the Governor and of the State agency for the State in which the municipality is situated) the governing body of any municipality, when the pollution is endangering the health or welfare of persons in a State other than that in which the pollution originates (interstate pollution). Whenever pollution is endangering the health or welfare of persons only in the State in which the pollution discharge originates (intrastate pollution), the Secretary shall invoke Federal proceedings when requested to do so by the Governor of that State if the effects of the pollution are sufficient to warrant Federal intervention. Whenever the Secretary has reason to believe that interstate pollution is occurring, he is directed to proceed with Federal enforcement action on his own initiative.

Enforcement actions, both State and Federal, will undoubtedly be invoked more frequently in the future. Supporters of water pollution control are increasing their demands for more aggressive enforcement programs.

While water pollution control measures are sometimes expensive, it is not believed that their cost would be a deciding factor in trade competition resulting from the economic growth of other nations. All developed nations today have water pollution problems much the same as those in the United States, and some are more serious. These nations are also spending large sums of money for water pollution control, as will the emerging nations as they develop.

The Public Health Service provides technical services to two international commissions, the International Joint Commission (United States and Canada) and the International Boundary and Water Commission (United States and Mexico). Increased economic and population growth along our international water will result in increased water pollution. The machinery provided by these two international commissions should, however, provide for effective pollution control measures.

RESEARCH GRANTS

The increasing number and variety of environmental health hazards and problems require the ingenious application of every conceivable research methodology, skill, and talent. A number of manpower problems are related to the research effort. Because of the critical shortage of environmental health personnel in the United States, we must do many things with few people. We, therefore, are aiming at the best and brightest students. Naturally such students will be at-

tracted to, and challenged by, research problems, opportunities, and facilities. The rapid and accelerating developments in science and technology require that our graduate education system prepare students not only for today's problems, but also for tomorrow's, and possible solutions.

Further, the shortage of professional manpower requires that we utilize existing resources to the fullest. Effective research is one means of assuring maximum utilization of limited manpower. This, in turn, requires the establishment and maintenance on a nationwide basis of some system of research intelligence. It has been estimated that the scientific literature in physics is doubling every 10 years and in chemistry every 8½ years. It is estimated that medical research literature alone is now so vast that it is quite beyond anyone's capacity to review even a fratcion of it, and we are reaching the point at which all except the most outstanding discoveries will be repeated at 30-year intervals. It is obvious that something in the form of prompt, complete, and effective communications must be developed to solve the problem of coping with the ever-increasing magnitude of scientific information.

The Bureau of State Services (environmental health) has completed preliminary plans for establishing a scientific data processing storage and retrieval system for improved extramural grants management and to facilitate scientific communication in environmental health. The plan is now being implemented as a pilot operation, starting with the data processing of grant-supported research and training in the environmental health sciences. As experience is gained, the system will be expanded to include research and training grants data for each of the categorical areas. In developing the system, attention was given to increasing its usefulness by making it flexible and compatible with other known scientific information systems. As programed now, it will be possible to include information from the National Library of Medicine and from other Federal agencies, such as the Science Information Exchange, National Aeronautics and Space Administration, and the Armed Services Technical Information Agency.

To further the research effort in environmental health will require increased health research facilities. During fiscal year 1962, 12 institutions received grants totaling $3 million for research facilities. During fiscal year 1963, 16 additional applications have been received approximating $4 million, but with the present budget limitations it is not likely any of these will be funded.

The following is a summary of research grant support by principal area in the environmental health categorical programs and environmental health sciences.

Air pollution

Subject	Grants	Cost (fiscal year 1962)
Epidemiological and other studies involving human beings	10	$449,092
Studies involving laboratory animals, protozoa, and tissue cultures	15	293,605
Studies involving plants, including algae and fungi	11	292,826
Meteorology	4	151,506
Basic and applied chemistry of air pollution	14	402,128
Analysis and identification of air pollutants	13	215,213
Control devices	6	96,989
Communicative projects	4	42,641
Total	77	1,944,000

Obligations for fiscal year 1963 have not been completed, but it appears that the subject matter groupings listed above will reflect a similar distribution.

The $2,892,000 apportionment for research grants in fiscal year 1963 will permit the awarding of approximately 120 projects.

The total needs of an adequate air pollution control program also include research activities in the social sciences (economics, sociology, and community planning) and the humanities (law). A general research grants program in these areas should be initiated consistent with program needs. There are in addition two general areas of need in the field of research grants which are of primary importance. The first is for a substantial increase and acceleration of program-oriented research, research directed toward solving specific practical problems. The second is for more basic research in areas which may provide fundamental information useful in the resolution of air pollution research problems.

Environmental engineering and food protection

Subject	Grants	Cost (fiscal year 1962)
Detection and assessment of toxicological hazards in foods	60	$1,388,408
Microbiological studies of foods	45	663,075
Chemical studies of foods	26	405,120
Applied study in food engineering and technology	17	257,054
Control of pest insects	7	85,343
Individual water supply and sewage	6	70,065
Solid wastes disposal	6	155,585
Communicative projects	6	77,778
Institutional and community sanitation	3	151,001
Environmental stress factors	3	56,091
Total	179	3,309,520

Obligations for fiscal year 1963 have not as yet been completed. However, subject matter groupings are not expected to vary materially, as approximately 90 percent of the above grants have continuances into this year.

The $3,924,000 apportionment for research grants in fiscal year 1963 will permit the support of approximately 200 projects.

The present program is supporting some research in each of the broad areas of program responsibility. The depth and scope of such research, however, leaves much to be desired. In the field of food microbiology, more effort is needed to define the role of virus contamination and the significance of shifts in microecology resulting from changes in food processing. In toxicology, there is urgent need for safer and less expensive methods for the detection and assessment of toxicity in foods and for better understanding of the fate of pesticides in plants, animals, and soil. Probably the greatest need for program expansion lies in the area of environmental engineering in the urban setting. The trend toward population concentration in metropolitan centers is placing unprecedented demands on environmental engineering services in such areas. Research, bringing the skills of social scientists to supplement those of engineers, is urgently needed to identify and quantitate relationships between urban growth and provision for environmental engineering services and facilities.

Occupational health

Subject	Grants	Cost (fiscal year 1962)
Occupational pulmonary disease	21	$635,790
Occupational toxicology	24	582,406
Occupational dermatoses	3	76,743
Cardiovascular disease and occupation	3	113,846
Noise and hearing loss	5	82,674
Physical agents, other than noise	5	166,786
Environmental measurements	6	153,455
Communicative projects	1	2,000
Occupational health statistics, epidemiology, etc.	1	40,000
Total	69	1,853,700

Actual figures for fiscal year 1963 are not available but it appears that subject matter distribution will be similar to that shown above.

The $1,766,000 apportionment for research grants in fiscal year 1963 will permit the support of approximately 61 projects.

The total minimum needs for an adequate research program in occupational health would include: studies on the impact of the psychological and social factors of the work environment on health; development of more sensitive methods for measuring individual exposure to a variety of noxious agents; and greatly increased support in the occupational health, epidemiology, environmental measurements, occupational dermatoses, and communicative projects area.

Radiological health

Subject	Grants	Cost (fiscal year 1962)
Somatic effects of radiation	9	$209,860
Radiation genetics	3	42,424
Combating detrimental effects of radiation	8	81,754
Molecular and cellular level studies	8	145,305
Environmental radiation studies	8	222,901
Radiological and health physics	1	11,500
Chemical toxicity	0	0
Cancer research	3	88,460
Selected beneficial applications	3	38,395
Countermeasures	11	247,252
Behavior	2	36,742
Dosimetry	2	31,916
Radiation meetings and conferences	1	26,090
Total	58	1,182,599

Currently there are 31 projects totaling $701,783 which have been approved but unfunded because of budget limitations.

These research proposals contribute to the determination of the extent and character of the radiation problem as well as the mechanisms by which radiation produces damage. It is felt that studies aimed at the elucidation of the radiation damage "cause and effect" relationship are essential if low-level and long-term radiation exposure effects are to be accurately assessed and general control programs organized. Other primary concerns are broad epidemiological studies aimed at a scientific evaluation of the long-term effects such as aging, congenital malformations, genetic effects, behavioral patterns, cancer induction, and also field studies of the movement of radioactive contaminants in biota and human food chains.

We have also supported studies aimed at directing scientific findings toward control devices or procedures that are necessary in a "total view" of man's ecological system, and studies that attempt to assess the relationship between health hazards created and possible benefits derived by radiation usage. The determination of the consequences of radiation exposure for present and future generations will require intensive investigation.

Water supply and pollution control

Subject	Grants	Cost (fiscal year 1962)
Wastes disposal and assimilation	17	$465,823
Conservation aspects of pollution	22	429,785
Microbiology of water and sewage	26	417,408
Wastes collection and treatment	27	401,608
Theoretical and applied engineering studies	23	303,273
Water resources and quality	18	298,575
Analytical methods: Water and sewage	15	160,504
Water treatment and distribution	8	131,969
Conferences and publications	3	70,055
Total	159	2,670,000

Obligations for fiscal year 1963 have not been completed, but it appears that the program areas listed above will reflect a similar distribution.

The $3,285,000 apportionment for research grants in fiscal year 1963 will permit the support of approximately 180 projects.

The total needs of an adequate research grant program in water supply and pollution control call for an increase both in the depth and breadth of research performed. At present, the water supply and pollution control research resources of the Nation are spread too thinly over a broad spectrum of problems directly and indirectly related to water pollution. The depth of investigation of problems ranging from pure science, through engineering, to the social sciences must be increased if real progress is to be made within a reasonable length of time. The range of problems to be solved must be broadened to include a greater number of fields and disciplines.

In addition, there must be more emphasis on integrating the efforts of these people in widely divergent fields so that sophisticated and meaningful solutions to water pollution problems may be attempted. The chemist and the engineer must work together; the biologist and the economist must join forces. In short the research problems of water supply and pollution control are daily growing more numerous and more complex. These problems require more people for their study; they require the integration of more disciplines and fields of interest for their effective solution.

ENVIRONMENTAL HEALTH SCIENCES

It is proposed to establish research grants activities in environmental health sciences during fiscal year 1964.

Research in the general environmental health sciences will include problems in physiology, toxicology, biophysics, bioengineering, genetics, ecology, behavioral sciences, and others that relate man to his environment in general. The environmental stressor in these problems may be airborne, waterborne, or foodborne, but the specific route is unimportant. Emphasis must be on the reaction of the organism regardless of the route of insult, which may involve either normal or abnormal responses to environmental factors. As previously noted, the results of such fundamental lead research will form the foundations for pointed investigations into specific environmetnal health problems. It is believed that without a strong reservoir of such fundamental and noncategorical research the categorical environmental health programs inevitably must suffer.

This new program of research grants in the broad environmetnal health sciences will be administered with intent to complement the research grant efforts of our categorical programs by fortifying the broad bases which make research on specific environmental health problems more promising and in some instances, even possible.

EXTRAMURAL TRAINING GRANTS IN ENVIRONMENTAL HEALTH

The effectiveness of the Nation's effort in environmental health depends on the availability of competent personnel in sufficient numbers to meet the tasks faced in this field. Individuals are needed with broadscale backgrounds in the physical and biomedical sciences, in mathematics, and in the social sciences. Needs in the physical sciences extend from classical physics and chemistry through meteorology, geophysics, and radiation physics to hydrology, oceanography, and many branches of engineering; in the biomedical sciences from molecular biology, botany, and microbiology through biochemistry, pharmacology, and radiobiology to epidemiology, toxicology, and the several medical disciplines; in mathematics, from classical mathematics through biostatistics to data and systems analysis. In addition, the nature of the problems encountered in environmental health requires the efforts of individuals with backgrounds in sociology, political science, anthropology, and psychology.

Table I shows the current numbers of professional personnel in each of several scientific categories working in the field of environmental health in the Service and in the Nation at large. It is expected that by 1970 more than twice these will be required in most categories and triple in some.

TABLE I.—*Professional scientific personnel in environmental health*

Scientific categories	1963		1970 estimated national requirements
	Public Health Service	Nation	
Physics-health physics	80	3,400	10,200
Chemistry	90	7,000	21,000
Biology	145	2,000	4,000
Engineering	420	8,500	25,000
Medical	55	1,000	2,000
Allied sciences	140	5,000	10,000
Total	930	26,900	72,700

Recommendations of committees

The manpower needs for environmental health personnel were reviewed by two groups of expert consultants representing research, teaching, and control program interests. The first of these, the Committee on Environmental Health Problems, set up by the Surgeon General, U.S. Public Health Service, in August 1961, recommended:

1. The divisional training programs providing fellowships and traineeships to students and research training grants to universities should be strengthened and augmented. In those instances where authority to undertake these programs does not exist, such authority should be sought by appropriate legislation.

2. A substantial program of environmental health institutional grants to support those universities engaged in programs of graduate education should be instituted.

3. Support for the training grant programs outlined in the first two recommendations should be increased as quickly as possible to a level of $25 million.

A second committee's report, "Conference on Education Needs in Environmental Health," dated June 1962, contained the following recommendations:

1. Establishment of interdisciplinary environmental health research centers at selected universities;

2. Interuniversity cooperation in the establishment of such centers, since the scope of environmental health and the increasing utility of newly developing applied fields make it clear that a single university may not be adequate;

3. Considerable increase in the number of and amounts of money for institutional grants for environmental health research, training, and facilities;

4. Expansion of the conventional fellowship program; and research assistantships and/or apprenticeships in this field for undergraduates.

Development of categorical training grant programs

Table II summarizes the appropriations for development of the categorical environmental health sciences training grant programs. Comparison is made with the recommendations made by the Committee on Environmental Health Problems.

TABLE II.—*Training, traineeships, and fellowships*

	1962 appropriation	1963 appropriation	1963 recommendation of committee [1]	Fiscal year 1964 President's budget
Air pollution	$114,000	$450,000	$850,000	$1,000,000
Environmental engineering and food protection	0	0	1,000,000	[2] 0
Radiological health	1,030,000	2,000,000	3,500,000	2,500,000
Occupational health	0	0	900,000	[2] 0
Water supply and pollution control	791,000	1,400,000	1,600,000	2,450,000
Environmental health sciences	779,000	1,479,000	2,200,000	1,519,000
Total	2,714,000	5,329,000	10,050,000	7,469,000

[1] Committee on Environmental Health Problems.
[2] With the passage of Public Law 87-838 and the change in sec. 301.d of Public Law 410, the Service is now authorized to establish research training grant programs in all environmental health categorical areas.

AIR POLLUTION CONTROL

The air pollution control training grants program provides funds to academic institutions for the expansion of graduate level training capacity. The grants support the development and improvement of curriculums related to air pollution research and control at medical schools, schools of public health, and related technical institutions. Also, fellowships are provided at the graduate level to qualified individuals. During fiscal year 1962 seven institutions were supported.

In fiscal year 1963 the budget of $450,000 will permit continuing support of 7 and adding 2 additional schools with the support of 26 students included. In addition, nine individual fellowships will be awarded.

RADIOLOGICAL HEALTH

The radiological health training grant program provides support to teaching institutions designed to help meet the national needs for radiological health trained personnel. The activities include:

(1) Institutional grants for the development of curriculums and support of graduate students in radiological health training;

(2) Assistance to academic institutions to develop and incorporate radiological health subjects into the curriculums for physicians, dentists, engineers, and others whose professional responsibility include radiological health hazards.

The fiscal year 1963 budget of $2 million permitted supporting 20 continuing and 3 new training programs. This has included support for 79 full-time students. With the addition of part-time support for students, the program is providing some training assistance to at least 127 students. This is short of meeting the manpower needs in radiological health. The National Advisory Committee on Radiation has pointed out that at least 150 specialists will be needed per year for the next 10 years, and that 3 technicians will be needed for each specialist.

WATER SUPPLY AND POLLUTION CONTROL

Training grants in water supply and pollution control are awarded to training institutions for the purpose of (1) establishing new or expanding existing curriculums in areas directly concerned with the water field, and in related areas where needed specialists may study their disciplines in relation to the problems of water supply and pollution control, (2) upgrading and expanding the teaching faculty in order to improve a given training program, and (3) furnishing financial support to students selected for the training in question, who fulfill the requirements of the institution for enrollment.

In fiscal year 1963, the budget of $1,100,000 will permit supporting 23 continuing and 11 new training programs, leaving a backlog of 9, totaling $280,000.

The research fellowship program in water supply and pollution control is basically designed to train individual scientists and engineers for research careers. The fiscal year 1963 budget of $300,000 will permit supporting 48 fellows—25 continuing and 25 new ones, with a backlog of 5, totaling $30,000.

ENVIRONMENTAL HEALTH SCIENCES

The environmental health sciences training grant program is intended to improve the quality and quantity of research and teaching personnel. The objectives of the program are (1) to enhance the potential of the training institutions in developing graduate programs in the environmental health sciences and (2) to encourage and aid the flow of high-quality students through these programs, particularly at the predoctoral and postdoctoral levels.

The complex nature of environmental health problems makes an interdisciplinary approach to training fundamental. The research training grant program provides support to institutions for developing graduate programs and subsistence stipends to trainees. The institution is free to propose programs of any nature which best reflect particular research training needs and provide the best grouping of the institutions' facilities and abilities to satisfy these needs.

At present, grants are being made to 19 institutions covering the following areas: Environmental microbiology, biological ecology, industrial toxicology, instrumentation development, mathematics and systems analysis, epidemiology, and chemistry. These are interdisciplinary projects in environmental health sciences which are beyond the scope of existing categorical training grant programs of the Public Health Service. These projects include the support of 94 students.

A modest beginning was made in the support of graduate training programs during fiscal years 1961 and 1962 when 10 grants were made, totaling $523,187. From then through the November 1962 approvals, 34 additional grants were made, bringing the total to $1,122,000. At the next review committee meeting this fiscal year, 13 new applications totaling $765,613 will be considered.

SUMMARY

Among agencies of the Federal Government the Public Health Service is unique in the number and scope of its responsibilities in environmental health. While activities relating to this field are carried on in all three of its operating

bureaus, the principal programs are presently in the Bureau of State Services. We now face a number of problems in the administration of these, particularly in regard to interagency and internal coordination, staffing, and laboratory and other facilities. Looking to the future, social and economic forces will increase environmental health problems. One can predict major growth in State and local government expenditures and activities, and by industry for facility construction, operation, and for other controls.

The need for a high-level organizational unit to carry out the environmental health mission of the Public Health Service is apparent. This need has been the subject of congressional interest, and has been studied intensively by advisers to the Surgeon General, as well as Service personnel. The most recent analysis of the problems, and of Federal programs required to meet its challenge, was completed in November 1961. This study was carried out by a committee of individuals skilled in environmental sciences, with Dr. Paul Gross, immediate past president of the American Association for the Advancement of Science, as its chairman. This group reviewed ongoing and proposed programs of the Service, developed long-range objectives for the environmental health programs, and gave special attention to manpower needs, the role of intramural and extramural research efforts, and the relationship of current and proposed Service programs to those of other agencies. Their conclusions and recommendations are as follows:

CONCLUSIONS AND RECOMMENDATIONS

The committee has reviewed the problems which face this Nation in the field of environmental health, particularly as they relate to the mission of the Public Health Service. The Service has established programs dealing with certain aspects of environmental health. However, the growth of our technology and the urbanization of American society have proceeded at a pace with which the Service's current programs are not prepared to cope. From its total evaluation of the problem, the committee concludes—

> That a national need exists for establishment and maintenance of a vigorous and integrated effort to maintain controls over the human environment compatible with projections of change in both population and the environment itself.
>
> That the current "categorical" approaches represented by Public Health Service divisional programs are incapable of providing either (*a*) the necessary cognizance of combined multiple effects of environmental impacts or (*b*) the depth of effort required by individual divisional programs.
>
> That accommodation to the national needs in environmental health will require the establishment of a strong focal center adequately staffed and equipped to prosecute an effective and integrated program within the Public Health Service and to manage and coordinate a strong extramural research, training, and technical support program utilizing the available institutional resources of the Nation.
>
> That an adequate leigslative basis for a sufficient national program in environmental health does not exist at present.

One of the factors missing in the current efforts of the Service is a place at which primary responsibility for the control of enviromnental hazards comes to a focus. The committee believes that immediate action should be taken to establish a center where the operational, research, and training programs of the Service in environmental health can be brought together. This is not to say that all of these functions of the Service should be centralized. On the contrary, many must remain close to the place where environmental hazards exist. However, the complexity of the problem requires that the Service's programs be designed with a total perspective toward the environmental health needs of the Nation. This perspective can best be gained by a concentration of primary effort at a center.

Therefore, the committee makes the recommendations given in the following paragraphs:

1. Public Health Service responsibility in environmental health

(*a*) A major national effort, both governmental and nongovernmental, must be started if the environmental health problems resulting from the rapid growth of our highly technological civilization are to be adequately understood and if measures for their control and ultimate prevention are to be developed.

(*b*) It is essential that the Federal Government assume leadership in the research and development effort required to supply knowledge and techniques

to the discrete State and local agencies of all types engaged in prevention and control activities for alleviation of threats to health from the environment.

(*c*) The focus of this national effort should be centered in the U.S. Public Health Service.

(*d*) The leadership of the Public Health Service in the prosecution of a national environmental health program should utilize to the fullest possible extent existing university, industrial, governmental, and other research and technological capabilities through grants and contracts for research, demonstrations, and educational and training facilities. Extramural extensions of the Federal activity should comprise a major fraction of the total annual effort.

2. Manpower needs

(*a*) In undertaking a national program in environmental health, high priority should be given to the early initiation of adequate training programs for a wide range of personnel in the physical, biological, and social sciences. These efforts should include the strengthening of the divisional training programs, the creation of a new program of institutional grants for comprehensive environmental health training, and the continued support of the Service's short-term, internal programs. Funds in excess of $25 million are urgently needed to place these programs in full operation. Training effort of this magnitude will not create an imbalance with other scientific needs of the United States.

(*b*) Strong efforts are needed to improve the status and income levels of environmental health scientists to permit Federal, State, and local health agencies to recruit needed personnel.

3. Need for a National Environmental Health Center

To implement effectively the development of a focal point within the U.S. Public Health Service for an enhanced and major national effort in environmental health, the committee recommends the establishment of a Center for Environmental Health, which should include the following elements:

(*a*) The headquarters activities of the present operational programs, including their administration, fundamental and applied research, and the national pool of resource personnel who supply information and assistance relating to control activities to the dispersed regional laboratories and instrumentalities operating wherever preventive and control measures are required.

(*b*) The administrative headquarters of a unified environmental health grants program in support of fellowships, university training programs, university-related research projects, and demonstration grants to properly constituted agencies.

(*c*) Appropriate facilities for the conduct of special training programs.

(*d*) A new "Office of Environmental Health Sciences," independent of the divisional structure and with separate budgetary provision, consisting of scientific groups reporting to the scientist who is Director of the Office of Environmental Health Sciences. These groups, which would include biological, physical, and social scientists as well as mathematicians, would study basic problems in environmental health, undertake research on problems of common interest to the several divisions where desirable, provide central services in mathematics, statistics, data processing, information storage and retrieval, instrumentation and analytical laboratory procedures, etc., and provide advice and consultation to the Bureau of Environmental Health with respect to the overall direction of research. Beyond these functions, these groups would be specifically charged with the continuing responsibility for an overall purview of the entire field of environmental health.

4. Location of the Environmental Health Center

The committee recommends that the Environmental Health Center, including the Office of Environmental Health Sciences, be located in the Washington area.

5. Programs in environmental health

(*a*) The Bureau of State Services (Environmental Health) is presently organized into five working divisions, a structure which evolved as needs were recognized. It is recommended that, as soon as possible, each of the operating programs be strengthened materially with respect to staff and facilities, so as to accomplish their specific missions more effectively.

(*b*) In view of the growing environmental health hazards resulting from rapidly changing technology and increasing population the country over, the committee recommends the continuing development of regional facilities, sup-

plementary to the Center, with adequate staff and facilities to conduct applications research, training and control activities appropriate to the regions involved.

(c) The committee recommends that as the Public Health Service moves toward the broader and more comprehensive effort here proposed, every effort be made to conserve the real strengths of the present program during the transition period and that intensive study be given to an optimal organization pattern for environmental health activities within the U.S. Public Health Service.

6. Relationship of programs of Bureau of Environmental Health to those of other Federal agencies

The broad scope of the problem of environmental health relates to virtually all of man's activities. It is to be expected, therefore, that the specific programs of the Bureau of State Services (Environmental Health) will frequently be contiguous with those of other agencies. It is imperative therefore that continuing effective liaison be maintained between the Bureau and other national, State, and local agencies so as to maximize the effectiveness of each while avoiding unnecessary duplication of effort.

7. Need for legislation

(a) The committee recommends that the Public Health Service seek such legislation as may be required to establish a Bureau of Environmental Health with necessary authorization to conduct research, training and technical support activities, and to administer a broad program of extramural training, research, demonstration, and institutional support grants and contracts. Such authorization should be in addition to existing legislation governing operation of the divisional programs. It should be designed to supplement, rather than limit, the existing authority for divisional operation.

(b) The committee recommends that a statutory Advisory Council on Environmental Health be established to advise the Surgeon General on matters concerning policy, operations, research and training in the field of environmental health. This Council would also serve as an advisory group for the Environmental Health Center, including the Office of Environmental Health Sciences.

Dr. TERRY. Mr. Chairman, our next witness is Dr. Shannon, the Director of the National Institutes of Health.

Mr. ROBERTS. You may proceed, Dr. Shannon.

Dr. SHANNON. Mr. Roberts, I have with me Mr. Joseph Murtaugh, who is Chief of our Office of Program Planning. We arranged with your staff for him to accompany me on the possibility that if one may wish to get into certain technical aspects of legislation and the like, he would be available to answer questions.

Mr. ROBERTS. Thank you, sir.

Dr. SHANNON. Mr. Chairman, we have two statements, one of which was submitted for the record and contains a fair amount of detail on some of the program developments that we wish to present to you today.

The other is a rather historical summary of the development of our programs that covers the present program in its support of research, the breadth of expansions of resources, both physical resources and manpower resources, and the production of some measure of institutional stability.

Mr. ROGERS of Florida. Mr. Chairman, do we have copies of the detailed statement?

Dr. SHANNON. I believe so; yes, sir.

Mr. ROGERS of Florida. Is this the detailed statement?

Dr. SHANNON. I am told that you do not have copies, sir. I had been under the impression that these had been given to the committee.

Mr. ROGERS of Florida. Could we get copies? I think it would be helpful to have the detailed statement, too. I would like to look at that, too.

Dr. HUNDLEY. The detailed statements, Mr. Rogers, are just now being cleared by the Department and we will make them available to you as soon as possible.

Mr. ROGERS of Florida. That is fine. Thank you.

(The statement referred to follows:)

SUPPLEMENTARY STATEMENT OF THE DIRECTOR OF THE NATIONAL INSTITUTES OF HEALTH [1]

BACKGROUND INFORMATION RELATING TO THE FEDERAL ROLE IN THE ADVANCEMENT OF THE NATION'S MEDICAL RESEARCH

The National Institutes of Health, a Bureau of the Public Health Service, seeks to promote health and control disease through research. To accomplish this objective, NIH acquires new biomedical information in its own laboratories and through a much larger group of scientists and physicians supported by grants and fellowships. Essential to this objective is a broad-scale scientific approach to the mysteries of health and illness and a marshaling and development of results for attacks on specific disease problems.

Early history of PHS research

The Public Health Service, formerly the Marine Hospital Service, has conducted medical research since 1887, when a laboratory of bacteriology was established at Staten Island, N.Y. There, Dr. Joseph Kinyoun, first director of the Hygienic Laboratory, applied the new concepts and techniques of European bacteriological science to problems of infectious disease. The laboratory was strategically located. Cholera, smallpox, yellow fever, and bubonic plague were constant national hazards; and Dr. Kinyoun was able to demonstrate the cholera organism in immigrants to America. He made several study tours in Europe, and did much to introduce into the United States the new science developed by Pasteur, Koch, Ehrlich, Roux, Van Behring, Wasserman, and Metchnikoff.

Thus, at the turn of the century, the Public Health Service, through the Hygienic Laboratory, was a major force in the Nation's scientific attack upon communicable disease. The Reorganization Act of 1902 (July 1) (Public Law 57-236) authorized the Public Health and Marine Hospital Service to strengthen and expand its bacteriological studies, and established an advisory board of experts (today's National Advisory Health Council). The Biologics Control Act (Public Law 57-244), passed the same day, gave the Hygienic Laboratory authority to control the purity, safety, and potency of commercial biologic products, a function now performed by NIH's Division of Biologics Standards. During this period notable advances were made in the production and application of diphtheria antitoxin and smallpox vaccine.

These early origins of the research function of PHS were part of a broader science. By the first decade of the 20th century, medical research support in this country had assumed its characteristic pattern of diversity of sources. Drug houses had undertaken chemical investigations as early as the 1860's when A. C. Abbott, of Chicago, first isolated pure alkaloids on a commercial scale. Private organized health research began with the founding of the Johns Hopkins Medical School in 1893 and expanded through private endowment. The Rockefeller Institute for Medical Research, McCormick Institute for Infectious Diseases, and Carnegie Institution of Washington were among the first large private contributors. In 1904 the voluntary health agency, another vehicle for private giving for health purposes, had its origin in the National Tuberculosis Association. Today nearly every major health problem is represented by a private national agency which raises funds for services and research.

Medical research by the Federal Government can be traced back to the Civil War. Expansion of the Army Medical Department established the nucleus of the Army Medical Museum and Library. When asked to list some of the great American contributions to medical science, William H. Welch (1850-1934), a leader in the development of medical research in the Nation's schools, named these: anesthesia, discovery of insect transmission of disease, development of the modern public health laboratory, and the Army Medical Library and its Index

[1] See also committee print containing background statement on Public Health Service.

Catalog. In 1956 this library was reestablished by act of Congress (Public Law 84-941) as the National Library of Medicine, within the Public Health Service.

Other early landmarks in Federal support of medical science include the National Board of Health, set up in 1879 on recommendations of the American Public Health Association and the American Medical Association.[2] Although the National Board lasted only 3 years, it was a prototype of Federal research activity to be undertaken at a more propitious time. It sent scientists to Cuba to study yellow fever, compiled vital statistics, and made research grants.

Even in this brief sketch of the early origins of American medical research, it is important, I believe, to give recognition to an extraordinary man, a giant in his time who was directly involved in each of the events I have mentioned and who, in addition, exerted a profound influence upon the course of the Nation's development in medicine. This man was John Shaw Billings, an officer of the Medical Corps of the Army. It was Dr. Billings who, at the request of the Secretary of the Treasury, made the study that resulted in the reorganization of the Marine Hospital Service in the post-Civil War period and recommended the establishment of the Commissioned Officer Corps for its administration. Dr. Billings was founder and first librarian of the Army Medical Library and initiated its major bibliographic instruments, the Index Catalog and Index Medicus. Dr. Billings was engaged by the trustees of Johns Hopkins University to plan the medical school and hospital of the university, which constituted a landmark concept in medical education. It was he who recruited as the core of the illustrious faculty of that school, Drs. William Welch and William Osler. Dr. Billings served as a member of the National Board of Health during its brief existence, and was largely responsible for the farsighted scientific approach of that experimental venture in a national organization for health.

I think it important to note here that the period at the close of the 19th century and the beginning of the 20th was one in which an impressive record of scientific accomplishment, exemplified by the work of Reed, Gorgas, Kinyoun, and Billings, was achieved under the aegis of the Federal Government. Here began the tradition of excellence which has characterized Federal activity in medical science to this day.

Thus the turn of the century reveals medical science activity in both private and public laboratories, with support from industrial, philanthropic, and governmental sources. Private funds substantially exceeded public. The Rockefeller Institute for Medical Research, originally endowed with $60 million, was spending upward of $200,000 annually by 1920, as compared with $36,000 for research that year by the Public Health Service. It may be noted that the leading causes of death at the turn of the century were pneumonia-influenza and tuberculosis—both communicable diseases and both plainly within the scope of public health authority.

From 1900 until World War I—the "progressive era"—science was increasingly applied to national problems emerging from rapid industrialization. Teddy Roosevelt espoused conservation and health. The food and drug laws were enacted. Specific research authority for the Public Health Service was legislated by the Congress. But the period saw some diminution of research in Federal programs, largely as a result of the rise of foundations and universities with broad research missions. The Rockefeller Foundation contributed generously to the application of earlier Government discoveries in hookworm and yellow fever, while the Carnegie Institution launched collaborative research and project grants.

World War I brought the Federal Government back into science, under the guidance of the National Research Council, which became an important negotiator, if not dispenser, of funds. The Government was active in war-related research, from ordnance to public health, from submarine detection to food production. Then, with the war over, Government expenditures for research and development fell. The Public Health Service retained a Division of Venereal Diseases born of the wartime Chamberlain-Kahn Act (Public Law 65-193); and the Hygienic Laboratory continued its small program of fundamental investigation, gaining greater recognition in 1930 through its designation by act of Congress (Public Law 71-251) as the National Institute of Health. The great depression of the thirties, however, was devastating to private and public research alike, and another decade was to pass before the Public Health Service could undertake major steps in a new direction.

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[2] U.S. Statutes at Large, vol. 20, ch. 202, p. 484.

This was the study of chronic degenerative diseases, spearheaded by the National Cancer Act of 1937 (Public Law 75–244). The Public Health Service (so called since 1912) had early recognized the importance of these diseases, which were now assuming a dominant position in morbidity and mortality. Gains in health since 1900 were predominantly against infectious diseases, many of which take their greatest toll in infancy and youth. As a result, the average lifespan progressively lengthened. More people were reaching maturity and old age, with a resulting increase in disability and death from chronic diseases, such as heart disease, cancer, and strokes.

Between 1937 and the end of World War II, the Public Health Service research programs—other than those directly concerned with disease control—were reestablished at the National Institute of Health, in new laboratories erected on land donated to the Public Health Service at Bethesda, Md. In 1944 through the Public Health Service Act (Public Law 78–410), broad authority was provided for the conduct and support of research and research training. These events, the Cancer Act, the new facilities at Bethesda, and the modification and extension of statutory authority set the stage for the major developments of the postwar period.

The National Cancer Institute served as a prototype for other institutes established to increase fundamental knowledge of the major diseases. It was authorized not only to conduct research, but to make research grants to scientists in non-Federal institutions and to support research training. Cancer research grants were first awarded in 1937, fellowships the following year, and training grants to schools in 1947. The National Heart Institute was created in 1948 (Public Law 80–655) to investigate diseases of the cardiovascular system, by far the leading cause of death at midcentury; and the National Institute of Dental Research was established (Public Law 80–855) to apply to basic medical science to the most prevalent of the chronic disorders. The following year the mental hygiene program of PHS, created by the Mental Health Act of 1946 (Public Law 79–487), was transferred to NIH and expanded to become the National Institute of Mental Health. In 1948 the National Institute of Health, by virtue of the broadened scope of its activities, was renamed the National Institutes of Health (Public Law 80–655).

Another significant event in the development of NIH programs grew out of the transfer of research grants in the medical sciences at the time of the discontinuance of the wartime Office of Scientific Research and Development. These grants became an NIH responsibility, and were extended to provide much-needed support of general biomedical investigations, constituting the origin of a program of major importance in the general medical and related sciences.

Postwar development of NIH

Hiroshima and Nagasaki imprinted indelibly the significance of science on the public mind. The discovery of three groups of drugs—the sulfonamides, the antibiotics, and the antimalarials—also had a far-reaching influence. Increased recognition of the potential of science led to its support at a new order of magnitude. Important consequences were the creation of the Atomic Energy Commission (1946) and the National Science Foundation (1950). It is also significant that private support of medical research continued to rise after World War II, increasing threefold between 1947 and 1957. This is largely attributable to the increase in research opportunity and the mutually stimulating effect of private and Federal effort applied to the urgent problems of chronic disease.

At the midcentury mark, PHS research authority was again increased by the "Omnibus Act" (Public Law 81–692), which extended NIH to encompass most of the major diseases of our time. The National Institute of Arthritis and Metabolic Diseases was formed from a nucleus of earlier laboratories, and the National Institute of Neurological Disease and Blindness was created. In 1953 the Clinical Center, a 516-bed research hospital, was opened at Bethesda headquarters, permitting all the Institutes to expand their study of patients. Two years later a renewed awareness of the problem of virus-induced infectious diseases and the probability of their conquest by vaccines, emphasizing associated regulatory responsibilities, resulted in a regrouping and expansion of activities under the titles National Institute of Allergy and Infectious Diseases and Division of Biologics Standards.

Throughout this period of development, the need to increase medical research resources—facilities and personnel—had become increasingly apparent. By 1955 appropriations for NIH grant and training award programs were twice those for the direct operations. The following year a major new resource program

was instituted by the Health Research Facilities Act (Public Law 84–835), a program of matching grants for research construction (extended by Public Law 84–777, 87–395, and 87–838). Thus, in fiscal 1957, 30 percent of NIH funds were budgeted for research training and construction in schools and other non-Federal institutions. Today the Nation is reaping the rewards of this investment through a larger pool of skilled investigators working in a much-improved environment.

The year 1957 marked a turning point in NIH programs. Three important facts had become manifest. First, that the problems of chronic disease, both in human and economic terms, had reached critical proportions. Second, that ample research opportunity existed for a much more aggressive attack on those problems. And third, that the only adequate source of the funds that would be needed for such an attack was the Federal Government. Accordingly, Congress made appropriations to NIH that were roughly double the previous year's sum. Substantial increases have been made each subsequent year, and the budget for fiscal 1963 totals $931 million. About 75 percent of this is awarded in grants for research projects, training, and construction.

Where does NIH stand at present in relation to other sources of medical research support? NIH conducts or supports 40 percent of the Nation's health and health-related research. Other agencies of the Federal Government account for another 22 percent, and private sources for the remaining 38 percent. Industry is the largest private contributor (25 percent). A considerable increase in private spending has accompanied the growth of Federal research programs in recent years. Total private support has doubled since 1957. Whereas the physical sciences are supported almost exclusively by the Federal Government, the life sciences continue to draw support from multiple sources. And if the Nation's medical research expenditure, roughly $1 billion in 1961, is compared with all research and development, it will be seen to have kept pace, remaining since 1950 at 5 to 8 percent of the total.

The development of NIH in the 1960's has been characterized by two major trends. The first is the extension of support to non-Federal institutions in forms enabling them to develop the research environment. Specifically, they have been able to create special resources such as clinical research centers, to expand career opportunities in research, and to augment their administrative capacity. The second trend consists in an internal reorganization to provide for better management of sizable support programs. This has included the creation of a Division of Research Facilities and Resources (1962), the establishment of two new Institutes—General Medical Sciences and Child Health and Human Development (1963) (Public Law 87–838)—and strengthening of program direction. Under authority of the International Health Research Act of 1960 (Public Law 86–610), international research activities have been concentrated and broadened through the Office of the NIH Director.

The significant accomplishment

It is difficult to assess the accomplishment of a single institution in the field of medical science, particularly when its support and leadership extend to a large portion of the total activity. Even accomplishments in the intramural operation are seldom quite separate from the broader scientific and medical movement. It is possible, however, to assert that NIH contributed in a major way to the attack on broad health problems that marked certain phases of our Nation's history.

Epidemic diseases characterized one such phase. Advances in the prevention and treatment of diphtheria, typhus, and tularemia were among early PHS contributions. The conquest of nutritional deficiency diseases, another important phase of the public health movement in this country, is typified by Joseph Goldberger's discovery of the cause and cure of pellagra (1915–23). The 1930's opened new opportunities through biochemistry, and the diseases resulting from internal chemical disorders—the metabolic diseases—came under attack. Early in the postwar period, biochemical approaches to cancer, heart disease, and mental illness were undertaken by NIH scientists. More recently it has become possible to study diseases at the molecular level, defining aberrations in precise chemical terms. Contributions are being made to the understanding of such fundamental phenomena as allergy, virus-cell interaction, and the genetic control of life processes.

In more specific terms, some pre-World War II achievements of NIH which stand out in historical perspective are as follows:

Explanation of the cause, spread, and prevention of hookworm disease.

Discovery of the cause and transmission of tularemia, and demonstration (postwar) of successful treatment by streptomycin.

The discoveries that pellagra and ariboflavinosis, diseases often confused clinically, respond promptly to small daily doses of B vitamins.

Development of a typhus vaccine.

Development of a vaccine for Rocky Mountain spotted fever.

Establishment of fluoridation effects and water fluoridation levels for preventing dental caries.

Major accomplishments of the World War II period, in which NIH and several other organizations participated, included the clinical evaluation of chemical compounds useful in the suppression of malaria. Chloroquine and other drugs emerged in time to be of great value in the treatment of American soldiers. Malaria is a continuing interest of NIH, and recent new findings will be described in the pages ahead.

Some outstanding accomplishments of the postwar period are as follows:

Treatment of choriocarcinoma, a usually fatal tumor, with the drug methotrexate—resulting in extensive remissions and demonstrating clinically that a solid cancer can be controlled by chemotherapy.

Synthesis of valuable pain-relieving drugs such as phenazocine, which is more effective and less addicting than morphine.

Identification of a virus which induces a wide variety of tumors in different species of animals, and preparation of an effective antiserum which prevents these tumors in hamsters.

Isolation of several viruses which cause leukemia in mice.

Technique for catheterizing the inaccessible left chambers of the heart, as an aid to the diagnosis of congenital heart defects.

Method for rapid laboratory diagnosis of influenza, based on virus-induced clumping and adsorption properties of blood.

Technique for detecting abnormal openings between the left and right chambers of the heart, a common congenital defect, through use of a tracer, the radioactive gas krypton 85.

Rapid colorimetric test for malignant carcinoid, a tumor often characterized by overproduction of a blood-pressure-affecting hormone, serotonin.

Identification of the metabolic defect resulting in galactosemia, a condition in which milk is poisonous, and a simple test for application to infants.

Discovery of the principal enzyme system by which the emergency hormone epinephrine (adrenaline) and its relative, norepinephrine, are inactivated after use in the body.

Clarification of the chemical transmission of inherited characteristics—"cracking of the genetic code."

NIH research highlights of 1962

Accomplishments of NIH scientists and grantees during the past year reveal that the fundamental investigations of the postwar period are now yielding important results in such formerly inaccessible fields as cancer causation and treatment, high blood pressure, mental retardation, inborn errors of metabolism. A selection of outstanding achievements from among the thousands of projects supported can be no more than suggestive. The following brief review, however, will indicate the variety, scope, and depth of present-day research operations, and will illustrate the areas of emerging opportunity that are receiving intensive stimulation and attack.

Two lines of research in cancer have held sufficient promise to warrant the creation of special task forces, which will mobilize resources and stimulate investigative effort. The first of these groups is concerned with leukemia therapy, the second with viruses as possible causes of human cancer.

In recent years the lifespan of patients with acute leukemia has been extended through use of drugs, blood transfusions, and other techniques. One of the more serious problems is bleeding, over which we have gained almost complete control through transfusion of blood platelets. A similar technique developed during the past year makes use of granulocyte transfusion in leukemia cases to combat overwhelming infections with a specific microbe which does not respond to other treatment. In clinical chemotherapy studies, two more drugs were found effective against some types of leukemia. One is vincristine, an extract of the periwinkle plant developed by Eli Lilly & Co., and the other is cyclophosphamide, synthesized in Germany. These drugs expand the arsenal of agents that can be used in combination or in sequence to induce remissions in acute leukemia of childhood.

Promising results were also obtained with the drug Methyl-GAG against acute myelogenous leukemia in adults.[3]

The possibility that viruses may cause human cancer has been recognized since the demonstration of a chicken tumor virus in 1908. One by one virus cancers were discovered in other species—birds, frogs, rodents. But the viruses seemed highly specific for particular species and types of tumor. Then, in 1957, NIH investigators indentified the polyoma virus in mice and extended its cancer-causing ability to a variety of tumors in several species. This greatly stimulated the search for a cancer virus in humans. In a concerted effort to expand this field, both at NIH and through support programs, the Virology Research Resources Branch is working to develop experimental animals, viral diagnostic agents, and other tools. The human cancer virus task force is seeking answers to important research questions. Last year NIH scientists made another major contribution to this inquiry in their isolation of a virus that causes leukemia and red cell proliferation in mice.

Heart research conducted and supported by NIH progressed on two levels—basic studies on the cardiovascular system and its function, and studies on the application of fundamental knowledge to clinical problems. A remarkable finding was reported during the year by grantees at the Southwestern Medical School, University of Texas. When rats were subjected to various diets, hormones, or the drug chlorothiazide throughout pregnancy, their young later developed a form of high blood pressure closely resembling essential hypertension in man. This may contribute to the understanding of prenatal influences in determining patterns of disease.

NIH scientists continued to study a spectrum of blood-pressure-lowering drugs. In previous years NIH reported on a new drug, alpha-methyl DOPA, developed by Merck Sharp & Dohme, which lowers high blood pressure in a significant proportion of patients. Additional experience with this compound indicates that it is useful both in malignant and less rapidly advancing types of hypertension. This valuable drug, already sold commercially in England, was recently placed on the market in this country.

It appears, however, that additional compounds will be needed to control high blood pressure in all patients. There are several biochemical processes concerned with the production or release within the body of chemical compounds, which probably have a great deal to do with the causation of hypertension. Scientists are already working on compounds that inhibit specific enzymes involved in these biochemical syntheses.

One or two results in mental health research will illustrate the impressive progress being made in that field. Grantees at Western Reserve University, reviewing early school records of adult schizophrenics, found that intelligence had declined markedly long before the psychosis was detected. The IQ of children who later become schizophrenic had dropped an average of 10 points between the second and sixth grades. It is hoped that this finding can be used broadly as an aid to detection of incipient mental illness.

In metabolic studies at NIH, a rapid and sensitive method was developed for detecting narcotics and other drugs in the urine. The method employs thin-layer chromatography for rapid identification of various organic compounds, such as morphine and barbiturates. It will undoubtedly facilitate studies now underway in many large cities on recidivism in narcotics addicts.

Basic studies in the genetic control of metabolism, or body chemistry, have been yielding results of clinical significance over the past several years. The molecular diseases—so called when the inborn error of metabolism can be described in definitive chemical terms—include phenylketonuria, or PKU. This is a disease that can lead to mental retardation through the body's inability to utilize phenylalanine, a constituent of protein. While we now know that a diet low in this substance can protect the afflicted child's brain, it has not been clear just how long this exacting diet must be maintained. Last year NIH grantees at the University of Colorado Medical Center found that patients may outgrow their need for the diet by the age of 4.

The detection and dietary treatment of PKU have been developed to the point where control of the disease would seem practical. NIH has launched a 5-year program to demonstrate the detection of PKU and prevention of its effects.

Basic studies by grantees at the University of Maryland Medical School have thrown light on another hereditary disease, cerebromacular degeneration. The

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[3] Methyl-GAG was originally synthesized in 1957 by Frederic A. French at Mount Zion Hospital, San Francisco, Calif.

disease affects the eyes and brain of children at about the age of 6, resulting in blindness, mental retardation, and usually death. Biochemical studies have disclosed that the patient and close relatives have an abnormal kidney function indicating inability to handle certain amino acids. It is basic research of this type that gives the best hope today of progress against the vast problem of mental retardation—a problem of multiple and complex causes, calling for a methodical, diversified, and very fundamental attack.

In discussing metabolic disorders, the field of diabetes comes to mind as one in which several significant findings were made last year. In a long-term study by an NIH grantee of Boston City Hospital, over 20,000 women have been tested for glucose tolerance while under prenatal care. A high incidence of abnormal glucose tolerance was found (confirming earlier studies by other workers). Continued observation of patients with this condition revealed that 28 percent developed diabetes mellitus within 5½ years of delivery. This suggests that pregnancy provides a unique opportunity for the study and possible detection of latent diabetes.

Grantees at the Joslin Clinic in Boston have devised a test for detecting prediabetic individuals before they develop an abnormal glucose tolerance. The test involves photography of conjunctival blood vessels and electron microscopy of tissue from the ear lobe. One objective in these studies is to learn whether diabetes and subsequent complications can be averted through early treatment.

One other result, which seems particularly promising, will illustrate the continued progress being made in the field of infectious disease. Since November 1961 NIH investigators have been testing an experimental Parke-Davis drug, DI-501, against malaria in prison volunteers. A single injection has protected the volunteers for a year against infection from repeated bites by malarial mosquitoes. This is nearly 10 times as long as the protection conferred by conventional agents. If these results are borne out in field trials, we will have a potent new weapon against malaria—at a time when resistance to the known synthetic drugs is becoming a critical problem.

These accomplishments of 1962 are typical of the more dramatic results that NIH and its sponsored laboratories and clinics are producing. It is gratifying that further advances may be expected along the same lines. The 15,000 research projects supported by NIH in more than 1,000 institutions, as well as the studies of 3,000 professional and scientific workers at NIH itself, are prolific sources of new knowledge, and will surely yield a constant flow of findings applicable in medical and public health practice. Moreover, many new research approaches and techniques—biomathematics, physical biology, and bioengineering, to name a few—are extending the capabilities of science at a rapid pace. There can be no doubt that the potential for scientific productivity is higher today than ever before.

This potential rests to a large extent on a framework of sound relationships within the scientific and academic communities. NIH programs and policies, grounded in national law, have progressively forged and reinforced those relationships. The grantmaking system of the Public Health Service, for example, with its utilization of expert advice by non-Federal consultants serving at both the scientific and policy-forming levels, has gained the respect and admiration of the entire scientific world. Efforts are now being made to gird this framework for an extended period of productivity at adequate levels of support.

Factors influencing past development

It may be seen from the foregoing review that the development of Public Health Service research programs has been shaped by the interaction of many trends and influences. The paramount factor has been the health problem itself, with its own modulation from diseases predominantly communicable to those heavily weighted by chronic and degenerative disorders. Although health problems have always plagued and burdened mankind, a systematic attack upon them awaited the advance of civilization, institutions, and science to the necessary level of organization and competence. Thus a second influence—to focus upon the state of the art—is often called research opportunity.

We have seen how the exigency of communicable disease and the state of bacteriological science converged in the latter 19th century to make possible a successful public health movement in this country. Tradition and economic structure dictated that private philanthrophy should be the main source of funds for the essential research behind this effort. The Public Health Service, however, established its own tradition of a parallel, often complementary effort meeting

the highest standards of academic and private operations. Its laboratory and field programs pioneered in the fundamental research through which nutritional-deficiency and epidemic diseases have been virtually eradicated.

The 1930's and 1940's brought revolutionary advances in basic science. Among the most important innovations were the techniques for tracing chemical reactions within tissues. These permitted the precise study of enzymes, which are necessary catalysts for these reactions in all living things, and the tracing of metabolites, or chemical currency of the life processes. The latter work has been greatly furthered by radioactive isotopes, a byproduct of atomic research. These techniques alone, in the hands of competent workers, would have sufficed to advance the life sciences far beyond the most optimistic hopes at the turn of the century. In addition to these techniques, however, many precise instruments and processes, such as the electron microscope and chromatography, have equipped the fundamental investigator with formidable tools for probing the unknown.

These techniques and tools have enabled the various branches of the life sciences to advance their frontiers—anatomy into histology, or the architecture of tissues; physiology into the physicochemical basis of body functions; genetics into the fundamental molecular dynamics of heredity. In addition, it is now possible to relate brain, mind, and behavior; to learn the mechanics of drug action; and to understand the fundamental processes of disease as departures from norms explainable in basic terms. There has been, in general, a broadening in scope and a deepening in penetration of the medical-science attack.

One aspect of this development has been the application of disciplines from other fields of science. Mathematics, electronic data processing physics, engineering, economics, and the behavioral sciences are all being applied fruitfully to problems in the health field.

The progressive broadening of the Federal role in medical research has resulted from several factors. One is a general change in the economic picture which makes it no longer feasible for private philanthropy to bear the major share of the cost. Another is the enlightened aspiration of the Congress to utilize every opportunity to bring the benefits of modern science to the people. Another is the availability of a framework—namely, the advisory structure and administrative capability of NIH—which permits the expansion and application of the Nation's research potential, strong today in academic and other institutions. And still another is the endorsement of public-spirited leaders, Federal and non-Federal alike, who view public support as a necessary complement to private effort in the tremendous task ahead. These are some of the reasons for the growth in Federal support of medical research from $28 to $973 million annually since World War II. And the expansion of non-Federal support, from $60 to $577 million over the same period, is testimony to the viability and cooperative nature of the total enterprise in which NIH so prominently shares.

The change in the Federal role has been more than one of expansion. Through successive acts of Congress, the research programs of the Public Health Service have progressed from limited support of ongoing medical research to purposeful expansion of national research capacity in the health sciences. This has been effected through the training of research workers at all levels of higher education, the construction and improvement of research facilities, general institutional support, the development of certain limited and regional resources, the opening of new fields of investigation, the seizing of research opportunities in foreign countries, and the encouragement of ancillary activities such as conferences and translations of the scientific literature.

Throughout this endeavor to expand research potential, there has been a studied effort to adapt the support to broad needs of investigators, research programs, and institutions. A natural consequence has been an involvement with institutions as such, particularly universities, in a way that places additional responsibilities upon the Service in the administration of its support programs.

Provision for future research

The further advancement of medical research and the biomedical sciences presents several major needs, some of which will require intensive study, program development, and perhaps new legislation. A paramount consideration, already mentioned above, is the need for extension of resources. The Nation's plant for research, teaching, and communication of results in the search for new knowledge of health and disease should be expanded if medical research is to attain a level commensurate with the health problem and research potential. This is not a need that may be viewed apart from the Nation's broader demand for physicians,

scientists, and other professional and technical workers. It must be approached within a broad context of national requirements and priorities, calling for a national policy concerning the health services, medical science, and research and development in general.

Looking ahead to 1970, an estimate of $3 billion for total national expenditures for medical research has been widely accepted. Such an estimate is not a proposed goal or target for medical research, but rather a consensus of projections, by expert groups, taking into account broad scientific, economic, and social factors. The estimate represents apprxoimately a threefold growth in medical research expenditures over the decade of the 1960's. To mount such a program, professional manpower for health and health-related research will have to be doubled. This means an average annual addition of approximately 5,000 scientists to the manpower pool.

Continuing analysis of the Nation's scientific resources by the planning group at NIH has given broad guidelines by which components of this manpower need can be determined. An addition of 45,000 scientific workers to the manpower pool during the present decade (allowing for loss by attrition) is indicated. Of these, approximately 56 percent should be Ph. D.'s and 25 percent M.D.'s. With respect to physicians for clinical investigation, the estimate calls for maintenance of the productivity of existing schools, full activation of schools already established, and completion of schools now firmly planned. The total forecast of M.D.'s and Ph. D.'s assumes deliberate efforts to expand output.

Careful consideration of the requirements for biomedical investigation have indicated that special efforts should be made to develop talent through adaptations of the educational process. It is believed that this would not detract from the capacity of schools and teaching hospitals to turn out physicians for medical practice. Emphasis would be toward shortening the process whereby the student preparing for clinical investigation acquires his medical education, clinical training, and finally his preparation for independent research. The schools that are engaged in experimental programs along these lines, using students with special aptitude and interest in research careers, have begun to report encouraging results.

A need parallel to that of expanding research in the Nation's institutions is to recruit and retain workers of exceptional ability in the direct research programs of the Public Health Service. This need has become critical. As career opportunities in the Nation's institutions are expanded both through NIH support programs and those of other agencies public and private, the difficulty of maintaining excellence in intramural programs increases. The root of the problem is broader than medical science. Demand for talent within the Nation's total manpower market in research, development, and medical practice has resulted in levels of opportunity which the Federal Government cannot match. There is urgent need to redress this differential.

Conclusion

The fundamental research programs of the Public Health Service, centered in the National Institutes of Health at Bethesda, have grown and evolved since 1887 to attack the Nation's most urgent health problems. Principal guidelines have been amendments to the Public Health Service Act, research opportunity, and the needs of physicians, medical schools, and other research institutions. With respect to the broad programs undertaken, the will of the people as known by their representatives in Congress has been the major determinant.

The result is a state of activity in the medical and biological sciences which augurs well for the solution of major health problems. The role of the National Institutes of Health is to sustain the vigor and productivity of this effort, to resolve wisely the problems and issues that have arisen in the conduct of supportive programs, and to secure the benefits of scientific progress for the well-being of people everywhere.

Dr. SHANNON. The statement I have with me, Mr. Roberts, covers the present program, how these functions are served by what programs, how the programs came into being, what is their general legislative background, and what are the unmet problems of the future.

I would be glad to discuss these problems individually or, if you prefer, take a more orderly approach and read a statement, the statement being some 27 pages in length, as you wish, sir.

Mr. ROBERTS. I think, Doctor, I will leave the matter of presentation up to you, however you desire to proceed.

Dr. SHANNON. Mr. Roberts, since it is such an important area, then I would prefer the more orderly presentation that is in the prepared statement.

I welcome this occasion, Mr. Chairman, to review the development of the research role and functions of the Public Health Service as exemplified in the programs of the National Institutes of Health.

The Surgeon General, in his statement yesterday, outlined for the committee the historical origins of the Public Health Service and its major functions, including the Service's research activities.

I have prepared and should like to submit for the record a somewhat fuller statement of this process of growth as it relates to research. This will enable me in the time available today to select out of this complex background the significant factors that have been influential in the evolution of our present-day programs. I should like then to explore briefly the problems of the present scene and what appears to be the prospects for the future.

THE BROAD CHANGES

As a setting for this discussion, it may be well to note for the committee the broad nature of the changes that have taken place in the organization and operational character of the National Institutes of Health and to provide a current view of the diverse activities now comprised within this complex entity.

For the purpose, Mr. Chairman, I think it would be helpful to the committee if I could make use of some charts. I believe they will convey quickly and clearly the points I wish to make.

Mr. Chairman, these charts are included in the prepared statement and perhaps it would be easier, though, if we used the larger charts over there to my right which are simply reproductions of those that are contained within the text.

(The chart referred to follows:)

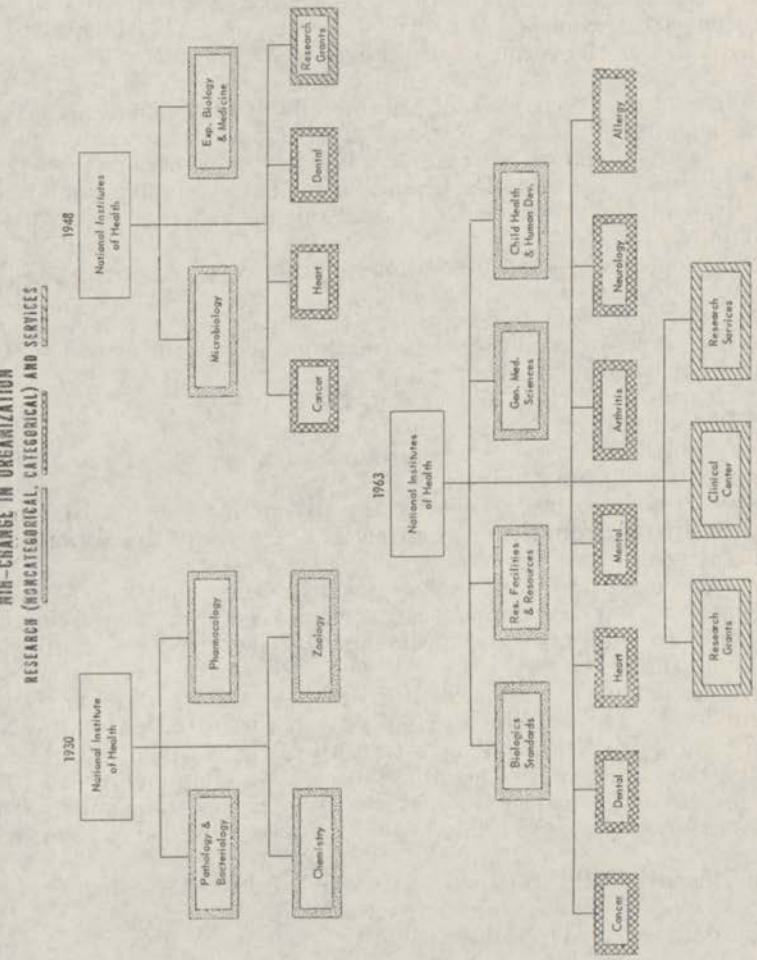
NIH-CHANGE IN ORGANIZATION
RESEARCH (NONCATEGORICAL, CATEGORICAL) AND SERVICES
1930
National Institute of Health
Pathology & Bacteriology
Pharmacology
Chemistry
Zoology
1948
National Institutes of Health
Microbiology
Exp. Biology & Medicine
Cancer
Heart
Dental
Research Grants
1963
National Institutes of Health
Biologics Standards
Res. Facilities & Resources
Gen. Med. Sciences
Child Health & Human Dev.
Cancer
Dental
Heart
Mental Health
Arthritis
Neurology
Allergy
Research Grants
Clinical Center
Research Services

CHART 1

Dr. SHANNON. Organization of the National Institutes of Health When we speak of the National Institutes of Health, we are referring to an organization that is now comprised of nine separate institutes, several divisions, and a large clinical research center as represented in the lower part of chart 1. With the exception of the National Cancer Institute, under the terms of Public Law 75–244, all of these units have come into being since the end of the war. This complex organization is quite in contrast to the simple plan which characterized the initial organization of the National Institutes of Health created in 1930 from divisions of the original Hygienic Laboratory.

Mr. ROGERS of Florida. Dr. Shannon, I believe you gave a reference to the law. I don't think it is in your statement here. At least, it is not in mine.

Dr. SHANNON. We will present to you, Mr. Rogers, more carefully annotated identification of the public law.

The chairman requested Dr. Terry to do this in his statement yesterday, so I will include those annotations in my presentation, but these will be inserted in other copies for you.

Mr. ROGERS of Florida. Thank you.

Dr. SHANNON. But the public law is 75–244.

This contrast between the past and the present reflects certain major shifts program emphasis:

The center of greatest activity in the advancement of health knowledge has shifted from the acute infectious diseases to the chronic and degenerative diseases.

The plan of organization once oriented along lines of scientific disciplines is now based upon categorical institutes, related for the most part to major disease problems and having their origins in specific statutes.

Mr. Chairman, I have a listing of these statutes, which I will append to the record, which extends from the initiation of the National Cancer Institute in 1937 as a result of the National Cancer Act through the final establishment of the so-called Omnibus Act in 1955, that gave to the Surgeon General broad authority to organize institutes insofar as these are related to the solution of broad categories of disease.

Mr. ROBERTS. I think it will be very helpful to us, Doctor.

Dr. SHANNON. There are seven such acts.

(The data referred to follow:)

Legislative authorities for NIH programs

Program	First legislative authorization	Present authorization in PHS Act	Applicable language in PHS Act
Regulation of biological products.	Biologics Control Act, Public Law 57-244, 1902.	Title III, sec. 351	Makes it a crime to ship biologics for sale in interstate commerce without license. Gives to Secretary authority to issue such licenses and to issue standards designed to insure safety, purity and potency of biologics.
Intramural research.	National Cancer Act, Public Law 75-244, 1937.	Title III, sec. 301	Authorizes Surgeon General to conduct research, investigations, experiments, demonstrations, and studies relating to the cause and treatment of disease.
Dissemination of research information.	National Cancer Act, Public Law 75-244, 1937.	Title III, sec. 301(a).	Collect and make available through publications and other appropriate means, information as to, and the practical application of, research and other activities.
Research project grants.	National Cancer Act, Public Law 75-244, 1937.	Title III, sec. 301(d), and various provisions of title IV.	Authorizes Surgeon General to make grants to universities, hospitals, laboratories, and other public or private institutions and to individuals for research projects upon recommendation of the appropriate National Advisory Council. Title IV also contains specific research project grant authority for categorical institutes.
Training grants	National Heart Act, Public Law 80-655, 1948.	Title III, sec. 301(d). Various provisions in title IV (particularly sec. 433).	Authorizes Surgeon General to provide training and instruction and establish and maintain traineeships and fellowships in matters relating to the diagnosis, prevention and treatment of disease and to provide for such training, instruction, traineeships, and fellowships through grants.
Fellowships (these authorities used for predoctoral, postdoctoral, and special fellowships and research career awards).	Public Health Service Act, Public Law 78-410, 1944.	Title III, sec. 301(c), and various provisions of title IV (particularly sec. 433).	Authorizes the Surgeon General to establish and maintain research fellowships with such stipends and allowances as he may deem necessary to procure the assistance of the most brilliant and promising research fellows from the United States and abroad. See also applicable language from sec. 433 under training grants (above).
Health research facilities construction.	Health Research Facilities Construction Act, Public Law 84-835, 1956.	Title VII	Authorizes an annual maximum appropriation of $50 million to make grants up to 50 percent of the necessary cost of construction of health research facilities upon recommendation of the National Advisory Council on Health Research Facilities.
Center programs	PHS Act, Public Law 78-410 sec. 433(a), 1950 (primate centers). Also appropriations hearings and reports, fiscal years 1960 and 1961.	Title III, sec. 301(d); title IV, sec. 433(a) (pertinent provision repealed effective July 1, 1962).	Sec. 433(a), until it was repealed, authorized the Surgeon General to make grants for erection of buildings and acquisition of land. Sec. 301(d) authorizes research project grants and General Counsel opinion says grants for research centers can be considered as project grants.
General research support grants.	Public Law 86-798, 1960.	Title III, sec. 301(d).	Authorizes Surgeon General to make grants for the general support of research and research training not to exceed 15 percent of the appropriated amounts provided for research or research training projects for any fiscal year.
International program.	International Health Research Act, Public Law 86-610, 1960.	Title III, sec. 308	Authorizes the Surgeon General to conduct and support health research and research training and to make use of health research and research training resources in participating foreign countries to advance status of the health sciences in the United States.

Establishment of NIH Institutes

Institute	Legislative authorization	Year established
National Institute of Health	Public Law 71-251, 1930 (changed name of Hygienic Laboratory to National Institute of Health).	1930.
National Cancer Institute	Public Law 75-244, 1937	1937.
National Institute of Mental Health	Public Law 78-410, 1944; Public Law 79-79-487, 1946.	1949.
National Heart Institute	Public Law 80-655, 1948	1948.
National Institute of Dental Research	Public Law 80-755, 1948	Do.
National Institute of Arthritis and Metabolic Diseases; National Institute of Neurological Diseases and Blindness.	Omnibus Medical Research Act, Public Law 81-692, 1950.	1950.
National Institute of Allergy and Infectious Diseases.	Public Law 81-692, 1950 (replaced National Microbiological Institute established in 1948 under 1944 Public Health Service Act).	1955.
National Institute of General Medical Sciences.	Public Law 87-838, 1962 (established as Division under Secretary's authority in 1958).	1962.
ational Institute of Child Health and Human Development.	Public Law 87-838, 1962	Do.

Dr. SHANNON. Emphasis is also being given to the underlying broad fields of science and research resources for the advancement of basic knowledge and research capability essential to further progress in the solution of disease problems.

This last development is exemplified by the establishment under the terms of Public Law 87-838 of the National Institute of General Medical Sciences and the National Institute of Child Health and Human Development, as well as the administrative creation of the Division of Research Facilities and Resources.

A further change from earlier organizational plans is the separate divisional status for the biologic standards function and the grouping together of the supporting program services.

The operational changes: The second chart which I should like to call to your attention shows the shift in the operational character of the activities engaged in by the National Institutes of Health.

(The chart referred to follows:)

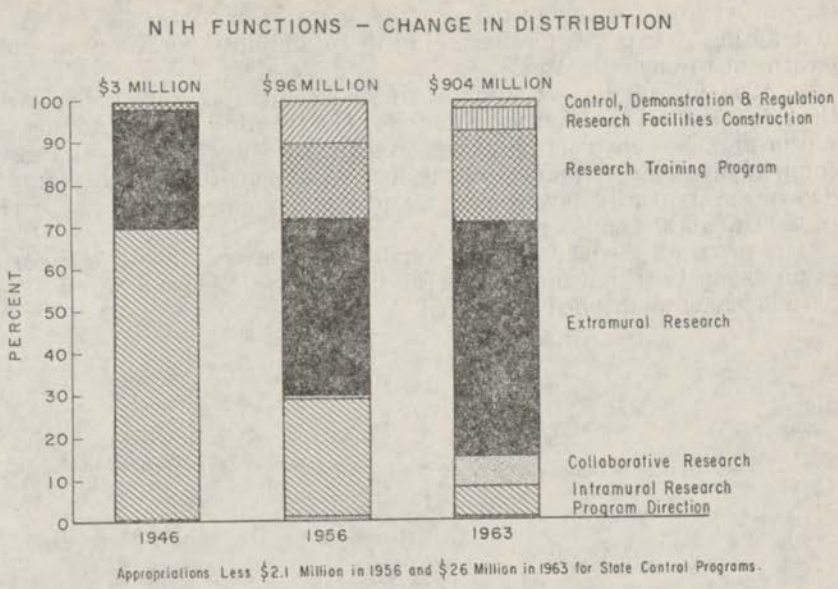

CHART 2

Dr. SHANNON. You will note that in the immediate postwar period the preponderance of National Institutes of Health funds were expended in the direct conduct of research in the National Institutes of Health laboratories at Bethesda.

Although the Public Health Service Act passed in 1944 conferred authority upon the Surgeon General to make grants for research projects, and to support fellowships in research, it was not until the 1950's that this aspect of National Institutes of Health operations assumed considerable magnitude. By 1956, however, funds for research grants constituted 42 percent of total funds appropriated to the National Institutes of Health.

Fellowship and training activities were beginning to emerge as a significant area of effort in response to obvious deficiencies in research manpower.

I might interject that the acts creating the categoric institutes, in recognition of the importance of training manpower, include statu-

tory provisions for the awarding of traineeships and for the making of training grants "in matters relating to diagnosis, prevention, and treatment of such diseases."

In 1963, as you can see, support of research through grants is now the dominant NIH activity. Funds for the training of research manpower and the construction of research facilities is the second largest component. The intramural research operation at Bethesda, although grown substantially larger and more complex, now utilizes only 7 percent of total funds.

The program elements: The third chart shows in detail the porgram elements which now comprise present-day NIH operations.

(The chart mentioned follows:)

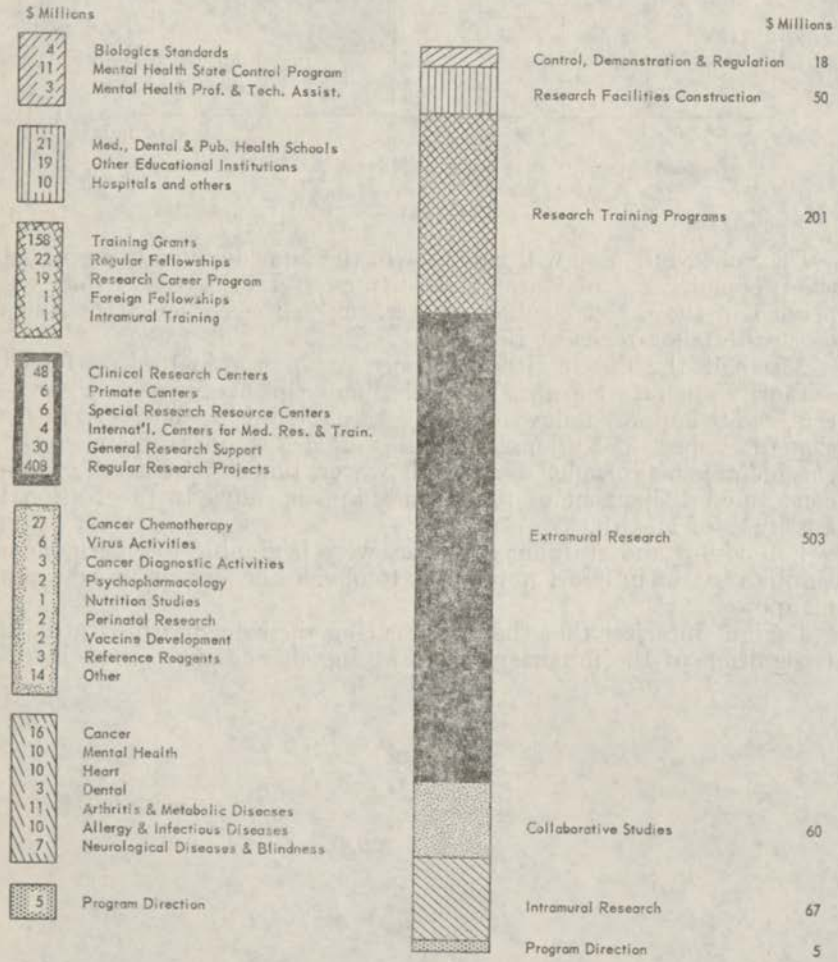

CHART 3

Dr. SHANNON. I think, sir, that you can probably read that chart better from your book copy than from where it stands. This is chart 3. The center bar of this chart is the same as the 1963 bar in chart 2. You will note the diversity of activity within our research and training program. These are shown in specific detail in the bar to the left of the chart. It is of the origin and nature of these various programs that I should like to speak now.

THE EVOLUTION OF PROGRAMS

The evolution and growth of the many activities which now comprise the operations of the National Institutes of Health is the result of a very interesting and, I believe, unique set of circumstances.

These programs have their beginning in the clear national disposition at the end of the war to mount a major attack upon disease and disability. This was reflected by the action of this committee under the leadership of men like Percy Priest and Charles A. Wolverton; the House Appropriation Subcommittee, first under the chairmanship of Frank Keefe of Wisconsin and then John Fogarty; and of Lister Hill and others in the Senate.

The several pieces of legislation bringing into being the categorial institute structure, which I have just mentioned, were forged in this period.

This was also a propitious time scientifically. During the course of the war, scientists had given convincing demonstration of what could be accomplished through concerted scientific attack. Released from their wartime assignments, there were large numbers of able investigators anxious to exploit the technological progress of the war years in the interest of human betterment. A pattern of Federal support for university research in the achievement of public purposes had been established. This was surely a very significant development.

At the same time, it was also clear that meaningful progress in the control of major health problems was impossible without new knowledge concerning the nature of disease and the underlying life processes. Only through research could such new knowledge and thus eventual control be obtained.

No Federal laboratory, however, could hope to encompass within its own walls the diversity of scientific skills or mount the magnitude of effort required if research into major disease problems was to be expanded.

It was in this setting of great opportunity and particular need, coupled with the passage of farsighted legislation which I referred to earlier, that the major expansion of the extramural research programs of the Public Health Service had their immediate beginnings. Thus was initiated what has been an extraordinarily productive joining of the scientific capability of non-Federal institutions with a Federal agency in the pursuit of a public purpose.

The needs to be met and the problems encountered in making most effective use of the further opportunities offered by this relationship have dominated the subsequent development of our programs

PROVIDING THE RESOURCES OF MANPOWER AND FACILITIES

The pursuit of knowledge, both fundamental and applied, which is needed for the ultimate solution of the complex problems of disease

is a long-term process. Consequently, the support of research imposes the obligation to be concerned with future resources as well as with the adequacy of current support for ongoing research activity.

The further development of medical research requires full utilization of the existing body of biomedical scientists, but above all, it requires new men trained in the new knowledge, new fields, and new technology now developing so rapidly. Support of research training, therefore, became an essential concomitant of the Public Health Service research support program. This training has been provided in two ways:

Through research fellowships for predoctoral and postdoctoral training awarded to individuals selected in national competition;

Through training grants to institutions, which in turn select research trainees and provide for their stipends and instructional costs from the grant.

Authority for these programs is contained in the Public Health Service Act, as amended.

You will note from the chart that the combined expenditures for these training programs in fiscal year 1963 totaled $201 million, 22 percent of our total funds. These funds (with the exception of certain programs of the National Institute of Mental Health) are expended for the advanced training of research manpower. This is our investment in the future.

The blossoming of medical research in the early 1950's brought sharply into focus a major inadequacy of our academic institutions—space for research purposes. There had been little expansion of our academic plants since before the war and, in many institutions, since well before the depression period.

The crisis created by the GI training program had been met in a variety of emergency forms, since it involved only simple quantitative enlargement of instructional space. The expansion of research constituted a qualitative challenge or a qualitative change in two ways:

Research was emerging as a major university function—no longer a subordinate professorial activity.

Modern research requires complex and specialized facilities and a variety of technical services.

The space needs of the physical sciences had been partially met through their long involvement in defense-related programs. But research facilities for medical and biological research were particularly inadequate. The prewar research plant in this area had been very limited. The rapid postwar change in the nature and extent of research in these fields created extraordinary new demands. Effective pursuit of promising new fields was being seriously hampered by space limitations. Although the Cancer and Heart Acts, together with the Omnibus Act, Public Law 81-692, provided limited construction authority, its use was confined to these categorical areas only.

This was the setting which generated the passage of the Health Research Facilities Act of 1956 (Public Law 835 of the 84th Congress) establishing a program of matching Federal grants for the construction of health research facilities.

Originally authorized for a period of 3 years, this program has now been extended three times, for a total of 10 years, and its initial authorization of $30 million, increased to $50 million in Federal funds annually.

In my concluding remarks, I will note that, despite the substantial assistance of this program, the need fof qualitative improvement and enlargement of our research plant in the health sciences still constitutes a major need not being met adequately by existing program levels.

THE STRENGTHENING OF INSTITUTIONS

Between 1956 and 1960, the funds expended for the support of research through NIH extramural programs increased by a factor of five. All of these funds were awarded in the form of grants for specific research projects. It was apparent that the concentration of support in the form of research project grants was adversely affecting the ability of universities and other research institutions to exert control over the content, emphasis, and direction of their own research programs in the biomedical sciences and thus to develop in accordance with their own interests and capablities in this area. A means to correct this imbalance was needed to provide research funds which gave greater latitude to the institution in determining their use in the development of their own research and research training programs in the health sciences.

This circumstance gave rise to a legislative proposal authorizing the Surgeon General to make grants for the general support of the health research and research training programs of institutions. This authority, enacted through Public Law 86–798, is the basis of our present general research support grant program.

We are now in the process of studying reports from the schools covering their use of funds under this program during its first year of operation. There has been high praise for this program from the institutions and we have been pleased with its operation thus far.

STABLE CAREERS IN RESEARCH

The further development of a vigorous national research program in the health sciences requires that every effort be made to attract and provide stable support for the best scientific minds and the ablest investigators. The importance of this need is reflected in the wording of section 301(c) of the Public Health Service Act which authorizes the Surgeon General to:

> Establish and maintain research fellowships in the Service with such stipends and allowances, including traveling and subsistence expenses, as he may deem necessary to procure the assistance of the most brilliant and promising research fellows from the United States and abroad.

Because of the short-term nature of support through research project grants, the tie to a specific and finite research activity, and the general unavailability of unrestricted fluid funds, most schools have been reluctant to provide tenure appointments for staff members whose salaries are derived either wholly or in part from research project grants.

The proportion of senior investigators so supported had become sufficiently large, as compared to scientists with stable institutional support, to create an unhealthy degree of instability as a built-in characteristic of the project system. Recruitment of the best minds for the biomedical sciences becomes difficult when the number of stable careers is small in relation to the total program.

To meet this situation, the Public Health Service initiated a special fellowship program to increase the number of stable full-time career opportunities for scientists of superior potential and capability in the health sciences. This program utilizing the classic concept of a fellow as an "incorporated member of a college" has been designated as the Public Health Service research career program. Two categories of awards under this program are available:

Career awards which enable institutions to finance fellowships favorable to the research productivity and development of established investigators of high competence for the duration of their careers. Awards are made on the basis of nationwide competition among candidates whose research in the biomedical sciences has won respect of scientific leaders in their fields.

Development awards to finance additional fellowships to encourage qualified scientists with demonstrated research ability to enter upon and continue in careers in health research and research training.

During fiscal year 1962, a total of 690 awards under this program were made. Of this total, 128 were at the career level and 562 were at the developmental level. Together, these awards involved a total expenditure of $10 million.

This program constitutes a new and, in many respects, a precedent-breaking venture in the provision of support for careers in the biomedical sciences. We believe that it will contribute substantially to the development of a sound medical research structure for the Nation as a whole.

THE DEVELOPMENT OF CLINICAL INVESTIGATION

The rapidly accelerating pace of biomedical research has created new facts and new technologies important to the control of disease and the preservation of health. Much of this information is obtained from the study of model systems, frequently laboratory animals, but its validity in terms of man can be established only through clinical investigation.

Systematic observation of man and his diseases by generations of physicians has, in little more than a single century, defined a host of discrete illnesses subject to precise diagnosis and increasingly effective treatment. The advances in clinical medicine have consistently capitalized on new information provided by scientists who explored nature for its own sake.

Increasing knowledge of the chemical pathways by which the body builds protoplasm and derives energy from food, of the complex interrelations among the various organs and organ systems mediated in the main by chemicals elaborated by specific tissues, has brought to the clinic a capability for even more precise diagnosis and such detailed understanding of disease processes as to provide approaches to therapy on a rational rather than empirical basis.

Exploration of this capability, however, requires highly specialized resources designed specifically to provide the essential laboratory backup to precise and detailed study at the bedside. While most hospitals perform some variety of chemical, hematological, and microbiological tests essential to good patient care, few of them can provide from their own resources the integrated facilities essential to the more sophiscated types of clinical investigation.

To remedy this problem, the National Institutes of Health, early in fiscal year 1960, initiated a series of research grants to bring about the establishment of special, discrete clinical research resources which would foster the collaborative research efforts of clinical investigators working either in a single categorical research area or in general fields. This we have called our Clinical Research Center program.

This program has involved the setting up, within an academic institution or hospital already extensively involved in medical and biological research, a special patient unit for research purposes.

These grants provide for the support of a stable and highly trained staff for such a unit and the supporting laboratory and ancillary technical facilities necessary for the high-quality clinical research investigations.

The Clinical Research Center program for this year involves the expenditure of $32 million in the support of 64 general clinical research units and 63 categorical research units throughout the country. We believe this program will constitute one of the most effective means of bringing directly into the clinical setting the fruits of research findings emerging from laboratory and animal studies, and of providing the facilities and services necessary to the scientific study of disease in that final crucial test vessel, the human being.

The complex and costly type of medical research conducted in the comparatively small, highly specialized clinical research centers is only one phase of clinical investigation. The need for observational types of research on larger numbers of patients not only persists but undoubtedly will increase.

The work accomplished in the centers, however, will define the critical points important to the observational team and will expedite their progress by providing direct methods for discriminating among different diseases with similar symptoms and for evaluating progress or arrest of disease in relation to specific therapy.

THE ENLARGEMENT OF RESEARCH RESOURCES

Research in biology and medicine has changed radically in the postwar years. Its conduct now involves large-scale and specialized animal facilities, the use of sophisticated and complex instrumentation and techniques derived from the physical sciences, the application of advanced mathematical and statistical concepts, and the making of numerous interdependent observations on large or specialized population groups. These developments have generated requirements for a variety of specialized and technical services and resources in support of major research operations.

The use of research grant funds to assist in meeting these needs has been one of the more recent developments in the NIH program. Steps were taken early in fiscal year 1960 to establish centers for research utilizing subhuman primates, accessible to investigators from several institutions. At the present moment, we are supporting seven such primate research facilities.

The increasing quantification of the life sciences has resulted in extensive efforts to adapt the capability of modern electronic data processing equipment and present-day computer technology to analysis and study of such data. Much of this activity is encompassed in what

we now call our special research resource program, through which we hope to provide in some part for the highly specialized research services and facilities essential to persent-day medical research. In the current year, $6 million will be expended for this purpose.

Mr. ROGERS of Florida. Excuse me just one moment, if I may interrupt.

Mr. ROBERTS. The gentleman from Florida.

Mr. ROGERS of Florida. Did you say the $6 million covers your seven primate research facilities, or is that just for the present research resource program?

Dr. SHANNON. That is for the special resources program, exclusive of the primates.

We would be glad to give you a detailed breakdown of those dollars, Mr. Rogers.

Mr. ROGERS of Florida. On the primates?

Dr. SHANNON. Well, we will break the resources dollarwise into its various components for you. I can give them to you now.

Mr. ROGERS of Florida. That is all right.

Dr. SHANNON. The regional primate research center program this year up to the present time amounts to $4,300,000. The remainder of the program amounts to $6 million.

Mr. ROGERS of Florida. Thank you.

Dr. SHANNON. Yes, sir.

EXTENSION INTO THE INTERNATIONAL SCENE

Growth of medical knowledge in the United States up to World War II depended to a large extent on the flow of basic knowledge from Europe. In the postwar period, with the vigorous growth of American science, this situation has been reversed. However, during the period when the United States was coming into a position of world leadership in medical research, the basic interdependence between America and the rest of the scientific world for stimulation of ideas and interchange of skills came to be clearly understood as essential for the rapid progress of the medical sciences, both nationally and internationally.

Explicit legislative recognition of the importance of international medical resaerch activities to the progress of the health sciences in the United States came through the International Health Research Act of 1960, Public Law 86–610, whose terms were developed, for the most part, by this committee.

This act authorized the Surgeon General of the Public Health Service to carry on "cooperative endeavors with other countries in health research and research training." In the same act, Congress recognized a permanent U.S. interest in international cooperation to further the "international status of the health sciences," an interest which

had previously been manifested mainly through the various foreign aid programs. Authority to act in respect to this latter objective, however, was reserved to the President.

The National Institutes of Health have in recent years greatly increased the use of foreign scientific resources to carry forward their medical research objectives. By selecting appropriate projects among the many foreign opportunities offered abroad, the Institutes are supplementing domestic resources both in quantity and scope. Thus, the productivity of our supply of highly trained scientists in certain fields is being reinforced by grants affording partial support for outstanding foreign scientists working on projects of mutual interest and concern.

Use of foreign scientific resources and environments not only adds unusual talent, unique research opportunities, and the stimulation of other ideas, but it affords a greater variety of techniques and approaches to solve problems related to causation, prevention, and treatment of diseases of importance to the American people as well as those of other nations.

In recent years, NIH international activities have grown both in scope and magnitude under the impetus of the International Health Research Act. Grants for the support of research by foreign investigators and institutions, including international scientific organizations, now number around 1,200. These involved an annual expenditure of about $16 million. An additional $4 million will be spent in the form of U.S.-owned local currencies under our Public Law 480 program.

Support is also provided for the training of U.S. scientists abroad, and a limited number of foreign scientists are supported in study in the United States under the NIH international postdoctoral fellowship program. A special aspect of our international activities has been the support of U.S. university-based international centers for medical research and training. These centers provide for collaborative health research and research training relationships between American medical schools and foreign research institutions.

THE CURRENT STATUS OF NIH PROGRAMS

In the foregoing, I have tried to portray to the committee the major program components of the National Institutes of Health and how they have emerged in the context of the needs and forces which shaped them.

As the chart now before you shows (chart 4), these developments took place in a period of rapidly increasing appropriations and represent the adaptation of existing and the forging of new mechanisms of operation within the statutory framework of the Public Health Service Act and its subsequent amendments.

(Chart 4 follows:)

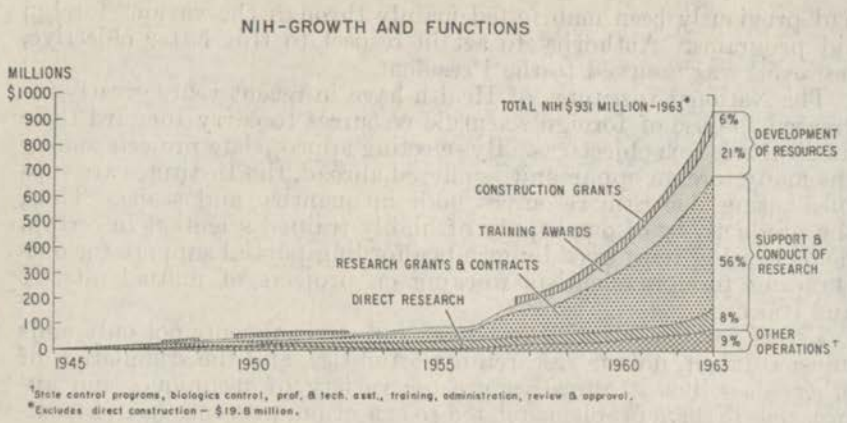

CHART 4

Dr. SHANNON. I think it important for the committee to understand that this process of growth in medical research, although led by Federal programs, has been accompanied by a susbtantial expansion of medical research funds from private sources.

The next chart (5) shows these trends quite clearly. The role of non-Federal funds in the expansion of national medical research activity is quite in contrast to most other fields of national scientific activity. In aerodynamics, the space sciences, and other branches of the physical sciences, Federal funds support most, if not all, the research now underway.

(Chart 5 follows:)

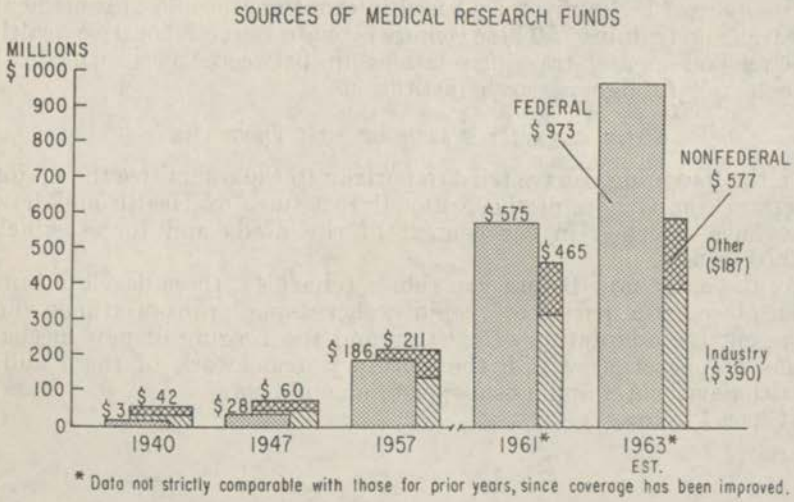

CHART 5

Dr. SHANNON. The relationship of NIH support to other sources of support for medical research is shown in the next chart (6).

(Chart 6 follows:)

NIH FUNDS AS A PROPORTION OF NATION'S MEDICAL RESEARCH SUPPORT

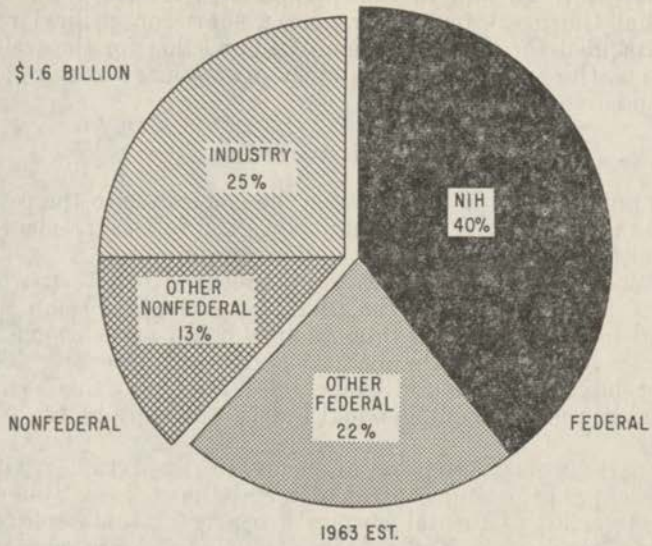

CHART 6

Dr. SHANNON. The magnitude of the national program in medical research and its rate of growth has been the subject of considerable "viewing with alarm." It is frequently overlooked, however, that medical research has shared in the general expansion in national research activity in the postwar period.

In relation to overall research and development expenditures, the proportion going to medical research has changed relatively little over the past decade, as shown by the next chart (7).

(Chart 7 follows:)

MEDICAL RESEARCH AS A PROPORTION OF ALL RESEARCH AND DEVELOPMENT

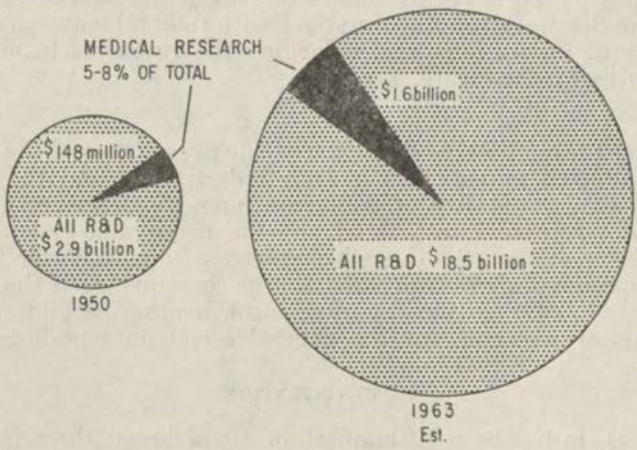

CHART 7

Dr. SHANNON. To add to this perspective, I should like to emphasize that the great preponderance of sums for medical research will be expended for the acquisition of knowledge for the well-being of man—not the application of known principles in major developmental and hardware efforts.

ACCOMPLISHMENTS

At this point, I should like to refer the committee to the review of progress in the health sciences contained in the fuller statement which I am submitting for the record.

In reviewing this record of accomplishment, I believe it would be difficult to dispute that over the past 15 years this Nation through public and private effort has brought into being an enormously productive research effort in the medical and health sciences. This development has had a revolutionary influence upon the health sciences, the practice of medicine, and indeed the state of the Nation's health.

Open-heart surgery, extension of survival rates in cancer, advances in the understanding and control of metabolic disease, reduction in the patient census of mental hospitals, nearly absolute control over many infectious diseases, and a major extension of knowledge into the basic life processes are significant reflections of this accomplishment. There is a promise of even more profound advances in the next decade.

To me—and this is a point I would urge the committee to ponder—the most profoundly important aspect of this postwar development of medical research is the probability that this rate of growth has advanced by at least 10 years the base of our scientific knowledge in the biomedical sciences and in our capability to deal with disease and disability.

We know and can do now what, under the circumstances of growth such as obtained during the early 1950's, would probably not have been feasible until the 1970's. It is this base that augurs further major gains in the next 10-year period.

In addition, this growth has made possible a broad program, encompassing support for fundamental scientific effort relevant to health and disease, strengthening the health research environment and capability of institutions, and enlarging the resources in manpower and facilities for the future.

QUALITY

I believe the qualitative character of our programs and the research being conducted under them is both reflective of and the measure of the general capability of American biomedical science. It is no better and no worse than that. By virtue of our non-Federal review and advisory system, the overall character of our scientific activities and the specific projects supported are the consequence of the best this Nation has to offer in the way of scientific evaluation and advice. I think this argues well for the general scientific soundness of our activities.

ADMINISTRATION

While there has been little question raised about the scientific aspects of our research program some have critized their adminis-

tration. The most extended criticism in this respect has been through the reports of the Intergovernnmental Relations Subcommittee of the House Committee on Government Operations.

The recommendations of Mr. Fountain's subcommittee and the matters into which it has inquired during the course of its prolonged study, now covering the better part of 4 years, have ranged broadly over the administrative aspects of NIH activities and certain of the general problems involved in Government support of research.

We have taken quite seriously the criticisms of this committee, and during the past year and a half we have undertaken some 50 major changes in policy, procedure, fiscal, organizational, and other administrative arrangements relating to the administration of grants. Many of these actions were taken as a result of the inquiries and recommendations of the Fountain committee. However, a substantial number of them have derived from the continuing process of self-scrutiny and self-evaluation to which we have subjected ourselves in the interest of improving our administrative capability. In brief, we have undertaken to—

Provide clear guidelines and limits on the use of grant funds for grantee institutions, investigators, and Public Health Service staff.

Establish a formal structure for the development and issuance of grant policy and procedures.

Strengthen internal grants administration substantially.

Develop more highly trained personnel to administer these programs.

Consult with grantee institutions to assure a full meeting of minds and a clear understanding of the nature of the grant relationship and our respective responsibilities and obligations.

As a consequence of these actions, I believe we are now organized and equipped for a more thorough exploration of research opportunities, for better program balance, and for assuring a proper exercise of responsibility by our grantee institutions with respect to program and administrative effectiveness.

We have submitted to the Appropriations Committee this year a detailed report on our actions in response to the Fountain committee recommendations. I should be glad to make this report available to this committee, if it so wishes.

Mr. ROBERTS. It will appear at this point in the record.

(The report mentioned follows:)

SPECIAL REPORT: ACTIONS TAKEN BY THE PUBLIC HEALTH SERVICE TO STRENGTHEN ITS RESEARCH AND TRAINING GRANT PROGRAMS [1]

I. PROGRAM PERSPECTIVES AND PROBLEMS

Before discussing the actions the Public Health Service has taken to strengthen the administration of its grant programs, it is appropriate that these actions be placed in their historical setting together with the program objectives we seek to achieve.

A. The effect of program and budgetary growth

In the past 10 years, NIH's support of extramural research has multiplied almost twentyfold ($40 million to $715 million); in the past 5 years alone, it has more than quadrupled ($147 million to $715 million).

[1] Prepared January 1963 as background information for the Director of the National Institutes of Health, Public Health Service, U.S. Department of Health, Education, and Welfare, in connection with fiscal year 1964 appropriations hearings.

In this same 10-year span the number of individual research projects supported has increased from approximately 2,000 to 14,000. Also, during these years we have added broad program grants, center grants, special resource grants, general research support grants, and extended our grant support abroad. This growth in both size and complexity has placed NIH in a new position—as a broad supporter of a major segment of science—a role quite different in its relationship both to investigators and institutions than its earlier one as a relatively small contributor to ongoing research.

While this growth and the changing nature of our support role have signified an extremely productive period for medical research, it is impossible to grow at such a rate and to take on new programs without experiencing the administrative difficulties which necessarily accompany such basic changes. Our problem is to adjust to these changes while at the same time maintaining these basic values and concepts which have proved so fruitful in producing scientific results.

B. The problems that face us

1. *Spending and accounting for large dollars.*—Basically we are involved in a broad and complex support program but still in a period of transition from a system that was constructed for administering relatively small outlays. We are attempting to provide funds for thousands of research projects and to account for the use of these funds from a single geographical point. Our problem therefore has been to improve the management of grant funds while protecting the essential strength of the research project system. We have been intensively engaged in trying to make this transition a smooth one.

2. *Maintaining the scientific freedom of the investigator.*—The efficacy of the NIH research support programs is traceable directly to the primacy of the investigator's freedom to conduct his own research. Money alone would not have done the job. Freedom is the other essential ingredient. Freedom is not something valuable or use in itself. It has been proved to be effective in bringing forth research findings. Freedom is defended not on abstract grounds, or as an inherent right of scientists, but as the prime condition for assuring maximum yield on the taxpayer's investment in medical research.

Yet we know this freedom must be maintained through new means of administering and accounting for our research funds.

3. *Strengthening the capacity of the grantee institution to administer funds.*—We believe that one of the keys to solving the problem of maintaining our basic program objectives while at the same time constructing a logical system of fund accountability lies in emphasizing the great responsibility that grantee institutions have for administering grant funds and in assisting them in the effective discharge of this responsibility. Such action must take place within the framework of clear policy guidelines provided to grantee institutions by the Government and assistance to them in the development of effective measures of program and fiscal reviews.

Until recently few academic institutions have had to deal with research involving a great deal of money. Academic traditions do not in general promote businesslike handling of grant affairs. Most fundamental, however, is the fact that few universities and medical schools have had the resources required to administer with full effectiveness a large and growing set of research programs. The recent increase to 20 percent of the amount allowed for support of indirect costs resulting from grants, and the President's proposal to remove this limitation, if approved, will assist in providing the financial resources. The next section outlines those steps we have taken or intend to take to provide the administrative wherewithall.

II. ACTIONS TAKEN OR PLANNED TO IMPROVE THE ADMINISTRATION OF GRANTS

In line with the perspectives discussed in the preceding section, we have attempted to organize our efforts to improve the administration of our grant programs into several major objectives:

(*a*) Take those steps necessary to assure that expenditures from grant funds are made for and essential to the purposes for which the grant was made;

(*b*) Provide a greater awareness on the part of grantee institutions of the responsibilities imposed upon them in the acceptance of grant funds and also make certain that they have adequate means to discharge such obligations;

(*c*) Assure a more complete and orderly establishment and issuance of regulations, policies, and procedures pertaining to grants administration;

(*d*) Strengthen our own internal grants organization, staffing and processes; and

(*e*) Delineate more clearly and improve the executive and advisory functions in the planning and direction of grant programs.

Steps taken or planned under each of these objectives are described below.

A. Take those steps necessary to assure that expenditures from grant funds are made for and essential to the purposes for which the grant was made

In discussing below the policy guides that have been provided to grantee institutions, we describe the development and issuance of a research grants manual. Within that manual, we have included a number of key policies which are directed specifically toward assuring that grant funds are expended only for the purposes for which the grant was made. The policies listed below were of such importance that they were reviewed by the Office of the Secretary prior to issuance. Each of them went into effect in January 1963.

1. *Salaries charged to grants.*—Salaries paid from grants must be consistent with salaries which are paid from institution funds to other staff with similar qualifications, and the salaries charged to grants must reflect the actual percentage of the person's time or effort devoted to grants as computed from quarterly "effort" reports made by the investigators and maintained by the grantee institution. In sum, this policy provides that there shall be no salary differential which results from the fact that a scientist is paid from PHS rather than grantee institution funds.

2. *Equipment.*—Equipment required for the conduct of a Public Health Service supported grant may be purchased only after determination by an appropriate administrative official of the grantee institution that no equivalent equipment is available for the intended use. Grant funds may not be used for the purchase of any single unit or piece of equipment costing in excess of $1,000 which has not received prior PHS approval, and grant funds may not be used to equip or furnish offices, reception rooms, conference rooms, or similar space, unless specifically approved by the PHS.

3. *Travel.*—Grant funds may be used for domestic or international travel by individuals engaged in carrying out the approved project where such travel is essential to the successful prosecution of the research being supported, up to the amount specified in the approved application. In exceptional cases funds may be transferred to the travel category if adequately justified in a request approved by the responsible budget official of the grantee institution and by the Public Health Service.

Special provisions which apply to foreign travel which is not specifically approved as part of the grant award include (*a*) the investigator must submit a request in writing to the PHS prior to the proposed travel and receive written approval in response, (*b*) the request must indicate why the proposed travel is needed for effective performance of the project supported by the grant, and (*c*) the request must be countersigned by the responsible grantee institution official indicating that the travel is in conformity with the institution's own policies on foreign travel.

4. *Charges for alteration and renovations.*—Alterations and renovations may be approved as an appropriate charge to a research grant if they are essential to the conduct of research project or projects; if they meet the requirements set forth in the specific definition of alterations and renovations listed in the manual; and if the aggregate cost to the PHS does not exceed $50,000.

5. *Transfer of funds between categories of expenditure.*—For purposes of evaluating applications for research grants, proposed direct costs must be broken down by category of expense; however, after a grant is awarded to the institution, funds may be rebudgeted, except that funds may not be rebudgeted into the following categories without prior PHS approval: alterations and renovations; patient costs; publication of books, monographs or pamphlets; travel, fixed equipment; items of movable equipment costing more than $1,000; and equipping and furnishing of offices, conference rooms, reception rooms, or similar space.

6. *Changes in project content.*—The investigator may make changes in methodology, approach, or other aspects of the project which in his judgment would expedite achievement of the research objectives of the project; however, no change may be made, without prior approval of the PHS, which would constitute a significant deviation from the nature and purpose of the approved project.

7. *Discontinuation of grants to profitmaking institutions.*—A key policy which has since been adopted on a departmentwide basis is our decision to use the contract mechanism for research performed by profitmaking organizations, to discontinue all current grants to such organizations and determine which of them should be switched to contracts, and to prohibit further grants to these organizations.

B. Provide a greater awareness on the part of grantee institutions of the responsibilities imposed upon them in the acceptance of grant funds and also make certain that they have adequate means to discharge such obligations

There are three basic approaches to focusing on the role grantee institutions should play in managing grant funds if accountability is to be achieved and if freedom of scientific investigation is to be maintained:

1. *Delineation of the nature of the grant relationship.*—It is of key importance that we spell out for both grantee institutions and our own staff the basic elements of the grant relationship. We have attempted to do this quite formally in the preface to our recently issued "Research Grants Manual."

It is stated therein that, under the terms of the grant, the institution and individual concerned enter into a very special relationship with the Public Health Service for the utilization of grant funds. A grant represents a mutual joining of interests on the part of the grantor and the grantee institution in the pursuit of a common objective, in contrast to a contract, wherein the Government lays down the specific terms and conditions and requires a specific end product.

In the grant relationship the grantee assumes with the granting agency the obligation to act in the public interest in achieving the common purpose. This is a relationship of trust which imposes upon the grantee the responsibility:

(*a*) To assure that the grant funds are utilized for the purpose for which they were given.

(*b*) To exercise the same probity and prudence in their expenditure that is extended to the use of the grantee institution's own funds.

It is to these broad obligations that a recipient of a Public Health Service grant is accountable. These terms, however, impose a broad responsibility on the Public Health Service to assess the adequacy of the administrative practices and mechanisms employed by the grantee to assure, in general, the conditions of prudence and, specifically, conformity with the terms of the grant and established policies and regulations.

An examination by Public Health staff of the administrative processes, controls, and mechanisms utilized in the expenditures of grant funds will be part of the continuing overview of Public Health Service grant programs in the further administration of these programs.

As a final point of understanding, it is emphasized that in the absence of express Public Health Service policy or guidelines, the principal investigator or program director designated in a Public Health Service grant must act in conformance with the policy and administrative practices of his institution.

2. *Coordination of our efforts with universities and university associations.*—In 1962, we held a formal series of meetings with the deans of medical colleges from each region of the country to discuss with them and seek their advice on the problems that currently exist in administering grant programs and to inform them of the steps we are taking to solve these problems. A similar series of meetings was held in January 1963, the primary purpose of which was to elicit from grantee institutions comments and suggestions relating to the "Grants Manual."

In September 1962 we entered into a contract with the Association of American Medical Colleges wherein they are independently (1) studying the present administrative policies and practices of medical schools; (2) comparing these policies and practices as between schools and also with administrative policies and practices as they are being applied in nonacademic institutions, private businesses, and certain areas of Government; (3) organizing workshop discussions of representatives of each medical school and invitees from nonacademic institutions, private businesses, and Government to the end that the administrative and fiscal problems peculiar to medical schools can be identified and ways and means found for their solution; and (4) preparing a report that can serve as a guide to those medical school administrators who may wish to use it as a point of reference for improving their administrative and fiscal policies and practices.

On a continuing basis, we are in touch with and seeking counsel from university officials from all our grantee institutions on their problems, their proposed

solutions to these problems, and the steps we can take to assist in solving these problems.

3. *Provide to grantee institutions policies, management assistance, evaluation, and training.*—Greater responsibility for fund accountability can only be placed with grantee institutions if they have available to them a clear set of standards and guides which provide the basic ground rules for spending Government funds. To achieve this goal and also to make more orderly our own internal administration, we have formally codified our policy guidelines in the form of the "Research Grants Manual." As we have previously stated, of particular importance is the preface to that manual which sets forth the basic responsibilities of the grantee institution for administering its grant funds and also reaffirms the basic principles of scientific freedom within which these guides will be administered.

In transmitting this manual to grantee institutions, we have asked them to submit to us a formal report of the steps they are taking and the systems they intend to follow to carry out the guides laid down in the manual.

Two other steps which we are taking which will provide grantee institutions with codified and uniform standards are (*a*) the publication in the Federal Register of the first formal set of regulations on research grants, and (*b*) the development of a grant brochure which will permit grant investigators and grantee institution officials to refer to one source for a description of the content and eligibility requirements for all grant programs.

As noted in the succeeding section, we are also organizing a strengthened grants management component in the PHS which will have as one of its primary functions assistance to grantee institutions in the installation or strengthening of fund control systems and periodic evaluations through site visits of the effectiveness of these systems. We are also studying the feasibility of establishing a series of field installations which can give more effective help on the scene to investigators and grantee institution officials and handle problems cooperatively with them. Finally, we are planning at a later date to extend our internal training programs for grants administrators to selected administrative officials from grantee institutions.

C. Assure a more complete and orderly establishment of regulations, policies and procedures pertaining to grants administration

Not only is it necessary to make certain that grantee institutions and PHS staff have available a clear set of policy guides and regulations, it is also essential that these guides reflect an orderly and carefully considered process of development and clearance. To this end we have taken the following steps:

1. *Establish a top policy review committee.*—An Interbureau Advisory Committee on Extramural Affairs (IACEP) has been established to review all proposed grant policies and to recommend action to be taken by the Surgeon General. No grant policies affecting more than one Institute or Division may be issued without the approval of this Committee. Its membership includes the grants policy officer in the Officer of the Surgeon General as Chairman, one representative from each of the granting agencies of the PHS, and the Chief, Division of Research Grants, NIH, as Executive Secretary.

2. *Establish comparable policy review bodies in the PHS bureau.*—The NIH and the community health and environmental health components of the Bureau of State Services have each established an Executive Committee for Extramural Affairs (ECEA). All grant policies affecting more than one PHS granting agency are reviewed by each ECEA before being submitted to the IACEP for review.

3. *Establish a Policy and Procedures Office.*—There has been established in the Division of Research Grants, NIH, a Policy and Procedures Office which has the responsibility for (1) preparing all draft grant policies for review prior to issuance; (2) determining what reviews are necessary before submittal to ECEA's; (3) preparing material for ECEA and IACEP review; (4) issuing all grant policies after IACEP clearance; (5) maintaining the "Grants Manual"; and (6) providing staff assistance to persons who wish help with the development and drafting of proposed policies.

4. *Codify policies and procedures for development and issuance of grant policy.*—A formal document has been issued setting forth the ground rules for the development and issuance of grant policy and describing the role of the Policy and Procedure Office.

D. Strengthen our own internal grants organization, staffing, and processes

We are mounting a number of major undertakings to accomplish the objective of strengthening the ability of the PHS to administer its greatly enlarged extramural programs. These steps include:

1. *Identify and strengthen the grant policy coordination role of the Office of the Surgeon General.*—On January 2, there was formally established and filled in the Office of the Surgeon General a top-level grants policy officer position to provide a PHS focus for coordination of grants policies. It is expected that staff will be appointed to assist the grants policy officer. The establishment of this central PHS function will permit the Surgeon General's Office to provide full-time policy guidance in extramural affairs and to have a focus for resolving questions of an interbureau nature. It also permits the Division of Research Grants, NIH, to continue as the single grants "manager" for the entire PHS, since its operating function can now be isolated from those policy direction matters which are more properly performed at the OSG level.

2. *Identify and strengthen those grants management functions to be performed (1) on a centralized basis by the Division of Research Grants for the whole PHS, and (2) on a decentralized basis by the PHS Institutes and program divisions.*—Two major studies are nearing completion which recommend the Division of Grants Management functions between a central PHS component (DRG) and the PHS Institutes and program divisions. These studies also describe the organization and staffing measures which need to be taken to strengthen performance of these functions. Completion of these studies will be followed by an organization order to be issued by the Surgeon General directing the Bureaus to put the approved recommendations into effect. Our efforts are directed toward concentrating DRG's grants-management functions on across-the-board grants-management operations, and on assistance to grantee institutions in the development of fund control systems and general oversight of these systems; and placing with Institutes and program divisions the responsibility for administering individual grants and specific programs. These efforts will also lead to the establishment of grants-management components in those Institutes and Divisions which do not have them and to considerable additional top level staffing in DRG and the Institutes and Divisions for both professional and administrative management.

Steps to strengthen our staff have in fact already been taken. During approximately the past 6 months we have, added 59 scientist administrators, 31 administrative persons, and 35 clerical staff to grants administration in our Institutes, program divisions, and DRG. The creation, last July, of a new Division of Research Facilities and Resources was also an important step in increasing our management capabilities in a major segment of our grant programs.

3. *Peform certain grants operations on a dispersed basis.*—A PHS study team (devoting full time to this effort) will begin work to establish a pilot grant field unit in the Boston area. This team is charged with developing both the logistics and the substance of a dispersed grant operation. They will work with grantee institutions to determine what grant matters can most profitably be coordinated from a PHS installation located near a complex of university centers and what the relationships would be between the universities and the field installations. They will also work with all PHS components to determine the proper organizational location and staffing of such a unit and its relationship to the Washington-Bethesda operation. The target date for establishment of a permanent unit is late summer 1963. On the basis of our experience with this unit, we will determine whether to establish similar dispersed grants units in selected geographic areas in which PHS provides major research support.

4. *Strengthen our grant audit operations.*—We are taking steps to improve our grant audit operations as an important instrument through which the Government will make a continuing check on the effectiveness with which grantee institutions are carrying out their fund control responsibilities. We have transferred our Grant Audit Section from our grants review and management organization to the Office of the Director, NIH, in order to assure further independence of grant operations on the part of our auditors. We are also devoting concentrated attention to strengthening both the staffing and procedures of our audit operations. These steps will be greatly aided by the availability for the first time in codified form both of formal regulations and of a grants manual. It is possible that these audit operations will be part of the dispersed grant units discussed above. We are also in process of establishing a comprehensive management audit function in the Office of the Director, NIH, which will have as one of its functions a regular review of our grants operations and particularly our system of auditing grants.

5. *Strengthen our processes of making the initial review of grant applications.*—Procedures have been developed to revise grant application forms to pro-

vide more information about the investigators resources and requirements; provide a checklist of items to be reviewed with respect to grant budgets and scientific information; more detailed documentation of information gained on site visits; improve information provided advisory councils through summaries of Study Section actions; and develop special measures to provide a common source for the compilation of information about grantee institutions and investigators.

6. *Provide more highly trained manpower.*—Special steps have been taken to assure that more highly trained manpower is available to administer grants both within the PHS and in the grantee institutions. We have a number of formal training programs either underway or in final planning stages:

(*a*) A grants associate program has been started to prepare selected scientists (not currently working in the grant field) for positions in the administration of grants. Nine such persons are currently participating in 1 year of diversified professional training and experience in key grant and award programs and attending a series of seminars on public science policy. Upon completion of the program, these grants associates will be available for permanent assignment to a wide choice of program areas as a science administrator. A special grants associates board oversees this program.

(*b*) The Division of Research Grants in January conducted a series of seminars for training of grants management personnel. The first series was attended only by PHS grants management people, but it is planned to extend the training to grants administrators in grantee institutions. These seminars are designed to train grants personnel already on the job intensively in grants concepts, regulations, and policies.

(*c*) A special training program is being planned to provide on-the-job training and career planning for PHS scientists working in the extramural field. This program will be directed toward broadening the acquaintance of our professional scientists with public science policy, granting programs of other agencies, and career possibilities throughout the extramural programs of the PHS.

(*d*) A 2-day orientation seminar was held last October for all new advisory council members and will be held annually from now on in July.

(*e*) Special training and orientation programs have been instituted on a regular basis for all Study Section executive secretaries.

E. Delineate more clearly the executive and advisory functions in the planning and direction of grant programs

In the rapid growth of our highly complex extramural programs, a high degree of dependency has been placed upon the advisory councils and other external consulting and technical groups. Although such groups have served, and will continue to serve, a vital and important role, we must exercise care that this involvement does not obscure the important distinctions that must exist between the executive and advisory process in the direction and administration of Federal programs. To assure that these distinctions are recognized and strengthened, we have taken the following steps:

1. *Establish more formal internal focal points for program planning.*—NIH institute directors and program division chiefs, at the NIH Director's request, submitted formal plans for strengthening their program analysis and planning activities, with particular emphasis on strengthening their staff resources for program planning, on developing the kinds of information required for effective evaluation of program activities, and on providing the analyses and assessments essential to sound program and policy determinations. All institutes and divisions have now appointed a top-level staff member with the basic responsibility for program planning and analysis, and these persons are meeting regularly with the Chief, Office of Program Planning, OD–NIH, to evaluate and assess program plans.

2. *Delineate more clearly the role of advisory councils.*—Discussions are being held with each of our advisory councils and a staff document has been prepared directed toward (1) delineating more clearly the role of advisory councils, and (2) suggesting procedures to enable the councils to complete their work more effectively. Our objective is to emphasize the role of councils in assessing current and future program planning and decreasing the time spent by councils in reviewing individual applications or in commenting on administrative policies and procedures. In line with this objective, we are increasing our own staff preparation of materials for council review and providing the councils with mate-

rial presenting for their consideration specific problems relating to selected grants. We are also developing policies and procedures to enable PHS staff to negotiate precise budget amounts for grants recommended by the councils.

This description of the background and status of our efforts to improve our administration of our research grant and training programs can perhaps be summarized through the following key points:

First: We are involved in a new set of relationships in our grant programs. We are no longer merely one among many who support individual research investigations. Our programs have grown so significant on the national scene—both in dollars and in types of support—that we now provide the major source from which medical research derives.

Second: This fact imposes additional responsibilities both upon us and the recipients of our funds to assure that these resources are used with prudence and with a specific concern that they are spent for the purposes for which the funds were granted.

Third: We need to continue to explore the measures followed to administer these funds by both the Government and grantee institutions to make certain that they are adapted to this changing situation, and that we can account for the use of these funds to the public which has provided them.

Fourth: Perhaps, most important, we must make these administrative adaptations in a manner which preserves the essential need of the investigator to pursue his research in a climate of free investigation and at the same time giving clear assurance of proper stewardship in the advancement of sound programs in support of the Nation's vital research effort.

Mr. ROBERTS. Doctor, I dislike to interrupt your interesting presentation, but it is 3 minutes before 12 o'clock and the committee has a very important bill on the floor of the House and I know that the members of the committee want to be present.

Mr. O'Brien wants to ask one question.

Mr. O'BRIEN. It has to do with this hearing and with what is on the floor of the House at the moment.

It has been suggested in the last 24 hours that research is draining off too many doctors who might otherwise be available for the care of patients. Is that a justified criticism?

Dr. SHANNON. Mr. O'Brien, I heard about this and if you will let me read from some penciled notes here, I would like very much to set the record straight because this is an erroneous reading of the statistics on the matter and stems largely from an unfortunate presentation in one of the public magazines during the very recent past.

I can give you some figures of this sort. The total number of physicians in this Nation are 243,000. Of these, 11,000 are in research and teaching. This amounts to four and a half percent.

There has been a series of studies that addressed itself to this problem, one by Dr. Herman Weiskotten, dean emeritus of the Syracuse University College of Medicine, who made these studies under the auspices, I believe, of the AMA, on a series of medical college graduating classes of 1935, 1940, and 1945, as to their professional career activities. Those in research and teaching from the class of 1935 were 2½ percent of the graduates; from the class of 1940, they were 5 percent of the graduates; and from the class of 1945, they were 6 percent of the graduates.

This did not mean that all these people stayed in research and teaching. Dr. Weiskotten resurveys show that some from each of these classes leave research and teaching to enter practice.

The intent of the entering class of 1961 indicated that 95 percent preferred to go into practice and 5 percent into research and teaching.

If one views this from a somewhat different fashion, not from the intent of students or the number of physicians, but from the total number of professional workers in medical research, our best estimate is that of the 39,700 professional individuals, 11,400 are M.D.'s, D.D.S.'s, D.V.M.'s; 18,000 are Ph. D.'s; and 10,000 have lesser degrees.

Now, the interesting thing, and I want to talk about trends now and I would like to give you a breakdown of the new investigations receiving support for the first time from NIH. Going from 1950 to 1960, in 1950 the M.D.'s constituted 52 percent. These are new ones entering research for the first time.

In 1954, they were 36 percent.

In 1958, they were 37 percent.

In 1960, they were 35 percent.

So that of the people we are supporting, if anything, there is a progressive emphasis on the Ph. D. And a less emphasis on the M.D.'s.

I would like to look at this from another point of view that is equally important. These people are not exclusively in research. These people are in research and education, and, please believe me, gentlemen, were it not for research you would not have adequate faculties in our medical schools today.

I would like to take the figure. We say there are 4,650 physicians acting as principal investigators in research today. That sounds like a large figure. We have about 90 medical schools. This means on the average that there could be as many as 50 M.D.'s associated with each medical school for investigation and research. This will break down to three per department, so that these numbers are not large in proportion to our instructional base. They are essential for our instructional base and they are the things that make our medical education of this country the best in the world.

So, I am very proud to see this. I think it is very important that this not only be maintained, sir, but extended. I was very much distressed to hear of the comments on the floor of the House yesterday. I think these were by poorly informed people and I should like to insert for the record an accurate account of this situation.

Mr. ROBERTS. It will be received.

(The material mentioned follows herewith:)

TABLE 1.—*Total number of physicians and number in research and/or teaching, 1931–60*

	1931	1940	1949	1957	1960
Physicians, total	156,406	175,163	201,277	22,625	243,062
In research and/or teaching	2,900	3,349	3,737	7,168	11,000
Percent of total in research and/or teaching	1.9	1.9	1.9	3.2	4.5

Sources: Data for 1931, 1940, 1949, and 1957, Physicians for a Growing America, Report of the Surgeon General's Consultant Group on Medical Education, U.S. Department of Health, Education, and Welfare, PHS Publication No. 709, October 1959, appendix table 6, p. 83.

Data for 1960, total physicians, Health Manpower Source Book, U.S. Department of Health, Education, and Welfare, PHS Publication No. 263, sec. 14, table 1, p. 3; number in research, Manpower for Medical Research, Requirements and Resources, 1965–70, U.S. Department of Health, Education, and Welfare, PHS Publication No. 1001, table 16, p. 15, and p. 18.

TABLE 2.—*Number of physicians in the United States, and ratio to population of all physicians and of those in research and teaching*

Year	U.S. population (thousands)	Total physicians (number)	Physicians in research and teaching (number)	Total physicians per 100,000 population	Physicians in research and teaching per 100,000 population
1931	124,149	156,406	2,900	126.0	2.3
1940	132,594	175,163	3,349	132.1	2.5
1949	149,767	201,277	3,737	134.4	2.5
1957	171,984	226,625	7,168	131.8	4.2
1960	180,676	243,062	11,000	134.5	6.1

Sources: U.S. population, Statistical Abstract of the United States, 1962, p. 5.

Total physicians and physicians in research and teaching, data for 1931, 1940, 1949, 1957, Physicians for a Growing America, Report of the Surgeon General's Consultant Group on Medical Education, U.S. Department of Health, Education, and Welfare, PHS Publication No. 709, October 1959, appendix table 6, p. 83.

Data for 1960, total physicians, Health Manpower Source Book, U.S. Deaprtment of Health, Education, and Welfare, PHS Publication No. 263, sec. 14, table 1, p. 3; number in research, Manpower for Medical Research, Requirements and Resources, 1965–70, U.S. Department of Health, Education, and Welfare, PHS Publication No. 1001, table 16, p. 15, and p. 18.

TABLE 3.—*Proportion of medical graduating classes in selected years making specific types of career choices in medicine*

Career choice	Year of graduation				
	1950	1958	1959	1960	1961
Percent, total	100	100	100	100	100
Specialty practice	63	75	65	74	[1] 78
General or family practice	33	21	27	21	18
Research and teaching	4	4	8	4	[1] 4

[1] Data for 1961 revised by AAMC (Dr. Lee Powers) subsequent to the release of the Datagrams, as follows: Specialty practice, 76 percent; research and teaching, 6 percent.

Source: Datagrams, Association of American Medical Colleges, vol. 3, No. 9, March 1962. Data on 1950 class collected in 1959 when they were in practice; data on 1958 class collected at time of 1959 AAMC Teaching Institute; data on 1959 class collected at time of graduation; data on 1960 and 1961 classes collected 2 months after graduation, during internship.

TABLE 4.—*Percent distribution of medical college classes of 1935, 1940, and 1945 by type of activity in 2 surveys* [1]

Type of activity	1st survey, medical college class of—			2d survey, medical college class of—		
	1935	1940	1945	1935	1940	1945
Total (number of respondents)	3,186	3,534	4,225	1,239	2,535	3,150
	Percent distribution					
Total	100.0	100.0	100.0	100.0	100.0	100.0
Private practice	82.7	77.3	74.1	85.2	84.3	84.1
Nonprivate practice	16.9	22.0	25.3	13.7	14.8	15.4
Non-Federal hospitals	3.1	3.4	4.1	2.1	2.6	2.6
Teaching and/or research	2.4	5.0	6.1	2.0	3.8	5.1
Public health	2.6	1.7	1.6	3.1	1.8	1.7
Federal Government	5.3	6.5	8.2	4.5	4.3	3.5
Resident, fellow	1.0	3.5	4.1	.1	.5	.8
All other	2.5	1.9	1.2	1.9	1.8	1.7
Not in practice	.4	.7	.6	1.1	.9	.5

[1] 1st survey for class of 1935 was in 1950, 15 years after graduation. 1st survey for class of 1940 was in 1950, 10 years after graduation, interrupted by World War II. 1st survey for class of 1945 was in 1954, 9 years after graduation. 2d survey was taken in 1959.

Source: Weiskotten, Herman G. (and others), "Changes in Professional Careers of Physicians," Journal of Medical Education, vol. 36, No. 11, November 1961, pp. 1565 ff.

TABLE 5.—*Percent of medical college graduates in teaching and/or research, by year of graduation*

Medical college class	1st survey		Resurvey, 1959	
	Number of respondents	Percent in teaching and/or research	Number of respondents	Percent in teaching and/or research
1935 [1]	3,168	2.4	2,239	2.0
1940 [2]	3,534	5.0	2,535	3.8
1945 [3]	4,225	6.1	3,150	5.1
Net increase, 1945 over 1935		3.7		3.1

[1] 1st survey for class of 1935 was in 1950, 15 years after graduation.
[2] 1st survey for class of 1940 was in 1950, 10 years after graduation, interrupted by World War II.
[3] 1st survey for class of 1945 was in 1954, 9 years after graduation.

Source: Weiskotten, Herman G. (and others), "Changes in Professional Careers of Physicians," Journal of Medical Education, vol. 36, No. 11, November 1961, pp. 1565 ff.

TABLE 6.—*Career preference of 10-percent sample of 1st-year medical college class, 1961*

Academic performance index	Total number	Percent indicating career preference [1]			
		Service	Research	Teaching	Administrative and other
Total	1,037	95	42	25	6
High	506	95	45	44	11
Medium	418	94	31	24	5
Low	113	96	23	20	4

[1] Multiple responses, total of detail greater than 100 percent.

Source: Total: "Great Aspirations," vol. 1, Rep. No. 90, National Opinion Research Center, March 1963, table 7.28, p. 517. Distribution by Academic Performance Index, special tabulation prepared by NORC for the National Institutes of Health.

[U.S. Department of Health, Education, and Welfare, PHS publication 1001, pp. 21, 22]

ABSTRACT FROM "MANPOWER FOR MEDICAL RESEARCH, REQUIREMENTS AND RESOURCES, 1965–1970"

Impact upon the total supply of physicians to meet the health needs of the Nation.—It is estimated that approximately 11,000 additional M.D.'s will enter research, 1961–70. What impact is this likely to have upon the total supply of physicians?

Over the long run, the only adequate answer to this question is to expand the total supply to meet the Nation's total health needs for medical care, teaching, and research. The following observations, however, are pertinent to a serious consideration of the shortrun implications.

1. Assuming that 11,000 new M.D.'s enter research, 1961–70, the proportion of M.D.'s in research and teaching to all physicians probably will rise from 4 percent in 1960 to more than 6 percent by 1970.

2. In 1960, nearly four-fifths of the M.D.'s in research were located in universities and research institutes (see table 10). Virtually all the M.D.'s in research in this sector were either full-time members of the clinical faculties of medical schools or staff in independent teaching and research hospitals. Of the remaining one-fifth, all but 5 percent were employed in Federal and State hospitals and health agencies.

3. Most of the M.D.'s engaged in research in medical schools and in non-Government and Government hospitals also teach medical students, instruct interns, and supervise the training of residents and postdoctoral fellows.

4. Most of these M.D.'s also render a wide range of health services in the inpatient and outpatient programs administered through the modern medical centers affiliated with medical schools or operated by Federal and State agencies.

5. In brief, M.D.'s engaged part time in research also perform teaching and service functions. Thus, the entrance into research of an estimated 11,000 M.D.'s 1961–70, does not represent a corresponding diversion from medical care and teaching activities.

Mr. O'BRIEN. Isn't it a fact, Doctor, that their research makes better doctors of the ones who are in the field?

Dr. SHANNON. Absolutely, sir.

Mr. O'BRIEN. Thank you very much.

Mr. ROBERTS. Thank you, Dr. Shannon, for your presentation up to this point and especially for your explanations.

Dr. SHANNON. Mr. Roberts, it is a good break because we start in with some of our problems from here on.

Mr. ROBERTS. Thank you, sir.

I would like to make this announcement for the benefit of the witnesses who are to appear. There is a rule of the House that these statements must be filed 5 days prior to the hearing, and the Chair would like to ask that as much of that rule as is left be complied with. It is very difficult for this committee to review these complex statements. Most of us are laymen, and you speak the language of an art we are not too familiar with. In order that we may do our homework we would like to have these statements as much ahead of time as possible.

The subcommittee will stand in recess until 10 o'clock tomorrow morning.

(Whereupon, at 12:05 p.m., the committee recessed, to reconvene on Thursday, April 25, 1963, at 10 a.m.)

ORGANIZATION OF PUBLIC HEALTH SERVICE

THURSDAY, APRIL 25, 1963

House of Representatives,
Subcommittee on Public Health and Safety
of the Committee on Interstate and Foreign Commerce,
Washington, D.C.

The subcommittee met at 10 a.m., pursuant to recess, in the caucus room, Cannon Building, Hon. Kenneth Roberts (chairman of the subcommittee) presiding.

Mr. Roberts. The subcommittee will please be in order.

I believe, Dr. Shannon, you were over on page 21 of your statement yesterday and, before you resume, I would like to try to give you an idea about the program for today.

As you know, the House goes in session at 11 o'clock, so we will move along until that time and if the subcommittee is able to get unanimous consent to sit this afternoon we will be at the regular committee hearing room of the Public Works Committee. That is tentative, however. It depends on whether or not I am able to get permission for us to resume our hearings. I hope that we can. We have a lot of ground to cover.

Dr. Shannon, you may proceed with your statement.

STATEMENT OF DR. LUTHER L. TERRY, SURGEON GENERAL; ACCOMPANIED BY DR. DAVID PRICE, DEPUTY SURGEON GENERAL; DR. JAMES M. HUNDLEY, ASSISTANT SURGEON GENERAL FOR OPERATIONS; ELTON WOOLPERT, ASSISTANT TO THE SURGEON GENERAL FOR LEGISLATION, PUBLIC HEALTH SERVICE, DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE; DR. JAMES A. SHANNON, ASSISTANT SURGEON GENERAL, NATIONAL INSTITUTES OF HEALTH; AND DR. ROBERT ANDERSON, CHIEF, BUREAU OF STATE SERVICES (ENVIRONMENTAL HEALTH); AND JOSEPH S. MURTAUGH, CHIEF, OFFICE OF PROGRAM PLANNING, NATIONAL INSTITUTES OF HEALTH—Resumed

Dr. Shannon. Mr. Roberts, I would be very glad to.

I should like now to turn my attention to what lies ahead and to some of the problems and issues that confront us in the further development of our programs. I believe the presentation thus far clearly indicates that the research programs of the National Institutes of Health now constitute the Nation's principal instrument for the advancement of the biomedical sciences. As such, they exert a profound influence upon the general direction and character of national development in this area.

In this respect we face a number of problems to which we must address ourselves in order to secure the most effective results from the vigorous national research effort in the medical sciences which has been brought into being. Certain of these problems may involve further legislative resolution. Thus far, the general framework of the Public Health Service Act and the broad authorities for the support of research through grants which it contains have served most effectively as a basis for the broad national developments which I have described.

Looking to the future, however, it is probable that the shape of our activities will shift in a manner which may call for new definitions and more explicit expressions of congressional intent and national policy. I should like to enumerate certain of these problems as they appear at the present time:

Application of research findings: The progress of research has now brought into being certain findings concerning the nature of disease which are appropriate for maximum exploitation in a concerted effort to gain the most from such knowledge. We are engaged in several of these activities at the present moment.

We are undertaking a major effort to pursue the development of vaccines for a variety of virus diseases which may eventually lead to an effective immunological approach to the common cold.

The current state of knowledge in the field of virology, and technical developments in respect to tissue culture and vaccine production, now make such a major effort possible.

In like manner we are pursuing with great concentration the implications of the relationships between viruses and the causation of cancer. Here new findings offer considerable promise that a major inroad will be made upon the heretofore intractable problems of carcinogenesis.

Because of the purposeful nature of such developmental activities and the necessity to pursue such explorations under carefully controlled conditions with specific targets in view, and because existing research capacity may not be adequate to the task, the use of the contract as the instrument of enlarging research activity appears more suitable than the grant mechanism which serves so well for the support of more broadly ranging research activity. The nature of the activities to be supported frequently involves the necessity to include provisions for certain construction necessary to the achievement of the purpose sought through a contract and to be able to provide stable contractual support over several years' period of time. We are now exploring the adequacy of our contracting authority for such purposes and that available to us through delegation from GSA.

Research facilities: As I noted earlier in my comments, the growth of medical research in this country is still confronted by inadequate research facilities. Funds authorized under the existing research facilities construction program have not been adequate to meet current demand. The matching requirements of the present program make the development of a national research plant dependent upon the vagaries of the individual financial circumstances of institutions. There are no means to act in the national interest to assure the availability of research facilities required for the achievement of important national objectives or to satisfy urgent needs in health research, such as is available to NASA, AEC, and NSF in respect to their programs.

Management of scientific and technical information: The diversity and complexity and magnitude of scientific activity in the biomedical sciences have brought increasingly to the fore the complex problems surrounding the management of scientific and technical information and the communication of research findings from the research community to the practicing health community.

This problem is now receiving broad attention within the Department of Health, Education, and Welfare, since it pervades all the major health programs of the Department.

Our concern, of course, is with the information and communications problems within the scientific community which we serve. Actions which may be appropriate to solve these problems may involve the use of devices and the support of activities not clearly encompassed within the present research project authority.

The further problems of support of research through grants: There has been a great deal of discussion and, indeed, controversy generated by the past year's review of the administration of grants in the Public Health Service. Most of this discussion has centered around the changes in policy and procedures governing the use of grant funds which we have recently issued. This statement of policy and procedure referred to as the "Grants Manual" represents, in fact, the first time that we have placed in organized form the specific terms and conditions which surround the support of research in the health sciences through the mechanism of the research project grant.

Two principles underlie the content of this manual:

First, that funds made available through grants for research projects must be expended for and be essential to the purposes for which they were awarded.

Secondly, the acceptance of a grant imposes upon the grantee the obligation to use such funds with all the prudence and forethought brought to the use of the institution's own funds.

We believe as a granting agency that we must set forth a set of uniform specifications as to what constitutes adequate recognition of these principles. The grants manual is the device for this purpose.

However, there is a larger problem involved here. This relates to the magnitude of the funds now being provided by the Federal Government for the support of all areas of research through grants to non-Federal organizations and particularly to universities and institutions of higher learning. In large degree the instrument by means of which such funds are made available is the grant, a mechanism in which the nature of the relationship between the granting agency and the grantee is largely implicit rather than explicit. This relationship imposes grave obligations upon both parties. For the granting agency, there is the paramount requirement that it establish policies and mechanisms which clearly provide for proper accountability in the use of appropriated funds.

The complementary requirement is that the community of scientists in this country, through their institutions, must demonstrate clearly their capability to use large sums of public money in a manner which gives clear evidence of due regard for the purposes for which the funds were made available and the integrity and probity of such use.

Thus the challenge to the scientific and academic community is to so order its activities and the institutional framework within which it works in a manner which can gain the confidence in their integrity

from the public at large. At the same time the scientist must bring to the use of public funds a high sense of responsibility and ethics which will diminish the necessity for greater and more restrictive regulations and procedures.

In the interest of preserving the integrity of our educational institutions and the conditions appropriate to free and productive scientific work, we believe that these are the conditions that must be met.

Our problem, therefore, is to continually seek those administrative arrangements which:

Provide for the proper discharge of these responsibilities by the scientific community.

Permit effective and efficient management of the appropriated funds available to the Public Health Service in the achievement of our program objectives and the discharge of our public stewardship.

A major problem in this area which will require further resolution is the nature of the limits that should be placed upon those professional activities of a scientist which are appropriately chargeable to the research project grant from which he receives salary support.

There is no definition within the law of this matter, and it is handled differently by the various Federal agencies. This constitutes one of the most controversial questions relating to the Federal support of scientific activity.

We are now engaged in a major effort to seek a satisfactory answer to this problem.

Mr. Chairman, if I may be permitted an aside here, on reading this aloud, I don't think it conveys to you the urgency of this problem.

As the Federal Government has broadened its support of science, more and more it must accept responsibility for the month-to-month salary of the scientist engaged in scientific work. Many of these scientists are engaged in full-time activities, but these scientists are in a very complex environment. In institutions they are in an environment that conducts a mixture of instruction, of service, and of research.

The productivity of the scientist depends largely upon his ability to draw from his day-to-day contact with other scientists within the environment, but this drawing from his scientific environment for purposes of furthering his own project cannot be a one-way street but must be an interchange between himself and the other scientists in the community.

Such interchanges are through lectures, through working seminars, through consultation, and through joint working with student groups at both the undergraduate and graduate level.

These are essential parts of the life of a scientist in an institution of higher education. Yet there is no formal mechanism or no formal statement that the full-time job of a scientist that is supported by a grant or by a contract of necessity involves certain obligations that he has to his environment.

I would suspect that the normal discharge of these responsibilities may well take no more than 10 percent of the total amount of the scientist's time or certainly no more than 20 percent.

I would say that to cut a man off through rigid rules or restrictions from this type of interchange is to place in jeopardy the project we support, but there is no place within the framework of rules, regulations, laws, or statutes that really defines the nature of this responsi-

bility and the freedom with which the scientist can operate within the scientific environment.

I would hope that that this committee, if not in law, at least in its report, would take cognizance of the essentials of the scientific life of the individuals supported by some Federal mechanism.

I think every time we turn in the research grant area to problems of handling personnel, we run into this, and this is the most serious thing that must be remedied one way or another if we are really to place this interdependence between the Government, on the one hand, and the institution of higher learning, on the other, in the achievement of a national objective, if we are to place this on a sound basis, because in the final analysis, our total activity depends upon productivity of our scientists and this, in turn, depends upon the circumstances of the environment within which he works, so this really is at the heart of the productivity of the entire system.

Mr. ROBERTS. I think, Dr. Shannon, that you have anticipated one of the questions that I had in mind. I think you remember that you were before the subcommittee some 2 or 3 years ago and at that time there was quite a bit of criticism being leveled at NIH because of the fact that in making these research grants to the scientific community, if I remember correctly, you stated that in some instances no report of the activity was made to NIH as to results obtained or whether no results were obtained.

Maybe it would be better if I asked you what you did say to us at that time.

Dr. SHANNON. Mr. Roberts, I can't recall what I said at that time, but I can recall the system that has been in being for a number of years, and that is a grant is made generally for a number of years, and I think the average grant would go 4 to 5 years.

Knowing that real progress in science and the difficult problems that are undertaken in general require more than the segment of a single year, we require on the part of our scientists annual reports, that are only outline reports in substance, and a full accounting the year that his grant comes up for renewal, where he goes in great detail into the totality of his experience over the entire grant period.

We find that this is the only reasonable way to assess scientific progress and in order to determine whether an activity permits extension into the future, so we have two types of reports at the present time, a summary outline type of report on an annual basis, which accompanies his estimate of expenditures for the coming year, and a definitive report prior to considering whether the grant warrants renewal.

Mr. ROBERTS. In other words, you have corrected that procedure and you do require now that the scientist furnish a preliminary estimate of what his expenditures are going to be?

Dr. SHANNON. Yes, sir.

Mr. ROBERTS. His anticipated budget to cover those expenditures, and then you say an annual report at the end of the year setting out how he has activated these various allocations and what he has done, the guidelines of his budget?

Dr. SHANNON. Yes, sir; but I would emphasize, sir, the annual report is not an attempt in a definitive fashion to discuss progress of that small segment of his activity, but rather in relation to the

primary research program that has been presented, it is more in the nature of a summary progress report which can be gone into if the man responsible for the project within our organization wants it, but in general it is taken as a progress report in summary form and not as a definitive discussion of work accomplished during the 12-month period.

Mr. ROBERTS. You remember that one of the criticisms that was leveled at NIH was in connection with an accident prevention research project, I believe, in Stamford, Conn.

Dr. SHANNON. Yes, sir.

Mr. ROBERTS. We found, if I remember correctly, the grantee was actually using some of the Government funds to purchase office furniture, and equipment, and some other things that certainly did not contribute much to answers in the field of accident prevention.

Would you agree that, had this system that is now in effect been in effect at that time, perhaps that situation would have been prevented?

Dr. SHANNON. I really believe, Mr. Roberts, if the mechanics that we now have in operation had been in operation at that time this ill-considered use of funds would not have taken place. I am quite confident of that, sir.

Mr. ROBERTS. Do you happen to recall any other specific instances of what we would call alleged misuse of funds that have come to your attention?

Dr. SHANNON. Mr. Roberts, our mechanisms are picking these up all the time through normal audits. Our audits are sufficient in depth to make us aware of the problems that grantees are facing up and in general these are poor judgments on the part of the grantee rather than any purposeful intent to evade the regulations.

It is unusual, and I would put it this way: that wherever we have uncovered irregularity of the use of funds and called it to the attention of the institution, their response has been such that we have reason to believe that this misuse was out of ignorance rather than intentional misuse, and, sir, this is not surprising and, of course, one must talk from experience from the bulk of our programs because we are dealing with institutions that, if they do not have a high integrity, then no degree of regulation on our part will ever prevent misuse of Federal funds.

We are dealing with our colleges, our universities, and our large State and private hospitals, so I think that our primary assumption is that we are dealing with people who will utilize public funds with prudence and with probity.

Mr. ROBERTS. Would you say, then, so far as you can recall, that there have been no instances of abuse or wrongdoing so far as grants to universities and colleges are concerned?

Dr. SHANNON. That we are convinced was intentional, that is correct, sir.

Mr. ROBERTS. And where you have had some trouble has been in the case of some private groups?

Dr. SHANNON. Sir, I would say here, too, that when as a result of an audit exception that we have taken we explored why the funds were misused in the past, unfortunately, but I must honestly confess, sir, I think this has been as much our fault as the fault of the grantee, and I think this is something that we are quite frankly grateful to the

Fountain committee for, in calling to our attention that we were remiss in our obligation in not setting forth clearly and explicitly precisely the conditions under which these funds were made available, and I think when we explore into deficiencies on the part of grantees that it is apt to be as much our fault as theirs and in either case the exception that we have taken to expenditures or the apparent misuse of funds has certainly been in every case we can find a misunderstanding rather than a purposeful intent to misuse public funds.

Mr. ROBERTS. Of course, in the instance I referred to, you would not say that that was any fault of not having proper guidelines as far as NIH is concerned?

Dr. SHANNON. Mr. Roberts, in the case of certain expenditures, I think it was our fault.

In the case of others, I think the misinterpretation was without obvious reason. I will put it that way.

We have now completed, as you may know, a complete audit of our own, an extension of that which was performed by the intergovernmental committee auditors. We have taken some broad exceptions to some substantial expenditures and requested return of funds.

As I say, some of those things, exception to which we have had to take, are beyond any doubt the result of a lack of clear enunciation of our own policies. Some, if I may put it this way, can be attributed to broad misinterpretation on the part of the grantee of what our policies were. I would not like to go further than that, sir.

Mr. ROBERTS. To be fair to everyone concerned and to put it in its proper perspective, when was the Stamford, Conn., matter brought to light? When did it first come to the knowledge of the Service?

Dr. SHANNON. I think it first came to the attention of the Fountain committee about 18 to 24 months ago. We were not aware of the extent to which there had been use of funds that we could not approve until a rather complete audit of the total operation of the corporate body was performed by GAO auditors at the request of the Fountain committee.

I might say, sir, and I want to place strictly before the committee an honest expression of opinion, I think that the type of audit that we would have done at that time would not have uncovered some of the deficiencies that were found by GAO. The experience made us appreciate that we were not set up to audit the activities of operations that were created for purposes of profit from research. Because of our appreciation here we have withdrawn as a matter of principle the availability of grants to such operations and deal wholly with them in the contract form where we are quite explicit of precisely what we are purchasing.

I speak of a contract in terms of it being a procurement device, and it was this appreciation that the type of audit that we are prepared to undertake is not suited for doing business within the framework of a grant as we perceive it when we are dealing with a profitmaking concern where the profitmaking is derived from the performance of work related to our programs.

Mr. ROBERTS. Have these procedures been corrected to the extent now that you think you have control of the situation such as the Stamford, Conn., situation?

Dr. SHANNON. Yes, I believe so.

There are only two other items in the statement, Mr. Roberts. I might take note of them. One relates to our problem relative to the maintenance of high standards of scientific personnel, and the other is a brief conclusion. Perhaps these could just be read into the record, if this is your wish, sir, or I could continue at your pleasure.

Mr. ROBERTS. I think, without objection, we will just put them in the record.

(The statements referred to follow:)

PERSONNEL

As the Surgeon General has noted yesterday—and I should like merely to reinforce his observations—our programs are suffering seriously from our inability to compete for the best in scientific, technical, and executive manpower. Unless new provisons are made for salaries and terms of employment in Federal sicentific and technical fields, we face a further and more serious deterioration of the quality of both our scientific leadership and our technical work. This is a deterioration which, if it is allowed to continue, may be impossible to overcome in any short period in the future.

CONCLUSION

I have tried to encompass within the time available to me a review of all the major aspects of NIH activities and the problems and issues which they now present. The scope of these activities is so great that it is impossible to present them adequately to the committee in this brief time. I hope I have made it clear to the committee that this Nation has brought into being a state of activity in the medical and biological sciences directed toward the solution of major disease and health problems which is both a historic and a scientific landmark. Our task in the future is to sustain the vigor and productivity of this effort, to make wise resolution of the problems and issues that the conduct of the supporting programs present, and to secure the benefits of this scientific progress for the well-being of the people of this Nation and, indeed, the world.

Mr. ROBERTS. I want to thank you at this point, Dr. Shannon, for what I think is a very well done statement. I realize a tremendous amount of work has gone into this statement and I am sorry that our time is so short this morning that we are not going to have time for detailed questions, but there are some things I think we ought to try to get to at this time.

If you will return to chart 3 in your statement which I think is a very informative chart, I note that in the left hand column you have broken down the various NIH functions and program components. Is my assumption correct that the Public Health Service Act contains specific authority for these various program components? For example, there is specific authority in the act, is there not, to build clinical research centers which you have listed and for which $48 million have been appropriated?

Mr. SHANNON. Mr. Roberts, I think that the clinical research centers, as such, require some comment.

In the first place, we do not build clinical research centers in this. This is a program that has been developed within facilities that are already created, and the only funds expended for building as such are those funds that are necessary in the way of renovation and repair to change the function of an area.

The program itself should be considered as a project grant in support of research where the support of the clinical activity constitutes a part of the support of a total program.

This caused us considerable concern as to whether we had the authority to do this and we only went forward after fairly thorough consideration here with our General Counsel.

The basic authority for the development of the clinical research center is our ability through our normal grant mechanisms to support a part of a project, the total project of which is considered advisable and supportable by one of our advisory councils, and even as we support the activities within a small project renovation of a laboratory for technical assistance, for supplies and equipment, this is that part of a project that supports the requirements of a number of people that are supported by other individual projects. Therefore, one should view the clinical center rather as an organizational entity rather than a building or than as a structure.

Mr. ROBERTS. I am sorry, Doctor. Would you repeat that last statement you made with reference to this?

Dr. SHANNON. I said that a center should be considered as an organizational entity rather than a structure.

We do not build the structure. Our funds are limited in this regard to those funds that are necessary to modify an existing structure for a different function, and our support of a research center is in terms of the specific requirements of our normal project research grant wherein a part of the total activities of a project is considered supportable when an advisory council has viewed and deemed worthy of support the total activity, but this is a partial support in the way of facilities and resources for a number of discrete clinical activities that as a matter of economy and administrative convenience can be grouped together as a single resource.

Mr. ROBERTS. Do I understand that this would not represent new construction as far as NIH is concerned?

Dr. SHANNON. This is correct, sir.

Mr. ROBERTS. Actually designating it as a clinical research center may simply mean that the Federal Government is entering into a partnership arrangement with an established center?

Dr. SHANNON. Yes, sir. I think I can give you a very good example, sir. Let me take a specific program.

We support the study of development of therapeutic agents within a hospital setting. For that we are quite prepared to expand the professional group that is conducting the study and in that sense we will pay professional salaries. We will also pay technicians and if the patient would not normally be admitted to the hospital for his own benefit but is essential for the study we will pay the hospitalization cost.

In another area, we might be studying the metabolic characteristics of a disease that leads to mental retardation. This requires very precise metabolic studies of the individual that bear no relationship to the care of the individual but which are essential to define the nature of the disease, in which case in a project of that sort we support the investigator, his technical assistants, and also the hospitalization cost of the subject, so that basically, what the center does is to take the hospitalization cost and the care of the patient from a number of these projects that we are quite willing to support and bring them together for economy and more adequate administrative purposes, so that the center concept really takes part of a large number of research grants, and from the standpoint of administrative convenience and efficiency these are viewed as a single entity, but these are supplementary to the other aspects of a number of research projects.

These are facilities that are created in hospitals that are already existing and our construction funds are limited to the modification of the facility for such a purpose.

Mr. ROBERTS. That same situation, then, would be true of private centers?

Dr. SHANNON. No, sir. Those were constructed specifically under the authority that heretofore existed under section 433(a), whereby the Public Health Service is authorized to construct or make grants for construction without matching funds to create facilities that are deemed necessary for purposes of the program. I don't recall the precise citation. I would be very glad to furnish that for the record.

Mr. ROBERTS. Without objection.

(The citation referred to follows:)

42 USC 289c (A)

SEC. 433. (a) Where an institute has been established under 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*),[1] through such institute and in cooperation with the national advisory council established or expanded by reason of the establishment of such institute. In addition, the Surgeon General is authorized to provide training and instruction and establish and maintain traineeships and fellowships, in such institute and elsewhere, in matters relating to the diagnosis, prevention, and treatment of such disease or diseases with such stipends and allowances (including travel and subsistence expenses) for trainees and fellows as he may deem necessary, and, in addition, provide for such training, instruction, and traineeships and for such fellowships through grants to public and other nonprofit institutions. The provisions of this subsection shall also be applicable to any institute established by any other provision of this Act to the extent that such institute does not already have the authority conferred by this subsection.

Dr. SHANNON. This is a highly specific authority in itself and this does relate to wholly new construction from scratch.

Mr. MURTAUGH. Dr. Shannon, I think you may wish to add for the committee's information there that the provision in law under which the primate centers were constructed was repealed by action of this committee in the passage of the Community Services Act some 2 years ago. That authority is no longer available to us for this purpose and the funds that you see here for primate centers now cover only the operating cost of such centers which were constructed under the authority as available to us at an earlier year.

Mr. ROBERTS. But there is no authority at the present time for any further construction?

Mr. MURTAUGH. At the present moment there is no authority of that type available.

Mr. ROBERTS. What is the situation with reference to the special resource centers?

Dr. SHANNON. Those also, sir, are operating funds. They are not construction funds.

Basically, you see, sir, we view the clinical research center as a resource center, but it is so important and has such a distinctive

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[1] The underlined parenthetical phrase was repealed as a consequence of the provisions of sec. 7 of Public Law 87-395, enacted Oct. 5, 1961, effective July 1, 1962, which reads as follows:

"SEC. 7. Effective July 1, 1962, the parenthetical phrase in the first sentence of section 433(a) of such Act which reads '(including grants-in-aid for drawing plans, erection of buildings, and acquisition of land therefor)' is repealed."

character in itself and is sufficiently costly that it is set out for separate consideration.

However, this is typical of the resource center. This does not involve building. This involves the provision of what one might call research services, or research facilities, or research resources to aid the projects.

Mr. ROBERTS. I notice a rather large item entitled "Regular Research Projects," for which $408 million has been appropriated. Is that a single item in the 1963 Appropriation Act or is this broken down into sub items in the appropriation legislation?

Mr. MURTAUGH. The $408 million, if I may answer the question——

Mr. ROBERTS. Surely.

Mr. MURTAUGH (continuing). Is the amount in the several appropriations made to the National Institutes of Health for heart, for cancer, for mental health, and the other programs which have been added together in a single total in this presentation here, but the appropriation is by the categorical area of use.

Dr. SHANNON. Mr. Roberts, I am sorry, but when they put this book together they punched the 408 out of this page and I couldn't find the page.

Mr. Murtaugh's figure is very adequate, but I was lost here.

Mr. ROBERTS. All right, sir.

What is the statutory authority in the Public Health Service Act for general research support as distinguished from general research projects?

Dr. SHANNON. The general research support grant was the subject of special legislation that was presented to this committee approximately 2 years ago. It was acted upon favorably and is contained in Public Law 86–798 authorized in 1960.

The law says: "Be it enacted," et cetera. This gets complicated, sir. May I submit this for the record?

Mr. ROBERTS. Without objection.

(The document referred to follows:)

PUBLIC LAW 86–798

86TH CONGRESS, H.R. 10341

September 15, 1960

AN ACT To amend the Public Health Service Act to authorize grants-in-aid to universities, hospitals, laboratories, and other public or nonprofit institutions to strengthen their programs of research and research training in sciences related to health.

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That section 301(d) of the Public Health Service Act, as amended (42 U.S.C. 241(d)), is amended by adding after the semicolon at the end thereof "and make, upon recommendation of the National Advisory Health Council, grants-in-aid to public or nonprofit universities, hospitals, laboratories, and other institutions for the general support of their research and research training programs: *Provided*, That such uniform percentage, not to exceed 15 per centum, as the Surgeon General may determine, of the amounts provided for grants for research projects for any fiscal year through the appropriations for the National Institutes of Health may be transferred from such appropriations to a separate account to be available for such research and research training program grants-in-aid for such fiscal year;".

Approved September 15, 1960.

Dr. SHANNON. I might say that this was presented to this committee as an essential piece of legislation that resulted from the already

existing very broad support programs contained within our institutions of higher learning, but which consisted of a series of specific projects and programs.

It was felt that our support, due to the project system, was sufficiently broad that it requires a stabilizing element of nonspecific support that would permit the institution to utilize a part of its resources and to mobilize those resources so the institution itself could establish certain of its own end objectives and take advantage of the better knowledge they had of their own circumstances in supporting a part of their own research on the basis of their own decision rather than purely the project system by specific action within our program.

This project now is completing its first year of operation. We are getting the initial reports. We feel from a preliminary survey that this is an extraordinarily productive program, but, sir, we will not be in a position to give you a definitive estimate of its effect, I would guess, short of a period of another 9 months.

The authorization permits us to use up to 15 percent of our total regular grants for such a purpose.

We have chosen to begin this program on a very modest scale. I believe our initial year was considerably less than 5 percent. The second year that we are just going into now amounts to 6 percent, and we would propose to study the effectiveness of the program prior to any determination to increase beyond the current level, much less go to the maximum authorized level.

We feel that this program, which permits the supplementation of the project system through stabilizing scientific career, through the provision on an institutional basis of certain central resources, through the provision of risk capital in the beginnings of new research ventures, is the most important single piece of legislation since the project system itself was established and made available to the Public Health Service for the support of science.

Mr. ROBERTS. In the category of the regular research projects, does that cover projects large and small?

Dr. SHANNON. Yes, sir.

Mr. ROBERTS. Could you give us an example of what you would consider a large project?

Dr. SHANNON. I can give you an example of one that we worked on very extensively because it was the prototype of another and it represents most of the complexities that one gets into.

The first really large research grant that was made available amounted to $500,000 annually with a commitment of our intention to support this for a 5-year period, the money being to support the multiple activities in the field of chemical genetics, conducted in the Department of Biology, California Institute of Technology. I can recall quite definitely the figures that related to that because of the intensity of our exploration.

The Department of Biology of Cal Tech is probably, in the field of genetics, the outstanding scientific area in this field in this country or, in point of fact, in the world.

I can furnish the precise figures for the record, but my recollection, and I am sure the order of magnitude is correct, is the total activity requires from all sources support of approximately $1,800,000 a year. It is a very large operation. Approximately $800,000 of that is de-

rived from Cal Tech's own funds, resources and the like, approximately $500,000 from grants from agencies other than NIH, a large number of them industrial, and approximately $500,000 from the NIH.

Now, the story would be grossly incomplete if one were not to point out that prior to making this grant we had supported that environment through a series of multiple grants that went to some 15 professors already contained within the department.

We felt that here was the oustanding laboratory in the world in the field of chemical genetics that had a purposeful program that could be viewed in the aggregate, that was being very broadly supported in a series of pieces by the National Institutes of Health, and we felt that it would be a much more productive enterprise if we negotiated with the university officials and with the chairman of the department for a single grant that would permit us to look serially on an annual basis at the total operation.

This turns out to be the prototype of many of our large grants that have been developed since that time.

These grants vary in size from, I would say, $50,000, and I think this is one of the larger ones, but a large grant could be $20,000 where $20,000 given to a college of arts and science that did not have a complex scientific environment, but we feel that these grants of the smaller value, regardless of the complexity of the environment, can be handled by our routine study section technique.

The larger grants involving, as they do, issues of policy, issues of program development on the part of the Institute concerned, require a very special type of treatment. These have become very important implements in program development.

Mr. ROBERTS. That commitment on the part of the Federal Government after the 5 years were completed would run into about what? A quarter of a million dollars?

Dr. SHANNON. No, sir. It would run into $2½ million; $500,000 a year.

Mr. ROBERTS. That is, of course, a large amount of money. What would you expect to gain from this research study? I believe you said it was in the field of genetics.

Dr. SHANNON. I don't know how to answer that, sir, in the number of publications or the specifics of the information, but I think I would say what we achieve by such a grant is we stabilize for a 5-year period the productive activities of the most advanced group in chemical genetics in the world and we would expect to get the fruits of their endeavors over the 5-year period.

I think if I tried to be more specific than that, sir, I would be overextending myself.

Mr. ROBERTS. How long has this grant been in effect?

Dr. SHANNON. Approximately 4 years, sir.

Mr. ROBERTS. In other words, you are almost at the end of the 5-year period?

Dr. SHANNON. I wouldn't be surprised if it has been up for renewal and I would be very glad, if you would like, sir, to take this grant as a specific item and give for the purpose of the committee, not necessarily for inclusion in the record—this would be at your service—the complete mechanics of this, how it is assessed, and I think this is a very good prototype.

Mr. ROBERTS. I feel, Dr. Shannon, that, with the Federal Government having put already $2 million into a project of this kind, it is only natural that we should at this period begin to at least anticipate what to your mind would be some results.

Dr. SHANNON. Please believe me, sir, results have been forthcoming but they are not of the nature so that I can be responsive to your question at the present time. We would be glad to define for you progress from the laboratory field by field in the work that has been supported. On the other hand, this is going to be in highly technical terms, publications and professional journals, but it is this information that is used by our scientific advisers that permit them to reach judgments as to whether or not this has been a productive enterprise.

Mr. ROBERTS. In what particular fields will these findings in your opinion be of great value?

Dr. SHANNON. Sir, it would be very difficult for you to mention any field of important chronic diseases that will not profit by a broader understanding of the genetic factors that lead to the acquisition or the inheritance of certain characteristics that relate to susceptibility of disease.

We talk about the tendency of people, or of families, or of individuals to be susceptible to this, that, or the other type of disease. We talk about family traits. In some instances we can develop clear-cut genetic evidence of the transmission of disease by hereditary mechanisms, the most recent of which is mongolism, but you know the story of the hemophilias that have plagued some of the royal kingdoms of Europe, which followed through generations of time.

We know many of the so-called metabolic defects, some of which cause mental retardation, alkaptonuria, agalactosemia, and phenylketonuria, to mention a few.

Mr. ROBERTS. These are some of the facts that this subcommittee wants brought out, Doctor, because when we are charged on the floor of the House with supporting grants to study the love life of a bumblebee, and that sort of business, we would like to have some answers.

That is what I want you to do for the subcommittee. I want you to tell us what some of this money is going for and what are the results; what are we getting for the taxpayers' money, and if I do not have these facts it puts us in a defenseless position.

Dr. SHANNON. We would be glad to take this particular grant and give you an interpretation of the role that these advances play as we can best judge them in the advance of science, but, Mr. Roberts, I think that certain answers I cannot give you.

You must realize, sir, that our support programs can only be characterized by saying that they are all-pervasive, within the biomedical sciences in this country and I would say there is scarcely any major advance that has taken place in the last year or two or that will take place in the future that is not profoundly influenced by some of the work we support, science being interrelated such as it is.

I think the time will never come when a technical type cannot be misunderstood by a person who wishes to misunderstand the type.

Mr. ROBERTS. I agree with that.

Dr. SHANNON. I think it has been our very good fortune in the past 3 or 4 years that some of the titles that have been picked out as being so ridiculous have within the span of my directorship of the NIH

shown to be the most profoundly productive programs that we have supported. This is good fortune, sir, but it just so happens that those that were ridiculed because of their apparent context have turned out to be so highly productive. However, sir, I am not annoyed by criticism of this sort because I think it is inherent, when a technical man tries to give a title to a program, he cannot imply in the title the general area of impact that his research results will have, so the best he can do is to give a title that is descriptive of precisely what he wants to do, and this is what is misunderstood.

Mr. ROBERTS. I would say, Doctor, that I am annoyed quite a bit by some of the charges and that is one of the things that I want us to try to overcome in this hearing. I want us to try to make a showing that we can sustain, because I am sure you know that practically all of the authority that is being exercised through the Institutes comes through this subcommittee and this full committee and we want all of the facts that you can possibly give us.

There was one statement you made that I wanted you to develop somewhat and that is in the field of cancer.

Mr. ROGERS of Florida. Mr. Chairman.

Mr. ROBERTS. Mr. Rogers.

Mr. ROGERS of Florida. Before you get on that, may I just ask a question or two about what you have just covered——

Mr. ROBERTS. Surely; I would be glad to yield.

Mr. ROGERS of Florida (continuing). And as to what I would like to have you be willing to discuss as we go into this very thoroughly. I am very anxious to go into great detail in your clinical centers, your research work, for instance, and I would like to know the number of your clinical research centers, primate centers, specific details, and the personnel involved.

In addition to the amount given for each clinical research center, like you picked out a prototype here, I would like to know what is allocated to the various ones.

In addition to that, I would like to know how much you give in regular fellowships perhaps or training grants for people who may be involved there in addition to the amounts of money covered in your clinical research centers, if that be the case.

Dr. SHANNON. Yes, sir.

Mr. ROGERS of Florida. The number of programs involved.

I would like to know, too, about the building. I understand you cannot go in and build a new research center, as such, but how much is being done and what moneys are being allocated for the actual construction of a portion of your center, whether you call it a revision, or new construction, whatever you call it, the actual construction that is going along.

Also, I would like to know who selects the grants. I believe your Advisory Councils are the ones who actually make your decision on your various grants.

Dr. SHANNON. Yes, sir.

Mr. ROBERTS. How often does this personnel change, how long have the present people on, how it is administered, your study sections, the operation of those.

Also, I would like to know what reports are given back to you, if they are, in a research project that is unsuccessful. Do you get this

report back to show that no one need go into that particular phase if they have covered this ground?

Dr. SHANNON. Mr. Rogers, now you are talking about the general grant program?

Mr. ROGERS of Florida. Yes; I realize I am covering this whole area. These are just some questions I would have, that I would want to go into in great detail, and how you coordinate this information between your various research groups where they know whether a particular group has covered this field, has made this approach, and whether it was successful or not, if this information is fed back to you and then made available, and to the extent generally that your reports are dispersed and made available.

These are some of the questions I have, if we could go into those in detail later on when you get into specific questions.

Dr. SHANNON. Be glad to, yes, sir.

Mr. ROGERS of Florida. Thank you.

Thank you, Mr. Chairman.

Mr. O'BRIEN. Mr. Chairman.

Mr. ROBERTS. The gentleman from New York.

Mr. O'BRIEN. I have a question that Mr. Rhodes requested that I ask.

Before doing that, would it be fair to state, Doctor, that research, if it is to amount to anything, must be accepted as a field honeycombed with blind alleys and that the research man may spend a great deal of money and a great deal of time in a field which at least for the time being is going to yield nothing? Is that not correct?

Dr. SHANNON. Oh, yes, sir, unfortunately. I shouldn't say "unfortunately," because if the end objective was not unkown, there would be no purpose of the research, so that this is inevitable; yes, sir.

Mr. O'BRIEN. That is true whether this research is financed by the Federal Government, or by private industry, or by the universities?

Dr. SHANNON. This is in the nature of the process; yes, sir.

Mr. O'BRIEN. I think that what happens to us here is that when the blind alley pops up we hear about the blind alley and we hear nothing about the alleys that lead to something.

Dr. SHANNON. Yes, sir.

Mr. O'BRIEN. Now, to get to Mr. Rhodes' question. He would like to know whether the different categorical institutes have substantially comparable responsibilities, or whether some of the institutes have responsibilities which go beyond conducting and supporting research?

Dr. SHANNON. The answer is "Yes," some of the institutes do go beyond supporting research.

Mr. O'BRIEN. That leads to his main question. He wants to know what the plans are if the legislation should be enacted for the Mental Health Institute, particularly if Congress should enact the mental health and mental retardation legislation which this subcommittee now has before us. Perhaps the question should go to Dr. Terry, or to you, Doctor, or both.

Dr. TERRY. This is a rather complicated question.

Mr. O'BRIEN. It is not mine. It is Mr. Rhodes'.

Dr. TERRY. This is a rather complicated question, Mr. O'Brien, in terms of trying to predict exactly what we are going to want to do 5 years or 10 years from now, much less even a year from now.

We feel that in the development of these programs we should take advantage of the opportunities for research developments when opportunities arise, should support the most promising areas in the area of research, and at the same time supporting the basic fundamental research which is necessary to keep the field alive.

As I mentioned in my statement earlier, too, we feel it is very important that these research results be transmitted to the people who need them and can use them; in other words, that this gets carried to the application stage and in many instances, when it reaches that stage, it also requires further research or exploration in terms of actual mechanisms of application.

I am not certain exactly what Mr. Rhodes wishes in asking a question like this. One of the things I think that is involved in this is the fact that, because of the serious shortage of personnel in the whole field of mental health, the Mental Health Institute has been given responsibilities which go beyond some of the other institutes in terms of training persons actually for service.

As an example, one of the portions of the Mental Health Institute program involves the taking of a general practitioner for a year who wishes to be able not to become a psychiatrist, but to do a much better job in the field of the general practice of medicine by virtue of training in the field of psychiatry.

We have a program which would allow us to pick this man up and support him during that year in a training circumstance, full-time training for a year, to make this man a much better practitioner.

We have also entered into the support of training of psychiatric nurses, of psychologists, and these sorts of people, many of whom make a partial contribution in the field of research, but many others make their primary impact in the area of the delivery of medical services.

This has come about because of the serious shortages that we have in this area and represents one of the things that you were asking about a little earlier in terms of a difference, in terms of some of the programs supported by this institute in comparison to some of the other institutes.

Mr. O'BRIEN. Thank you very much, gentlemen.

Mr. ROBERTS. Mr. Brotzman.

Mr. BROTZMAN. Just one question. Perhaps the chairman can help me. My questions would be somewhat along the line of my colleague from Florida.

Will we have an opportunity to get into specifics as we proceed along here to more closely analyze some of the various programs? I do not want to intrude upon your presentation, but I have certain questions and I do not want to take everybody's time to ask them out of order, but if we are going to proceed along the line as Mr. Rogers was asking his questions, I will have questions at that point.

Mr. ROBERTS. I will assure the gentleman that at the proper time there will be time for those specific questions to be answered.

Mr. BROTZMAN. I will yield to Mr. Springer. I think he has some specific questions.

Mr. SPRINGER. I do, but I do not think I can do it, Mr. Chairman, in the time allotted in view of the fact that there is a rollcall and I will forgo that until the next session.

MANHATTAN, KANSAS

Dr. SHANNON. Mr. Chairman, we are of course at the pleasure of the committee from the standpoint of the depth and the character of the inquiry they wish to consider, but it does occur to me that it might be helpful if we were able, and I think we can, to supply some supplementary information to the committee that may form a backdrop for some of these studies, and we would be glad to discuss with the committee staff the type of material you may wish that will make your inquiry, I think, more profitable and less cumbersome.

We would be glad to discuss with Mr. Borchardt the type of supplemental information you would like to have.

Mr. ROBERTS. I might say at this time we have a rollcall coming up and I just want to leave one question here that the chairman, Mr. Harris, asked me to ask for him, and that is would it be possible for you to submit to the subcommittee a listing of some subcategories into which the category of general research projects could be divided? Could that be done?

Dr. SHANNON. Yes, sir.

Mr. ROBERTS. I believe that the chairman related to a controversy that he had with Judge Smith, chairman of the Rules Committee, in which Judge Smith challenged Mr. Harris that he probably did not know what was going on at NIH these days. Mr. Harris agreed that he probably did not.

One of the problems here is to see whether it is not feasible to gain an understanding of what is going on without necessarily going into each regular research project, item by item.

Would you please see what you can do to help the subcommittee to gain this understanding by furnishing us a further categorical breakdown of this 50-percent item that I referred to?

Dr. SHANNON. This we would be glad to do; yes, sir.

(The material mentioned appears on pp. 389–394.)

Mr. ROBERTS. I would like to announce at this time that the chairman of the full committee is seeking to get permission for the subcommittee to sit this afternoon and, as soon as I am able to get that information, I will communicate with the clerk of the committee, Mr. Williamson, so that Dr. Shannon, and Dr. Terry, and all of the other witnesses and the press will know.

If we are able to meet with the permission of the House we will meet at 2 o'clock in the Public Works hearing room. The regular hearing will be continued tomorrow morning in this same hearing room at 10 o'clock.

The committee is now in recess.

(Whereupon, at 11:10 a.m., the committee recessed to reconvene at 10 a.m., Friday, April 26, 1963.)

ORGANIZATION OF PUBLIC HEALTH SERVICE

FRIDAY, APRIL 26, 1963

House of Representatives,
Subcommittee on Public Health and Safety
of the Committee on Interstate and Foreign Commerce,
Washington, D.C.

The subcommittee met at 10 a.m., pursuant to recess, in the caucus room, Cannon Building, Hon. Kenneth Roberts (chairman of the subcommittee) presiding.

Mr. Roberts. Our first witness today will be Dr. Aaron W. Christensen, Deputy Chief, Bureau of State Services, U.S. Public Health Service.

Dr. Christensen, you may proceed with your statement.

STATEMENTS OF AARON W. CHRISTENSEN, ASSISTANT SURGEON GENERAL, DEPUTY CHIEF, BUREAU OF STATE SERVICES, U.S. PUBLIC HEALTH SERVICE, AND M. ALLEN POND, ASSISTANT SURGEON GENERAL FOR PLANS; ACCOMPANIED BY STEPHEN J. ACKERMAN, BUREAU OF STATE SERVICES; DR. LUTHER L. TERRY, SURGEON GENERAL; AND DR. JAMES M. HUNDLEY, ASSISTANT SURGEON GENERAL FOR OPERATIONS

Dr. Christensen. Thank you very much, Mr. Chairman.

I have with me Mr. Ackerman from the community health side of the Bureau of State Services to assist, if this is all right with you, sir.

Mr. Roberts. Glad to have you.

Dr. Christensen. I have a short statement which I would like to read, if I may.

The community health programs of the Public Health Service have as their major goal the rapid and effective application of health knowledge to meet personal health needs. This mission involves the strengthening of preventive, curative, and restorative services in States and communities. Our role is to encourage and stimulate the development of necessary health manpower, appropriate facilities, and improved methods and techniques for the delivery of health care.

There is a growing gap between discovery and application of health knowledge—between what is known and what is actually done. A few examples will serve to illustrate the price we are paying as a nation for our delay in putting knowledge to work.

Using what we know to the fullest extent, we could save 265,000 cancer patients each year—88,000 more than are currently saved. Among these would be the 10,000 women who die unnecessarily each year of cervical cancer.

Using what we know about early detection, we could control glaucoma in the estimated 1 million people who have the disease but do not know it—thus eliminating one of the major causes of blindness.

Using what we know about treatment, we could prevent recurrence of rheumatic fever in 90 percent of the children who suffer from this disease—thereby preventing a form of heart damage that takes 20,000 lives per year.

Using what we know about restorative medicine, we could return to independent living up to 80 percent of stroke patients, most of whom are now condemned to a kind of twilight life.

These problems, and many similar ones, illustrate the changing health needs of our growing and changing population. New patterns of community health service will be required to meet them. Aiding in the development of these patterns in communities across the Nation is an important part of our task.

A brief review of recent legislative history indicates clearly that this committee, and the Congress as a whole, have been keenly aware of needs in the community health area, and that you have acknowledged the importance of Federal contributions in these fields. In fact, an impressive list of legislation has been enacted during recent years through the leadership of this committee, directly related to the community health field and now being administered by community health divisions. The list includes the following:

The Hospital and Medical Facilities Survey and Construction Act, originally enacted in 1946 and subsequently extended or amended by the 81st, 83d, 85th, and 87th Congresses.

The Health Amendments Act of 1956, which authorized traineeship programs for professional nurses and for professional health personnel. These authorizations were extended by the 86th Congress.

Public Law 85-544, enacted in 1958, which authorized training grants to schools of public health.

Public Law 86-720, enacted in 1960, to authorize project grants for improving graduate public health training in schools of public health, schools of nursing, and schools of engineering.

The Community Health Services and Facilities Act of 1961 which provided a legislative base for a program of grants to States and of project grants designed to improve health services for the chronically ill and aged was passed and started by this committee.

The Vaccination Assistance Act, enacted last year, which authorized financial support for intensive community vaccination programs against poliomyelitis, diphtheria, whooping cough, and tetanus.

Public Law 87-692, also enacted last year, which authorized a program of family health service clinics for domestic agricultural migrants and their families.

All of these authorizations expire in 1964, 1965, or 1966. We look forward to reviewing with this committee the many accomplishments which these legislative acts have made possible, looking toward their extension or modification in the light of changing priorities and needs.

The programs authorized by these laws have already had a profound impact on the availability of health services. Through the hospital and medical facilities construction program, hospital and related health care has been brought within reach of millions of people for whom such care was once both distant and difficult to obtain.

Some 216,818 general hospital beds have been added to the Nation's health resources, and 2,648 new health centers, nursing homes, and other facilities have been built by Federal funds and matching local funds in a ratio of about $1 Federal for $3 local. No less important, the program has advanced the concept of planning for health facilities, State by State, and more recently area by area. It has also made important contributions to the efficient delivery of services within the hospital.

The much newer program authorized by the Community Health Services and Facilities Act is making parallel contributions in terms of out-of-hospital services. New and improved programs of home care and other services for the chronically ill are among the projects underway.

The migrant health legislation will make medical services available to a long neglected and desperately needy group of Americans.

The Vaccination Assistance Act will promote the spread of communitywide immunization programs, aimed ultimately at the eradication of such diseases as poliomyelitis, diphtheria, tetanus, and whooping cough, which still take an unnecessary toll, especially among children.

Thanks in large part to these recent legislative acts, the community health programs of the Public Health Service are now administering funds amounting to some $20 million a year for training of various kinds. These programs represent a significant start toward meeting the tremendous manpower needs in the community health field.

Meanwhile, other promising new legislation has already been considered by this committee. The Health Professions Educational Assistance Act (H.R. 12), on which this committee and the House of Representatives has taken favorable action, will have far-reaching significance. In effect, it will increase the total health manpower pool from which future community health personnel must be drawn.

Hearings have also been held recently on H.R. 133, to establish a National Accident Prevention Center.

Seven divisions make up the community health group within the Bureau of State Services.

The Division of Accident Prevention seeks to prevent or minimize the damage done by accidents—in the home, in traffic, and elsewhere.

The Division of Chronic Diseases operates several control programs directed toward specific illnesses—heart disease, cancer, various neurological and sensory diseases, diabetes and arthritis, and others, It also furnishes leadership in developing better services for victims of long-term illness in nursing homes, other institutions, and their own homes.

The Communicable Disease Center is the principal arm of the Public Health Service for controlling infectious diseases, by furnishing laboratory and other technical services to States, aiding in the investigation of disease outbreaks, and through training programs.

The Division of Community Health Services deals with a number of special health problems, such as those confronting migratory workers, and serves the health professions through studies of such fields as health economics, public health, and medical care administration. It also administers a number of traineeship programs.

The Division of Dental Public Health and Resources seeks to strengthen dental services, encourages more effective use of dental personnel, and stimulates the adoption of dental public health measures such as fluoridation of public water supplies.

The Division of Hospital and Medical Facilities administers our construction grants program, aids in promoting effective planning for the use of health facilities, and encourages efficient services within hospitals.

The Division of Nursing works closely with health agencies and professional nursing groups toward the goal of making the best possible nursing services available to people who need them, through training, manpower development, and research.

Clearly, this represents a wide range and diversity of programs and responsibilities. Yet, all are directed toward the fundamental goal of strengthening the Nation's health resources and fostering the widespread application of health knowledge.

There is also, among the community health divisions, a unity of method and approach. The primary responsibility for personal health services rests with the private and public health sectors of the local community, reinforced by the State.

A close partnership has evolved between our programs and many public and private agencies—State and local health departments, universities, professional groups, and voluntary agencies. Much of the work of our divisions is done through representatives in our nine regional offices, who maintain close and constant liaison with their counterparts in the various geographical areas.

Our role in this partnership is to assist, to encourage, to stimulate action in a variety of ways. First, a problem is recognized—generally a nationwide problem which is reflected in most States and communities. Research is conducted to develop the knowledge or methods needed to meet the problem. The results of this research are disseminated by demonstrations or through consultation.

We then undertake to train or assist the States in training personnel to carry out the new program or technique. Financial assistance is often provided, to stimulate the development of selected activities or to support their continuation.

Let us consider a few specific examples of this general pattern of technical assistance. They take many forms, depending upon the nature of the problems to be solved.

The development by the Communicable Disease Center of the fluorescent antibody technique is a good example of research in an applied field. This technique serves a vital purpose—it is an excellent and rapid method for diagnosing a number of diseases. Following its discovery, testing, and refinement, its use has been widely disseminated to State laboratories and others.

The technique is playing a key role in the rapid diagnosis of streptococcal infection which often leads to rheumatic fever and subsequently to rheumatic heart disease. Thus, a method developed in the communicable disease field has important application in the prevention of chronic disease as well.

A successful example of the demonstration project method of technical assistance—whereby Public Health Service representatives work directly with State and local personnel to demonstrate a new concept or service—has taken place recently in Ouachita County, Ark.

This project was developed in cooperation with the Arkansas State Board of Health, the State medical society, the Governor's committee on aging, and several key local organizations. It was designed to establish an effective home nursing program for the chronically ill and aged in a semirural area. The project has met with enthusiastic community acceptance, and appears to have established a pattern which can be repeated or adapted elsewhere in Arkansas and throughout the country.

Frequently, a problem requires that personnel be given special training. Public Health Service nurses have helped to improve standards of nursing care through a series of workshops and institutes, held at the invitation of a number of States, in which nurses from a given geographic area learn up-to-date methods for meeting specific problems. This is one of the many forms of training performed by community health programs.

In dealing with some health problems, the greatest need is for effective communications—from scientist to practitioner and to the general public. For example, the "strike back at stroke" program of the Chronic Disease Division is essentially a communications effort based on special instructional materials.

I would like to comment on this. We have now used nearly a quarter of a million of these pamphlets. They are distributed to the physicians. They are distributed to other health agencies and they are actively being used.

I have some copies with me that I would like to leave with the committee. I think we sent one over. It shows how we work.

This pamphlet is designed so that the private practitioner can utilize this material in carrying out the treatment for his patient.

The manual containing the core of the program can be used in the home, resulting directly in better care for stroke victims. As another example, the informational bulletins issued to 500 local poison control centers by our national clearinghouse in Washington furnish up-to-date information which saves lives.

Here is a sample of one of the poison control bulletins that we put out.

The nationwide seat belt campaign, which owes much of its success to the leadership of this subcommittee, has involved a number of kinds of Federal leadership including a major emphasis on communication to the general public. The Public Health Service helped support the original research. It has worked closely with the American Medical Association, the National Safety Council, the automobile manufacturers, and others in stimulating the widespread use of seat belts.

My final example of technical assistance illustrates how several of these methods are brought to bear on a specific problem—in this case, the provision of dental care for those too ill or too old to seek it outside their homes.

The staff of our Division of Dental Public Health and Resources, working with two State and several local health departments, a university school of dentistry and local professional organizations, set up a demonstration project which brought dental care to the homes of a number of chronically ill patients. The pattern established here is suitable to widespread application. It also demonstrates how two seemingly different fields—dentistry and chronic illness—can be brought together in the community health framework.

In addition to these various ways in which we work with our State and local allies, a number of grant mechanisms are available to us. These provide a means of stimulating or assisting them in developing and operating programs which are in line with national objectives. The methods of financial assistance available to our community health programs include:

1. Formula grants, awarded to States on the basis of a State plan approved by the Surgeon General to help support health programs and provide assistance in certain specific areas.

2. Project grants, awarded to States or to local public or private nonprofit agencies for the support of specific projects in several community health fields.

3. Training grants, awarded chiefly to educational institutions, to assist in the development of an increased supply of better-trained health manpower.

4. Construction grants, on a matching basis, such as those made under the hospital and medical facilities program.

Finally, on July 1, 1963, all of the community health divisions will be able to award research grants which will be used primarily to study better methods of application of health knowledge—often using the community itself as the "laboratory."

Thus, the seven community health divisions of the Bureau of State Services use a variety of means to help advance the Nation's health. The major challenges of the present and immediate future can be grouped under six headings:

(1) Health manpower: Greatly increased numbers of highly skilled men and women are needed to serve the personal health needs of the American people. The enactment of the Health Professions Educational Assistance Act will constitute a vitally important step. But other needs are also urgent.

For example, the recent report of the Nation's nursing resources and needs, based on an intensive study by a consultant group to the Surgeon General, highlights the need for a greatly expanded and accelerated training effort, both to increase the number of nurses available for service and to augment the skills of those already in practice. New legislative proposals are now being developed, designed to attain these goals.

Moreover, there is need for a searching appraisal of existing training programs being administered by the community health divisions. Two important national conferences this summer, called in accordance with specific provisions of the authorizing legislation, will examine the professional public health traineeships and nursing traineeship programs. From these conferences, we anticipate new insights into the broad-scale personnel needs of the community health field.

In these and other ways, in the years ahead, the problems of manpower for health service must be continually assessed and new solutions developed, measured to the constantly changing and growing dimensions of the problem.

(2) Health facilities: Great strides have been made in meeting some of the Nation's health facilities needs. Much remains to be done. Areawide planning for the health facilities of the future must be based upon thorough study of needs and patterns of utilization. National planning must reflect the impact of population changes and

socioeconomic trends. It must be geared to meet needs for renovation or replacement of facilities which can no longer deliver the best in modern medicine.

It must take into account growing needs for facilities to seve the chronically ill and aged, the mentally ill and mentally retarded, and other groups requiring special attention.

(3) Organization of health services: The effective application of health knowledge requires full and efficient use of all the health resources of a community. This in turn will require new modes of cooperation between public and private agencies and groups, based on thorough consideration of their respective responsibilities and capabilities.

Effective health care is coordinated care, whereby a full battery of services and facilities is available to meet the specific needs of specific patients in hospitals, in nursing homes, or in their own homes.

(4) Disease prevention: We have now the knowledge and capability to eradicate poliomyelitis, diphtheria, tetanus, whooping cough, and other diseases. It is possible for us to bring venereal disease to the point of eradication, and to achieve massive reduction in tuberculosis. We must also be prepared to take immediate advantage of new tools and techniques to conquer other diseases as they are developed.

(5) Chronic disease: Existing methods to reduce the toll of cancer, heart disease, and other chronic ailments must be more widely applied, and new techniques developed. Early detection campaigns can strikingly reduce the harmful effects of diabetes, glaucoma, and other lingering illnesses.

Modern restoration medicine can rehabilitate many thousands of persons to active, productive living. Much valuable work is already being done in these and parallel fields, but the horizons are unlimited.

(6) Accident prevention: Intensified research is urgently needed, not only in the field of traffic safety but also for the reduction of home accidents, recreational accidents, and many others. Meanwhile, knowledge and methods already known require more extensive dissemination.

Success in all of these areas will depend on the development and maintenance of effective channels of communication, so that new knowledge and ideas may flow steadily from their point of discovery to their point of application. Stimulating this communications effort throughout the health partnership is another of our major challenges in the years ahead.

I have attempted to outline for you the mission of the community health programs, the way we work with our allies in the States and communities, and the major problem areas with which we are confronted today and in the immediate future.

I shall be glad to respond to any questions, or to discuss in greater depth any of the activities within our area of responsibility.

Mr. ROBERTS. Thank you, Dr. Christensen. Especially does the Chair appreciate your references to the legislation that this subcommittee has had the privilege of sponsoring.

I certainly want to congratulate those of you in the Public Health Service who have, I think, done a very fine service for the public in cooperation with educational forces and with manufacturers in en-

couraging the widespread use of seat belts. We saw that program grow from a few thousand 3 or 4 years ago to a point where it is estimated this year where we will equip about 15 million cars, which is certainly, I think, a very fine step in the right direction.

I would also like to say that I feel a greater effort is being made under the leadership of the Public Health Service in this presently important field of accident prevention, not only at the highway safety field but in the home and industry and across the board, so to speak.

You mention H.R. 133. The subcommittee has held hearings and I am hopeful that we may be able to move that bill to the full committee at an early date.

I would also like to mention the fine work that is being done in cooperation with the hospitals throughout the country, the physicians and others in this field of poison control. I think we have there a splendid example of what can be done with information and with cooperation on the part of those who are in a position to do something about many of these cases.

I think we are making rapid strides in the protection of children and others who accidentally get in touch with poisonous substances in the home and elsewhere.

I want to stress again that these hearings are being held to gain background information for the reorganization bill, H.R. 2410.

I would like to know from you, Doctor, and perhaps Dr. Terry, too, how enactment of this bill would affect the administration of the community health program which you have just discussed.

Do you feel that the bill is vital to the effective administration of these programs?

Dr. CHRISTENSEN. We feel that the tying together of the Community Health Services Division which I have talked about this morning will tend to bring a unity as far as approach is concerned to the State health departments, to the local health departments, to the other health agencies with which we deal.

We think if we can develop this unity of approach that we will cut down some of the duplication of services that now exist and will continue to exist unless there are some changes along these lines.

Mr. ROBERTS. Just one other brief reference to your testimony.

Under the sponsorship of this subcommittee last year, we enacted what I considered to be a very important bill, the migratory workers bill, and I know that the three of us who are here this morning were very strongly in favor of that legislation.

I would like to know what kind of start has been made in carrying out the provisions of that legislation.

Dr. CHRISTENSEN. We were very pleased also that the bill was enacted into law last fall.

This year we were able to go up for a supplemental appropriation. We have appeared before the House committee and before the Senate committee. We have received a markup of $500,000 to carry on a project grant program, to start our project grant program this year at least as far as the House is concerned. We still have not heard from the Senate. We are awaiting to hear from them.

In the meantime, we have been actively working in the field. We have been developing projects and we have at the present time applications for projects totaling close to $1,500,000.

Now, if most of these projects are good projects and they come from a number of different States and if money is made available, I feel sure that the Advisory Committee which will review them will pass them and the program will get well underway in these specific areas.

In the meantime, with our staff in the Community Health Services Division, we are carrying on such program as we are able to do with the funds available to us.

Mr. ROBERTS. Thank you very much, Doctor.

Now, Dr. Terry, I noted in going through the various statements that in the background material that the Public Health Service has prepared, that many of the programs that have been referred to will have expiration dates under the statutes which authorize the programs.

I think it would be very helpful if we could get for the record these dates listed so we can see just where we stand with reference to various programs that we have touched on in the hearing so far.

Dr. TERRY. We will be very happy to prepare this for the committee, Mr. Roberts, and I think we can make this available to you quite rapidly.

Mr. ROBERTS. Thank you very much.

Dr. TERRY. Mr. Roberts, before we leave some of the matters that we were talking about, I think Dr. Christensen covered very well the importance of the reorganization plan in relation to giving a more finite concept and organizational structure for these community health programs.

I, personally, feel that this is today one of the most important areas that we have in our whole field of health, this area of community health, the problem of the delivery of medical care in terms of the organization and the integration and cooperation of the various segments—official, unofficial, voluntary, and all other portions of our society which are involved in the problems of medical care.

I cannot support too strongly the statements that he has made in this respect.

There is one other matter that I would like to mention, too. In connection with the seat belt campaign, Dr. Christensen mentioned the very important part that the National Safety Council, the American Medical Association, and we have played in the presentation and stimulation of this program.

Another very heavy contributor in this direction has been the Advertising Council. They have given freely of their services and support and I think they have been very heavily responsible for our getting across through the communications media our story to the public. Of course, the Federation of Women's Clubs, many of the civic organizations, and various other types of organizations have contributed as well, but I think the work that the Advertising Council has done on it without pay has been an outstanding one.

Mr. ROBERTS. Thank you, Dr. Terry. I certainly join with you in paying tribute to those organizations. I might mention, too, one that has been outstanding in this field has been the junior chamber of commerce throughout the country.

Dr. TERRY. That is right.

Mr. ROBERTS. I think it shows what cooperation can do on a voluntary basis.

As you mentioned, all these groups have contributed without pay for their efforts, and so it has been a matter in the public interest.

Mr. Rogers.

Mr. ROGERS of Florida. Thank you, Mr. Chairman.

Dr. Christensen, I think your statement has been excellent.

There are few points I would like to go into a little more detail on, though, however.

Your specific duties as Chief of the Bureau of State Services encompasses what else now? Is that what you are primarily concerned with?

Dr. TERRY. Mr. Rogers, may I clarify this particular point?

Due to the particular functional adjustments that we have made within the Bureau of State Services, Dr. Christensen's specific title is Deputy Chief of the Bureau of State Services.

As you recall, I mentioned when Dr. Anderson appeared that he is Chief of the Bureau of State Services and is in charge of the environmental health programs, Dr. Anderson.

On the other hand, by law we can only have one bureau here at the present time and one one chief. On the other hand, Dr. Christensen is Dr. Anderson's counterpart in the Bureau of State Services for the Community health program so that he has the top responsibility for the Public Health Service community health programs.

Mr. ROGERS of Florida. Thank you.

Now I would like to know, on page 2 of your statement, if you could tell us this: If you don't have these figures right now, you could perhaps submit them to us.

In the various bills that authorize these various programs like the Hospital and Medical Facilities Survey and Construction Act enacted in 1946 and extended and amended in the 81st, 83d, 85th, and 87th Congresses, could you tell us the amount of money from that act you are now administering and the specifics of the administration of that act as to what projects actually are approved and in process of construction?

Dr. CHRISTENSEN. Well, at the present time for 1963 the appropriation for hospital construction is $226,211,000. In addition to this, there is $2,500,000 which is the Federal share of construction of George Washington Hospital here in the District.

The funds for construction are used for general hospitals, are used for nursing homes, are used for chronic disease hospitals, are used for diagnostic and treatment centers, are used for——

Mr. ROGERS of Florida. How many treatment centers?

Dr. CHRISTENSEN. I don't have those figures but I will be very happy to supply them.

In the long statement, we have them listed according to beds rather than projects.

Mr. ROBERTS. Could the Chair suggest that these figures be supplied for the record?

Mr. ROGERS of Florida. Fine. I think figures like that could be supplied, too.

Dr. HUNDLEY. Mr. Chairman, could I take a minute to emphasize this?

We have prepared a much more detailed long statement which will have many of these facts and figures in them. If the committee is agreeable, we will include this in the record.

Mr. ROBERTS. Without objection.

(The material referred to follows:)

Hill-Burton Program Highlights, July 1947 Through June 1963

By June 30, 1963, a total of 6,810 projects had been approved since the beginning of the program. These projects, providing 289,489 beds in hospitals and nursing homes and 1,922 other types of health facilities, involved: $6.19 billion total costs; $1.96 billion Federal share, and $4.23 billion State and local funds.

CONSTRUCTION STATUS

Projects completed and in operation number 5,423—80 percent of all projects approved. These projects account for: 220,168 beds in hospitals and nursing homes; 1,537 other health facilities, and $4.4 billion total costs.

Projects under construction or in planning stage total 1,387 and will add: 69,321 beds in hospitals and nursing homes and 385 other health facilities.

TYPE OF CONSTRUCTION

More than two-fifths (44 percent) of all Hill-Burton projects are completely new facilities:

[In percent]

	Projects	Federal funds
New facilities	44.4	43.5
Additions and alterations	55.6	56.5

TYPE OF FACILITY

Hospital and nursing home projects are providing a total of 289,489 beds:

Type:	*Beds*
General	223,970
Mental	18,265
Tuberculosis	7,209
Chronic disease	13,964
Nursing homes	26,081

Other health facilities include: 955 public health centers; 29 State health laboratories; 551 diagnostic and treatment centers, and 272 rehabilitation facilities.

TYPE OF OWNERSHIP

Voluntary nonprofit projects represent: 47.6 percent of all projects and 56 percent of all Federal funds.

Publicly owned projects account for 52.4 percent of all projects, 43.8 percent of the beds, and 44 percent of the Federal funds.

GENERAL HOSPITAL PROJECTS

The 4,024 projects providing 18,265 beds account for: 59 percent of all approved projects; 77 percent of all beds in approved projects; 77 percent of Federal funds allocated to date, and 15,791 beds for other services, such as chronic disease, tuberculosis and psychiatric care.

Two-thirds of Hill-Burton general hospital beds are in the smaller cities, towns, or rural areas:

[In percent]

Size of community	General hospital projects	
	Beds	Federal funds
Under 10,000	30.8	31.9
10,000 to 49,999	34.6	33.1
50,000 to 99,999	11.0	11.2
100,000 or more	23.6	23.8

LONG-TERM CARE FACILITIES

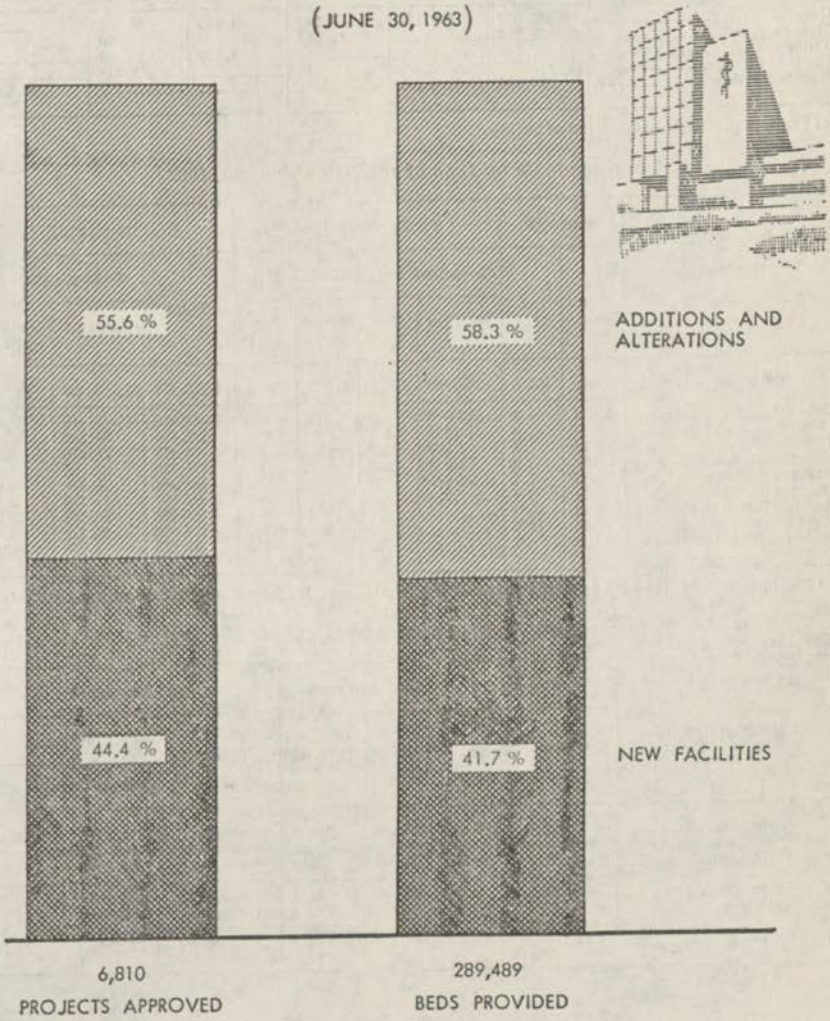
Now total 46,807 beds and include: 13,964 beds in chronic disease hospitals; 26,081 beds in skilled nursing homes; 6,666 chronic beds in general hospitals; and 96 chronic beds in other types of hospitals.

Total projects approved, June 30, 1963

State	Number of projects	Facilities provided		Cost (thousands)	
		Inpatient beds	Health units	Total	Federal share
United States and territories	6,810	289,489	1,922	$6,185,677	$1,963,409
Alabama	208	7,090	74	123,995	64,576
Alaska	16	323	5	11,287	3,497
Arizona	64	2,466	13	44,296	14,721
Arkansas	117	5,097	19	89,350	42,021
California	259	12,914	76	321,316	79,[illegible]86
Colorado	76	2,975	30	73,062	18,985
Connecticut	93	2,716	26	91,338	13,005
Delaware	21	1,195	10	18,135	5,[illegible]67
District of Columbia	21	615	9	29,751	5,5[illegible]8
Florida	208	8,876	77	161,037	51,009
Georgia	338	8,672	160	180,296	70,186
Hawaii	33	1,215	13	22,727	8,598
Idaho	62	1,751	15	27,022	9,292
Illinois	174	11,218	29	285,289	62,658
Indiana	127	6,482	22	150,335	44,804
Iowa	126	6,102	8	111,758	31,6[illegible]0
Kansas	91	3,658	10	83,489	27,294
Kentucky	195	6,255	82	117,453	55,580
Louisiana	195	7,870	84	129,281	53,651
Maine	63	1,869	15	40,560	14,719
Maryland	100	5,396	32	155,350	26,904
Massachusetts	181	8,756	31	217,406	41,5[illegible]5
Michigan	190	9,721	35	229,868	6[illegible],885
Minnesota	138	5,864	12	130,794	41,048
Mississippi	256	5,709	150	87,510	51,378
Missouri	141	6,095	28	1[illegible]8,181	49,51[illegible]
Montana	57	1,591	5	25,319	7,779
Nebraska	98	2,499	11	60,526	18,499
Nevada	28	825	6	12,7[illegible]8	5,0[illegible]9
New Hampshire	62	1,160	27	31,427	10,004
New Jersey	114	8,693	35	165,5[illegible]2	3[illegible],629
New Mexico	81	2,156	25	35,237	14,212
New York	237	15,395	21	415,423	93,719
North Carolina	364	11,134	111	199,105	85,238
North Dakota	55	1,789	6	31,300	10,819
Ohio	209	12,536	50	269,820	70,292
Oklahoma	202	6,920	49	91,189	36,130
Oregon	98	4,080	14	71,415	18,495
Pennsylvania	240	14,368	31	383,291	108,947
Rhode Island	48	1,517	12	54,281	9,590
South Carolina	224	5,831	115	94,852	48,684
South Dakota	64	1,780	3	28,167	11,521
Tennessee	192	7,905	77	154,532	63,542
Texas	296	19,292	56	339,447	120,167
Utah	42	1,330	9	38,016	12,826
Vermont	37	1,117	14	24,140	8,373
Virginia	158	6,803	67	154,224	56,262
Washington	86	3,149	21	94,902	24,363
West Virginia	74	3,632	16	87,271	33,473
Wisconsin	132	5,245	16	133,535	42,093
Wyoming	34	706	6	13,037	4,392
Guam	7	----------	7	248	165
Puerto Rico	71	7,133	42	101,540	58,030
Virgin Islands	4	----------	2	337	183

More than two-fifths of all Hill-Burton projects are completely new facilities

(JUNE 30, 1963)



Beds added by type of facility and type of bed, June 30, 1963

Type of facility [1]	Type of bed					
	Total beds	General	Mental	Tuberculosis	Chronic disease	Nursing home
Total	289,489	208,179	25,341	9,178	20,710	26,081
General	223,970	208,179	7,740	1,385	6,666	
Mental	18,265		17,585	620	60	
Tuberculosis	7,209			7,173	36	
Chronic disease	13,964		16		13,948	
Nursing homes	26,081					26,081

[1] Denotes primary classification of facility.

Total projects by type of facility, June 30, 1963

Type of facility	Projects		Facilities provided				Cost (thousands)		
			Inpatient beds		Health units		Total	Federal share	
	Number	Percent	Number	Percent	Number	Percent		Amount	Percent
Total	6,810	100.0	289,489	100.0	1,922	100.0	$6,185,677	$1,963,409	100.0
General	4,024	59.1	223,970	77.4	[1] 115	6.0	4,848,856	1,515,443	77.2
Mental	159	2.3	18,265	6.3			177,621	64,256	3.3
Tuberculosis	75	1.1	7,209	2.5			73,413	26,516	1.3
Chronic disease	263	3.9	13,964	4.8			225,133	67,508	3.4
Nursing homes	482	7.1	26,081	9.0			289,964	98,376	5.0
Diagnostic centers	551	8.1			551	28.7	209,097	71,728	3.7
Rehabilitation facilities	272	4.0			272	14.1	165,168	56,304	2.9
Public health centers	955	14.0			955	49.7	158,792	55,229	2.8
State health laboratories	29	.4			29	1.5	37,633	8,049	.4

[1] Public health centers built in combination with general hospitals and not reported as separate projects.

Total projects by type of ownership, June 30, 1963

Type of ownership	Projects		Inpatient beds		Cost (thousands)		
	Number	Percent	Number	Percent	Total	Federal share	
						Amount	Percent
Total	6,810	100.0	289,489	100.0	$6,185,677	$1,963,409	100.0
Public, total	3,571	52.4	126,934	43.8	2,349,386	863,169	44.0
State owned	468	6.9	32,971	11.4	579,073	203,315	10.4
Other public	3,103	45.5	93,963	32.4	1,770,313	659,854	33.6
Nonprofit	3,239	47.6	162,555	56.2	3,836,291	1,100,240	56.0

Total projects by type of facility and type of construction, June 30, 1963

Type of facility	Projects		Facilities provided				Cost (thousands)		
			Inpatient beds		Health units			Federal share	
	Number	Percent	Number	Percent	Number	Percent	Total	Amount	Percent
	New facilities								
Total	3,027	100.0	120,785	100.0	1,261	100.0	$2,572,404	$853,997	100.0
General	1,588	52.5	98,969	81.9	[1] 87	-------	1,980,522	662,724	77.6
Mental	37	1.2	5,017	4.2	-------	-------	74,014	24,097	2.8
Tuberculosis	29	1.0	3,482	2.9	-------	-------	39,783	14,231	1.7
Chronic disease	52	1.7	3,800	3.1	-------	-------	76,208	18,731	2.2
Nursing homes	147	4.8	9,517	7.9	-------	-------	112,101	36,539	4.3
Diagnostic centers	154	5.1	-------	-------	154	13.1	40,533	17,205	2.0
Rehabilitation facilities	100	3.3	-------	-------	100	8.5	65,067	20,908	2.4
Public health centers	900	29.7	-------	-------	900	76.7	149,640	52,982	6.2
State health laboratories	20	.7	-------	-------	20	1.7	34,536	6,580	.8
	Additions and alterations								
Total	3,783	100.0	168,704	100.0	661	100.0	3,613,273	1,109,412	100.0
General	2,436	64.4	125,001	74.1	[1] 28	-------	2,868,334	852,719	76.9
Mental	122	3.2	13,248	7.9	-------	-------	103,607	40,159	3.6
Tuberulosis	46	1.2	3,727	2.2	-------	-------	33,630	12,285	1.1
Chronic disease	211	5.6	10,164	6.0	-------	-------	148,925	48,777	4.4
Nursing homes	335	8.9	16,564	9.8	-------	-------	177,863	61,837	5.6
Diagnostic centers	397	10.5	-------	-------	397	62.7	168,564	54,523	4.9
Rehabilitation facilities	172	4.5	-------	-------	172	27.2	100,101	35,396	3.2
Public health centers	55	1.5	-------	-------	55	8.7	9,152	2,247	.2
State health laboratories	9	.2	-------	-------	9	1.4	3,097	1,469	.1

[1] Public health centers built in combination with general hospitals, and not reported as separate projects.

Mr. ROGERS of Florida. Perhaps, then, you could point out page numbers to this when you let us have this so we can go right to the page of your report and find these figures.

Dr. CHRISTENSEN. Yes, sir.

Mr. ROGERS of Florida. All right, sir.

Now, the Health Amendments Act.

Are there any more under the Hospital and Construction Act?

Dr. CHRISTENSEN. The other two types of hospitals that are eligible are tuberculosis and mental hospitals.

Mr. ROGERS of Florida. Now, that figure will give the number of mental health hospitals, or just the beds?

Dr. CHRISTENSEN. We will have the number of mental hospitals and the number of beds.

Mr. ROGERS of Florida. And the amount of contribution we are making or have made to those hospitals?

Dr. CHRISTENSEN. Yes, sir.

Mr. ROGERS of Florida. That will be helpful.

Now, the Health Amendments Act of 1956.

Dr. CHRISTENSEN. You would like to know the total amount of money that is being allocated at the present time under this act?

Mr. ROGERS of Florida. Yes.

Dr. CHRISTENSEN. I would prefer to submit it for the record, if I may, to give the exact figure.

(The information mentioned follows:)

(*a*) From July 1947 to December 1962, participated in 150 mental health projects, providing 18,000 inpatient beds. Federal contribution of $62,261,000.

(*b*) The total amount of money that is being allocated in fiscal year 1963 under the Health Amendments Act of 1956 is $11,325,000.

The professional nurse traineeship program is just a little over $7 million.

Mr. ROGERS of Florida. Is that each year?

Dr. CHRISTENSEN. Yes, sir.

The amount available for the general traineeship program is in the neighborhood of $4 million. We will get you the exact figures for it.

Mr. ROGERS of Florida. Who makes the determination on who shall receive these traineeships and grants?

Dr. CHRISTENSEN. For the professional nurse traineeship program, this is decided by the approved schools of nursing, themselves. These approved schools are on the list as a result of meeting certain requirements by a committee which has been formed by the Division of Nursing.

Mr. ROGERS of Florida. By the Division of Nursing.

Would you let us have the personnel on that committee and how long they have served on the committee?

Dr. CHRISTENSEN. Yes, sir.

(The requested information follows:)

EXPERT ADVISORY COMMITTEE FOR THE PROFESSIONAL NURSE TRAINEESHIP PROGRAM

(Appointments to the committee are normally for a term of 3 or 4 years; none of the original members are now on the committee.)

Miss Margaret G. Arnstein (chairman), Chief, Division of Nursing, Bureau of State Services, Public Health Service, Washington, D.C.

Dr. James Z. Appel, general practitioner, 305 North Duke Street, Lancaster, Pa. Term expires June 30, 1964.

Miss Olga C. Benderoff, director of nursing, University Hospitals of Cleveland, University Circle, Cleveland, Ohio. Has resigned; a name has been submitted for replacement.

Miss Edna J. Brandt, professor, Public Health Nursing, State Department of Public Health, 2151 Berkeley Way, Berkeley, Calif. Term expires June 30, 1963.

Mrs. Margaret E. Dolan, professor, Public Health Nursing, School of Public Health, University of North Carolina, Chapel Hill, N.C. Term expires June 30, 1963.

Mrs. Loretta A. Hanner, director, School of Nursing, Arizona State University, Temple, Ariz. Term expires June 30, 1964.

Miss Isabel Harris, Director of Program in Nursing Service Education, University of Minnesota School of Nursing, Minneapolis, Minn. Term expires June 30, 1964.

Mrs. Lillian H. Harvey, dean, School of Nursing, Tuskegee Institute, Tuskegee, Ala.

Mrs. Mary Kelly Mullane, dean, College of Nursing, University of Iowa, Iowa City, Iowa. Term expires June 30, 1964.

Herluf V. Olsen, Jr., assistant director, Rhode Island Hospital, 593 Eddy Street, Providence 2, R.I. Term expires June 30, 1964.
Miss Faye Pannell, dean, College of Nursing, Texas Woman's University, Denton, Tex. Term expires June 30, 1964.
Mr. Leroy E. Rambeck, hospital administrator, University Hospital, University of Washington, Seattle, Wash. Term expires June 30, 1964.
Sister Charles Marie, dean, School of Nursing, Catholic University of America, Washington, D.C. Term expires June 30, 1964.
Miss Loreana J. Murray, Executive Secretary, Division of Nursing, Bureau of State Service, Public Health Service, Washington, D.C.

Dr. CHRISTENSEN. On this committee, there are people from some of the nursing schools and other people high in the nursing circles.

Mr. ROGERS of Florida. Yes.

In fact, Mr. Chairman, if we might establish this, I know from my knowledge I would like to have it, it may not have to go in the record but I would like to have it for my knowledge, on all of these committees that we ask for if it is possible I would like to know the personnel for the last 10 years if it goes back that far, if it is not too difficult to get that information.

Dr. CHRISTENSEN. Fine.

Dr. TERRY. Mr. Chairman, I might call to your attention that we have just gotten available a publication which we put out annually which is a roster of the members of the Public Health Service, public service groups. This includes all of our councils and standing committees, as well as ad hoc committees for the current year.

As you can see, it is quite a voluminous thing listing some 2,028 advisers in the advisory groups.

We will be happy to make copies of this available to the committee because it gives the individual membership of each committee as well as their address and a definition of what they do.

Mr. ROBERTS. Without objection, that will be filed with the committee.

(The publication referred to may be found in the files of the subcommittee.)

Mr. ROGERS of Florida. As long as we are on that subject, let me ask this: Does this include your various study groups, as much?

Dr. TERRY. Yes.

Mr. ROGERS of Florida. And they are designated, the study group?

Dr. TERRY. Yes.

Mr. ROGERS of Florida. Because the procedure is, I believe, you have a study group first and then it goes to your Advisory Council?

Dr. TERRY. This is in grant review; yes.

Mr. ROGERS of Florida. So this would be set forth?

Dr. TERRY. That is right, sir.

Mr. ROGERS of Florida. Fine. If we could have that.

Dr. TERRY. Yes.

It is taken up, Mr. Rogers, for your information, on our organizational pattern. For instance, the first groups listed are the ones that are direct advisors to the Office of the Surgeon General, and then to the National Library of Medicine, the Bureau of Medical Services, Bureau of State Services, and the various institutes.

Mr. ROGERS of Florida. I would particularly like to have the 10-year membership of your study group in your national institutes, cancer and heart and so forth.

Dr. HUNDLEY. Mr. Chairman, could I also indicate that we have another publication that I think will help Mr. Rogers in the line in which he is interested? This is a parallel publication that, for each of our advisory committees, gives the authority to which it is formed, the functions and duties it has to perform, the length of terms of membership, how the members are rotated. I think this will also help you and we will be glad to supply this.

Mr. ROGERS of Florida. Thank you.

Now, Public Law 85–544 authorizing training grants to schools of public health, and the amount of money there that is administered.

Dr. CHRISTENSEN. The training grants for the schools of public health has an appropriation ceiling of $2,500,000. At the present time expenditure is $1,900,000.

Mr. ROGERS of Florida. So you actually are not using all of the amount authorized?

Dr. CHRISTENSEN. That is correct.

Mr. ROGERS of Florida. Is that a yearly amount now?

Dr. CHRISTENSEN. Yes, sir.

Mr. ROGERS of Florida. All right.

Public Law 86–720 for improving graduate public health training in schools of public health, schools of nursing, and schools of engineering.

Dr. CHRISTENSEN. There is a ceiling limitation of $2 million.

That is what we are receiving at the present time and we are in a position where we cannot approve any additional projects because of this ceiling.

Mr. ROGERS of Florida. You are using all of the authorization?

Dr. CHRISTENSEN. Yes, sir.

Mr. ROGERS of Florida. But you are receiving the money up to the limit of authorization?

Dr. CHRISTENSEN. Yes.

Mr. ROGERS of Florida. Two million dollars?

Dr. CHRISTENSEN. Yes, sir.

Mr. ROGERS of Florida. Then the Community Health Services and Facilities Act of 1961.

Dr. CHRISTENSEN. That act placed a limitation on section 314c of the Public Health Service Act of $50 million. The $50 million consist of grants for general health grants of $13 million; $10.9 million for mental health grants; $2 million for radiological grants; $1.9 million for grants to the schools of public health; and $13 million for grants for chronic illness.

That adds up to about $42 or $43 million, as I remember it.

Mr. ROGERS of Florida. Out of the $50 million authorization?

Dr. CHRISTENSEN. Out of the $50 million.

In addition, our costs for administering these grants have to come out which puts us real close to the ceiling level at the present time.

Mr. ROGERS of Florida. You mention there schools of public health, $1,900,000.

Dr. CHRISTENSEN. Yes; the schools of public health; that is the act we just talked about, Public Law 85–544, which authorizes the grants to schools of public health. This is included within the ceiling of 314(c). It is a subceiling.

Mr. ROGERS of Florida. I don't think I am quite clear on that; 85–544 authorizes $2.5 million.

Dr. CHRISTENSEN. Yes, sir.

Mr. ROGERS of Florida. And you are using $1.9 million?

Dr. CHRISTENSEN. Yes; and that is included in the $50 million ceiling of 314(c).

Mr. ROGERS of Florida. So that, that is a duplicated figure, then?

Dr. CHRISTENSEN. Yes.

Mr. ROGERS of Florida. You are not actually spending two amounts of $1.9 million.

Dr. CHRISTENSEN. No, sir

Mr. ROGERS of Florida. It is only $1.9 million?

Dr. CHRISTENSEN. Yes.

Mr. ROGERS of Florida. Is there other duplication in this $50 million ceiling?

Mr. CHRISTENSEN. That is the only one.

Mr. ROGERS of Florida. All right.

Then the Vaccination Assistance Act.

Dr. CHRISTENSEN. We have gone up for a supplemental for the Vaccination Assistance Act. We have been heard before the House and heard before the Senate committee. At the present time, the House markup is a little over $5 million. The ceiling on this is a total, I believe, of $36 million for the 3-year period. I think it is $13 million for the first year and then it goes to $11 million and then down to $10 million. I can supply the exact figures.

(The following figures were subsequently submitted for the record:)

Fiscal year:	*Authorization*
1963	[1] $14,000,000
1964	11,000,000
1965	11,000,000

[1] House allowance on supplemental appropriation—$5,300,000 grants, $130,000 direct operations; Senate allowance—$12,100,000 grants, $130,000 direct operations.

Mr. ROGERS of Florida. And you are now requesting $5 million?

Dr. CHRISTENSEN. We requested $12.6 million. The House markup was $5 million. We don't know what the Senate figure is at the present time.

Mr. ROGERS of Florida. All right.

Dr. CHRISTENSEN. This has a 3-year limitation.

Mr. ROGERS of Florida. And then Public Law 87-692, family health service clinics.

Dr. CHRISTENSEN. That has a ceiling of $3 million. We have appeared before the House and Senate. The House gave us $500,000. However, I should point out that within this $3 million ceiling is about a quarter of a million dollars which we have for direct operations concerning migrant health problems which will be included.

Mr. ROGERS of Florida. How much?

Dr. CHRISTENSEN. About a quarter of a million dollars at the present time.

So, if $500,000 comes through, we will have available for expenditure in 1963 about $750,000, $500,000 of which will be special project grants.

Mr. ROGERS of Florida. All right.

Now, in your formula grants on page 9, your formula grants awarded to States on the basis of a State plan, do you have a study group or an advisory group that makes this decision?

Dr. CHRISTENSEN. No, sir. These grants are approved on the basis of a plan submitted by the State health department. The plan is a standard narrative format which is sent to each of the States. They indicate in the plan how they are going to utilize the money. It is sent to our regional office where it is reviewed by our regional staff.

Our regional staff is composed of physicians; nurses; health educators; and other health personnel who all participate in the review of these plans.

From the point of view of determining whether it meets an overall health program for the State.

Included in this plan is also the amount of money that the State is spending for its health services. Now, by law, the State is only required to match its Federal allotment in order to obtain Federal funds. However, in almost all cases, they are putting down their total planned expenditures.

So, our regional staff office has a good idea as to how the money is being spent in the State and what the plan for health is.

Mr. ROGERS of Florida. Yes.

On these formula grants now, is there any particular requirement as to the amount of State contribution or does it vary with the particular law?

Dr. CHRISTENSEN. The contribution from the State is $1 of State or local money for each dollar of Federal money, with the exception of the chronic illness grants which is a new grant. In the latter grant $2 of Federal money are matched for each dollar of State and local money. This has been the past history of most of our formula grant programs, that when a new grant starts the Federal contribution is greater than the State's and then, as time goes on, the Federal contribution shrinks until it gets to a 1-to-1 basis.

In the chronic illness grant, I believe it is in 1966 that, in accordance with our regulations that we will be down to 1-to-1 matching.

Mr. ROGERS of Florida. One to one?

Dr. CHRISTENSEN. In 1966, I believe.

Mr. ROGERS of Florida. In the chronic illness?

Dr. CHRISTENSEN. Yes.

Mr. ROGERS of Florida. That is good.

You say assistance in certain specific areas in the formula grants.

Dr. CHRISTENSEN. Sir?

Mr. ROGERS of Florida. What are those areas?

In the formula grants, you say they help support health programs and provide assistance in certain specific areas. What are those specific areas?

Dr. CHRISTENSEN. Our formula grants are several in number.

First is a general health grant and this is available for almost any expenditure that the State health department wishes to make which is in accordance with the plan that they have submitted, with the exception that it cannot be spent in the area for which we have categorical grants. These categorical grants are: the heart control grant, the chronic illness grant, the formula grant for tuberculosis, the formula grant for mental health, and the formula grant for cancer.

There is also a grant for water pollution which is outside of the community area. That is in Dr. Anderson's area of environmental health.

Dr. HUNDLEY. Could I again try to help, Mr. Rogers?

In the committee print, I think you will find all these facts and figures in section 8 in the grant and aid section beginning on page 75.

Mr. ROGERS of Florida. Page 75.

Dr. HUNDLEY. Yes, sir.

Mr. ROGERS of Florida. Is this also put out for project grants? Could you point out the page, training grants, research training?

Dr. HUNDLEY. They are in the same text.

Mr. ROGERS of Florida. All this information will be there?

Dr. HUNDLEY. It is there.

Mr. ROGERS of Florida. Mr. Chairman, just a question or two more. Now, you have nine regional centers or offices?

Dr. CHRISTENSEN. Yes; nine regional offices of the Department. We have men in each one of these regional offices.

Mr. ROGERS of Florida. What is the number of personnel normally or an average in those offices, if you can submit that for the record?

Mr. ROBERTS. Will the gentleman yield?

Isn't Mr. Pond supposed to testify as to the manpower situation?

Dr. TERRY. This is not covered in his testimony, though, Mr. Roberts.

Dr. CHRISTENSEN. I cannot give you the exact number at the present time. I would be glad to supply it. I would say for the community health programs the number of personnel would average about 36 per region. This varies from region to region.

Mr. ROGERS of Florida. If you could let us have that.

(The information mentioned follows:)

Region	*Bureau of State Services (Community health) employees* [1]
I. Boston	19
II. New York	39
III. Charlottesville	38
IV. Atlanta	46
V. Chicago	38
VI. Kansas City	39
VII. Dallas	41
VIII. Denver	24
IX. San Francisco	42

[1] Budgeted positions.

Dr. CHRISTENSEN. The cost of operation of the Community Health part of the regional offices is about $3 million.

Mr. ROGERS of Florida. Thank you.

Dr. CHRISTENSEN. This is the estimated cost for the community health side. The environmental health programs also have regional office personnel.

Mr. ROGERS of Florida. Yes. As I understood, Dr. Terry, you plan some reorganization if this legislation is passed which would bring an upgrade in environmental health?

Dr. TERRY. Let's say it this way: It would establish a bureau of environmental health consisting of the various problems; water, air, radiological health, occupational health, and so forth. It would also establish a bureau of community health encompassing the programs we are talking about here, Mr. Rogers.

Mr. ROGERS of Florida. I don't think the committee has authorized, as I recall, specifically an environmental health center, has it?

Dr. TERRY. No, sir; not so far as I am aware.

Mr. Rogers, a particular type of physical installation to support our programs like that, I do not believe that it is necessary to have such specific authorization.

Mr. ROGERS of Florida. Do you feel you have the sufficient legislative authority to go in and form an environmental health center?

Dr. TERRY. This is our interpretation; yes, sir.

Mr. ROGERS of Florida. From what legislation?

Dr. TERRY. As a matter of fact, I cannot cite it for you right now. I could get it for you, sir.

Mr. ROGERS of Florida. Well, I would be somewhat concerned because I think in forming new health centers I would think this committee would want to know—I certainly would—as a legislative committee any plans before you get into a spending program. I notice something about an appropriation committee made some comment on it.

As I recall, there have been no proposals to this, the legislative committee, along those lines. I would be very much concerned about it and would want to go in to see how much duplication there might be under your present program and any possibility of building an environmental health center.

This committee, I think, would want to know all the details so we would be sure there is no duplication.

Dr. TERRY. We will certainly be happy to get into that for whatever department you would like, Mr. Rogers. I would suggest that I believe the chairman has indicated he wishes to call some of us back about discussion on specific features. For instance, one of those is the environmental health field.

I think that when Dr. Anderson is back with us we could give you all the specific citations and legislative authorities on it and background.

Mr. ROGERS of Florida. I think that would be helpful. Thank you very much.

Dr. TERRY. I might mention in that respect, Mr. Rogers, this is not any new concept in terms of something that has just come up this year.

Mr. ROGERS of Florida. Yes. I realize you have been doing work along this line and I didn't know it would necessarily be essential to the program of what we are doing to have a new center. I would think this committee would want to know if it is necessary.

Dr. TERRY. Well, we feel that it is and I think we can show you adequately, sir, at the time we get into the detailed justification.

Mr. ROBERTS. I think the Chair would like to emphasize that the hearings are to try to get the broad aspect of the organizational structure of the Public Health Service in connection with H.R. 2410.

I have stated repeatedly that we would go into specifics a little bit later on.

I think in this field of environmental health that certain authorization is certainly contained in the Air Pollution Act, that is a part of that picture; but we do want to go into the whole picture at a little later date.

Mr. Nelsen.

Mr. NELSEN. I was interested in the grant feature in the mental health program.

Just what type of grants do you make to various States or schools?

Dr. CHRISTENSEN. The grant features of the grant program which I referred to, the $10.9 million, we really service the grant for the National Institute of Mental Health.

I might add, however, that these grants are made available to the mental health authorities of the States based on the plan which is approved by our regional office and approved by the Surgeon General just the same as the formula grants for the ones which I talked about earlier.

Mr. NELSEN. One of the reasons I ask the question, we have hearings before our committee dealing with the mental health problem. Now, in the decentralization of the mental health care or the mental hospitals, could not this same agency do what we are proposing to do in other legislation before us?

Dr. TERRY. I am not sure just exactly what you want, Mr. Nelsen, but I think in terms of the existing grants which are available which you have been referring to, this is basic funds to support the development of the broad public mental health program within the State.

Now, as you are aware, the further authorizations which have been requested and are involved in other bills before the Congress now in the field of mental health, involve the support of the construction of mental health centers in relation to community centers; in other words, attempting to bring mental health programs and mental health medical care back from the large, remote, distant mental health hospitals into the community hospitals where patients can see more rapidly available diagnosis and management in the community rather than being relegated to some remote institution where they have a poor chance of recovery.

The other proposal before the Congress, also in the field of mental health, also involves some support for these centers so established in terms of additional staffing necessary to institute such programs in the communities over a decreasing basis of 4 years, I believe it is.

Mr. NELSEN. The observation that seems obvious to me is that some of the problems that you are faced with are directly on the doorstep of the Congress itself, where we pass legislation, and quite frequently we have a tug-of-war where it is supposed to go even among committees.

The reason I ask the question, I want to be sure that we are not doing something that duplicates what you have already been asked to do by congressional act.

Now, another question, and this does not relate primarily to the bill before us, but I would like to ask the question while I have the opportunity, Dr. Terry.

I remember attending the dedication of a hospital a number of years ago, and they had failed to get Hill-Burton funds, but then by local subscription, they proceeded on their own ability. It was a beautiful hospital. And they made the observation to me that they were able to do the same job with less money, because they were not required to meet the very stringent standards that they would have had to comply with had they used Federal funds.

Now, I just wonder: How are your standards coordinated with State public health services? Are they more stringent? Do you depend on the States, or do you have more difficult standards?

Dr. CHRISTENSEN. In administering the hospital construction program, minimum standards of construction have been set and approved by the Federal Hospital Council. These minimum standards of construction are required by the Public Health Service for those projects which are going to have Federal financial participation.

We have found in many cases the States have higher standards than our minimal standards. We are very proud of this fact and feel that we have made an important contribution in the elevation of hospital construction standards.

I might cite a few things. If you think back a number of years about some of our old hospitals, you may recall how difficult it was to get a patient through the hallway to his room and bed without tilting the stretcher, because the door or hallway was too narrow.

In the area of fire safety which is certainly very important, the program has made significant contributions. The Hill-Burton projects to date have had an extremely fine record for fire safety, and I know of no major fire disaster that has occurred in any of the Hill-Burton projects to date.

So, we feel that this program has made a very important contribution to the country by the elevation of hospital construction standards.

Mr. NELSEN. I thank you gentlemen.

No more questions.

Mr. ROBERTS. The gentleman from Pennsylvania.

Mr. RHODES. Mr. Chairman, I would like to ask Dr. Christensen about a statement here on the first page of his testimony. It is with regard to the growing gap between discovery and application of health knowledge; between what is known and what is actually being done.

Now, I would like to know what is being done to narrow this gap.

Dr. CHRISTENSEN. At the present time, we think that there are really four major factors that need to be considered, and we feel that we are making a small contribution in each one of them, but much more needs to be done.

The first of these is in the organization of health services at the local levels. I think we need better organization to there would be less duplication of services and better utilization of the health personnel. This would bring about more effective use of the facilities and personnel than occurs at the present time and also would, I believe, result in a more concerted effort in the attack upon some of these diseases.

The second thing that needs to be done, more than at the present, is the creating of a greater awareness in the public, itself, as to the importance of going to their private physician or going to the office where they receive their health care at an early date so that severe and serious complications of the disease process can be prevented by treating the disease at an earlier date.

You attack this problem by public information, health education, and similar types of programs. You all are aware of the role of official health agencies, of voluntary agencies, of local medical societies, of local dental societies, and similar health agencies in this matter.

The third area that is important is the need for a continued type of education program for health personnel. If we look back and think

of the many new discoveries that are occurring in medicine and the health field, it becomes almost impossible for the private physician, for the dentist, for other health personnel to keep up to date. There is need for a continuing type of training program for all types of personnel so that they might use the latest methods in the most effective way in order to cut down the morbidity and mortality of these diseases.

The fourth factor is familiar to all of us. This is the shortage of health manpower in all categories. H.R. 12, which this committee has so successfully gotten through the House of Representatives, will go a long way toward meeting the need as far as dentists, physicians, osteopaths, and nurses, but there is a growing problem in the ancillary health personnel. The need for basic training for physiotherapists, for laboratory technicians, for neutritionists, and for many other categories of health personnel are great. These all are shortage categories.

It is important, as we move into the chronic disease field, that we work as a health team—with the physician at the center directing the treatment and with the other health personnel all contributing toward the total care of the individual.

Therefore, it is necessary to look at the total health personnel when we are talking about manpower.

Mr. RHODES. So, then, it is a problem that must be met on a local level as well as a Federal level?

Dr. CHRISTENSEN. Yes, sir.

Mr. RHODES. Do you think we are moving fast enough to narrow this gap?

Dr. CHRISTENSEN. I think so.

Mr. RHODES. Could we do better?

Dr. CHRISTENSEN. I think we could do better than we are doing at the present time, but I am first to admit that the changing of public opinion in terms of creating awareness of personal health needs is a rather slow and at some times discouraging process. There is no question but what we could move faster if we could move into some of these other areas more rapidly than we are doing.

Dr. TERRY. May I just remark there a word in addition to H.R. 12 which is now before the Congress?

As you know, and as Dr. Christensen has mentioned, I think it is one of the most outstanding pieces of legislation which is needed in this area.

I would like specifically to mention the Community Health Services and Facilities Act which was passed in September 1961. This is particularly true, I think, at the State and local levels in terms of working out mechanisms by which we can get the better coordination of our health services.

The large part of these funds made available through this act and program is directed toward particular projects, experiments, if you want to call them that, pilot projects in terms of how can we get better use and better development of our facilities, our physical facilities, as well as our personnel and related supporting resources in the community?

I think that this committee and the Congress in passing this act gave us one of the most valuable tools with which we have to work in this direction.

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Now, we have had this tool only a year and a half, but already we are seeing some very important developments taking place on the National, State, and local level as a result of studies which have been carried out under this act in aiding and developing these programs.

Dr. CHRISTENSEN. I might mention a few of the projects that have developed as a result of the Community Health and Services Facilities Act.

At the present time, we have had applications for about 300 special projects. We have approved about 90 projects. These projects are reviewed by a committee which is composed of 15 people, 10 of which are outside experts and 5 are experts within the Public Health Service. They review these projects from a scientific point of view.

The kinds of projects that we have had are very interesting. One of the State medical societies, for instance, had applied to us for a grant for the purpose of determining the quality of care that is given in private physicians' offices. I think this is a very remarkable stride forward when the State medical society has taken this step toward trying to provide better services for the people within that State.

Another kind of project we have had is the one that I cited in my opening statement where we place several nurses in a rural area to see whether or not it was possible to provide a home nursing service in a rural setting. This proved successful, and it is probably going to be adopted on a statewide basis at the present time.

Another project that we have is in Dade County, Miami, Fla. This is an effort of the welfare agency and the health department to work more closely together in order to do away with duplication of services.

Another interesting project that we have is in a rural county up in Hudson, N.Y., where a group practice is trying to furnish the out-of-hospital services for the entire county.

In addition to these, we have projects with several of the leading hospitals where they are setting up training programs for the further development of coordinated home care programs so people that wish to establish a home care program in their own community can go there, be trained, see the things that are necessary, and the things that they can use at this training center, so they can adopt a home care program in their own community.

These are the kinds of developments that are happening as a result of the project grant sections of the Community Facilities Act and this is why all of us in the public health field feel that this is such a significant piece of legislation.

These projects are going to be new methods, new ways of delivering services, and these are the things that are going to bring about more effective utilization of the health services that now exist in the communities.

Mr. RHODES. You have given some very good examples of the many people in this country that die prematurely and suffer unnecessarily.

I am quite certain that if the public would be informed fully on this matter that they would give the kind of support that is necessary, not only to narrow the gap but to eliminate it.

That is all.

Mr. ROBERTS. Thank you.

Thank you very much, Dr. Christensen.

Dr. Terry, I think our next witness is Mr. M. Allen Pond, Office of Assistant Surgeon General for Plans.

I believe Mr. Pond will conclude the list of witnesses from the Public Health Service.

I would like to ask Mr. Pond if he would be willing to summarize his statement for the subcommittee, if that would be convenient for you.

Mr. POND. I would be delighted to, Mr. Chairman, in view of the fact that many of the points that I wanted to make have been made by prior witnesses, both with respect to the manpower problem and the facilities.

Mr. ROBERTS. That was my feeling.

You may file your statement for the record.

(The statement referred to follows:)

STATEMENT BY M. ALLEN POND, ASSISTANT SURGEON GENERAL FOR PLANS, U.S. PUBLIC HEALTH SERVICE

MANPOWER AND FACILITIES

Each of the preceding speakers has identified the importance to the Nation's health of an adequate supply of skilled manpower, and the need for a variety of facilities. It is my purpose to discuss some of the major aspects of the health manpower problem, summarize briefly the role of the Public Health Service in helping to provide facilities of significance to the public health, and suggest certain areas where further attention will be needed in the years ahead.

HEALTH MANPOWER

Present supply and needs

About 2.2 million persons in more than 30 occupational categories are now engaged in health work in the United States. Some categories—medicine, dentistry, and nursing, particularly—have been extensively studied, and we have relatively good estimates of need. But there are many others—nutritionists, laboratory technicians, medical record librarians, clinical psychologists, health educators, medical social workers, statisticians, speech therapists, sanitary engineers, and health physicists, to name only a few—for whom the need is great, but about whom there is less specific information.

Increasing demand for health services which is reflected in increasing need for health manpower is a product of population growth; increasing knowledge about disease processes, including improved methods for preventing, diagnosing, and treating illness; rising economic levels, and especially the increase in third-party payments for medical and hospital care; more and better public education; and growing urbanization.

The predicted increase in the population 65 years of age and over from 17.5 million in 1963 to over 20 million in 1970 will itself increase the demand for health services and facilities since older people require substantially more care than do young people.

During the past 30 years, there has been an absolute increase in demand for personal health services. Since 1930 the rate at which people visit physicians has tripled. During this same period the proportion of the people admitted to a general hospital annually has more than doubled.

Treatment of the mentally ill is receiving greatly increased attention. Already some progress has been made in replacing custodial care with intensive therapy, both inside and outside the hospital. But over 600,000 mental hospital patients have the services of only 4,000 physicians and 5,000 professional nurses; or less than 1 doctor and 1 nurse per 100 hospital patients. The Joint Commission on Mental Illness and Health last year recommended that by 1970 the number of physicians and nurses caring for the mentally ill be about doubled.

Improved services for other chronically ill and disabled persons, and for the mentally retarded, for example, will increase the demand for specialized health manpower.

Medical research will require a marked increase in the number of trained investigators in the sciences, and of supporting personnel engaged in research. Specifically, the number of trained personnel must approximately double over

the coming decade, with an increase in medical research manpower from the current level of about 40,000 to about 80,000 in 1970. Much of this increase must be in persons with doctoral degrees in the basic medical sciences.

In environmental health, emerging threats to health as well as expanded knowledge of how to deal with these threats have created urgent needs for scientific and technical personnel in water pollution control, air pollution control, radiological health, occupational health, waste disposal, milk and food sanitation, and environmental engineering. For example, the Surgeon General's Committee on Environmental Health Problems in 1961 recommended substantial increases in the numbers of professional workers and an increase in subprofessional workers from the current 3,000 to 10,000 a year by 1965.

With the committee's approval, Mr. Chairman, I will submit for the record a separate tabulation of available data on health manpower.

Training needs

We are not now training enough health manpower. This committee has already carefully considered the situation in medicine and dentistry. The action of the House on Wednesday is heartening evidence of the seriousness that you and your colleagues attach to the situation.

A study of needs in nursing has just been completed by a group of consultants to the Surgeon General. This shows a need for nurses which is far greater than the present potential of our nursing schools. The consultants have recommended as goals for 1970 that there be a 75-percent increase in the numbers graduating each year, with substantial expansion of both collegiate and hospital programs.

Why aren't we training the people that we need? For some professions a major obstacle is the formidable cost of building teaching facilities. The cost of a new medical school is currently about $8 to $10 million for basic science teaching facilities and another $12 to $15 million or more for an adequate teaching hospital. Most universities today find it difficult to meet the space needs of existing educational programs, let alone those of new programs.

Another deterrent to expansion of training capacity is the high operating cost of training programs. The usual budget for 4-year medical schools today runs in the vicinity of $2.5 to $3.5 million a year. Such costs place severe strains on the budgets of parent educational institutions. Additionally, individuals qualified for faculty positions in schools for the health professions are in short supply.

For many health occupations there has been no comprehensive study of manpower needs and training requirements. Such a study could provide a real incentive to the orderly development of training capacity.

Difficulties in recruiting enough qualified students constitute another barrier. In recent years the health professions have been at a disadvantage with relation to science; both because of the present glamor and of the substantial amount of financial assistance available for training in the so-called hard sciences. Expansion of teaching facilities will increase the opportunity for qualified students. But high costs, long training, and great competition from other fields of specialization will continue to handicap recruitment. Thus expansion of teaching facilities must be accompanied by measures which will substantially increase the number of qualified students.

The present role of the Federal Government

For many years there has been Federal aid to promote specific types of manpower training. In the health field, support has been provided mainly for research training, public health training, mental health services training, professional nurse education, and practical nurse training.

The Public Health Service, as the primary Federal agency dealing with health affairs, has assumed increasing responsibility in the field of health manpower development. Its major efforts have been directed to the study of needs, and to the establishment of training assistance programs. Studies of needs go back 25 years and more, with major attention focused on the total supply of the key professions. During World War II a major concern was the protection of manpower resources for the protection of civilian health, while at the same time meeting military requirements. In the past few years major studies have been made of needs in medicine, dentistry, nursing, environmental health, mental health services, and research.

The role of the Public Health Service in training

The training and fellowship programs of the Public Health Service have increased significantly in the past several years. Indeed, the successful accom-

plishment of Service-sponsored programs—in research, in community health services, and in environmental health—is dependent upon an adequate pool of well-trained manpower. Since the need for trained manpower pervades virtually all programs of the Service, there is almost no unit in the organization without some training interests.

In 1947, training and fellowships made up only four-tenths of 1 percent of the total appropriation for the Public Health Service—less than one-half million dollars. In 1963 they make up 13.6 percent of the total Public Health Service appropriations—about $215 million. This includes (*a*) traineeships awarded directly by the Public Health Service to deserving individuals applying for financial assistance; (*b*) training grants that are awarded to institutions of higher education to assist them in improving their curriculum and facilities and in providing stipends for deserving students; and (*c*) research fellowships which are awarded primarily to train personnel in direct research work.

Although these and other programs of Federal assistance for education and training probably will continue to differ according to special needs, they should be developed with a view to their impact on total health manpower requirements. The Federal Government in cooperation with other public and private agencies and institutions must persist in efforts to develop health manpower policy in such a way as to advance the Nation's manpower and education interests generally, in addition to providing staff for essential health services.

The most urgent problems

In looking to the future, the following are areas of special concern in respect to health manpower:

(1) The need for increased production in the key professions of medicine, dentistry, and nursing.

(2) Research and development of methods of making better use of these scarce talents. This should extend to the encouragement of better organization for the provision of services, including group practice, and the greater use of auxiliary workers.

(3) The need for greater attention to training for community services and patient care.

(4) The need for a comprehensive review of the health manpower resources and requirements of the Nation.

FACILITIES

The Public Health Service is engaged in three significant programs to aid in the construction of facilities of public health significance: (1) hospital and other health care facilities; (2) medical research facilities; and (3) municipal sewage treatment plants. In each of these categories, the Federal role is that of partner in financing the costs of building and equipping plants that are owned and operated by public or other nonprofit organizations.

Health care facilities

As a result of experience gained during the depression and the years of World War II, Congress in 1946, in passing the Hospital Survey and Construction (Hill-Burton) Act, recognized the need for Federal financial assistance in planning, building, and equipping local health care facilities. This action was taken in the face of growing demands for hospital care which was unavailable in many rural areas and inadequate in scores of larger communities.

The major purposes of the Hill-Burton Act were (1) to assist the States in making an inventory of existing facilities, in surveying their needs for additional facilities, and in developing comprehensive plans for construction of additional facilities; and (2) to provide the necessary incentive, through financial assistance to the States, for the construction of long-needed public and other nonprofit hospitals, public health centers, and related hospital facilities.

In 1954 the act was amended to provide funds for constructing nursing homes, diagnostic and treatment centers, rehabilitation facilities, and chronic disease hospitals. At the same time the Public Health Service was authorized to conduct and make grants for hospital research. The enactment of the Community Health Services and Facilities Act of 1961 further expanded the research program by authorizing experimental and demonstration construction and equipment projects.

To participate in the Hill-Burton program, each State is required to designate a single State administering agency and to develop an annual State plan for

construction, including an inventory of all civilian inpatient and outpatient facilities available, and a long-range program for meeting additional facility needs.

Sums appropriated are allotted to the States in accordance with a statutory formula which takes into consideration the population and relative per capita income of the States and territories. The formula operates so that the largest per capita share of the Federal appropriation goes to the States with the lowest per capita income, which also are generally those having the greatest unmet need for hospital services. The total minimum annual allotment to a State is now $550,000. Federal participation may range from one-third to two-thirds of the total costs of construction and equipping an approved project.

As of February 28, 1963, a total of 6,573 projects had been approved for Federal aid under the Hill-Burton program. Of this total, 5,205 were completed and in operation. The remaining 1,368 are under construction or in the planning stage. These projects will provide 279,199 inpatient beds and 1,842 other health facilities.

Thus since World War II important progress has been made in providing for health facilities construction from both private and governmental sources. Additional hospital beds and health centers have been provided, and there also has occurred, mainly as a result of the Hill-Burton program, (1) systematic statewide planning for hospital facilities; (2) development of standards of need; (3) achievement of better distribution of facilities; (4) improvement of hospital design; (5) improvement in hospital operation; (6) effective cooperation between Government and voluntary health agencies; (7) improvement of medical care in low-income States and in rural areas; and (8) aid to teaching centers for training physicians and nurses.

Despite the progress made by the Hill-Burton program, there continue to be important unmet needs for health facilities in the United States. Briefly summarized, the goals for future action involve the need to:

1. Increase substantially the capacity of acceptable facilities for long-term care, i.e., chronic care hospitals and skilled nursing homes;
2. Increase construction of community-based mental health facilities, and encourage construction, expansion, and modernization of facilities for the mentally retarded;
3. Support replacement and modernization of older hospitals;
4. Stimulate community planning for redistribution of facilities in metropolitan areas to achieve balanced urban hospital resources; and develop an integrated program of construction and services for all types of facilities within an urban area, according to a community plan;
5. Encourage construction of general hospitals in those remaining general hospital service areas with demonstrated shortages;
6. Provide for enough construction of all types of in-patient facilities to reduce present shortages and keep up with population growth;
7. Continue the construction of necessary public health centers and other outpatient facilities to improve preventive and ambulatory care;
8. Support new construction, replacement, or rehabilitation of teaching facilities for training medical, dental, and other health personnel;
9. Expand research in support of (*a*) efficiency of design and operation of facilities and effective use of personnel; (*b*) the application of new medical discoveries in diagnosis and treatment to reduce the need for in-patient care; and (*c*) improved organization of community machinery for continuity of care for patients, between the hospital and related institutions.

Health research facilities

In 1956, the Congress enacted legislation (Public Law 84–835) to authorize Federal matching grants to aid in the construction and equipping of facilities for research in the sciences related to health. This action provided the base for a program that has been extremely effective in helping to provide facilities used in carrying out important medical research.

The Federal share of grants under this program cannot exceed 50 percent of the cost of the project. To be eligible for a grant, the applicant institution must be either a non-Federal public or a nonprofit private organization, which is competent to carry out the type of health-related research for which the facility is designed.

Various types of facilities are eligible for assistance under the program including not only research space per se, but also specialized facilities used in support of research such as animal resource centers. Projects may be designed for general medical research, or they may be planned to meet categorical disease

interests such as research in cancer, communicable diseases, mental health, dental diseases, or metabolic disturbances.

Since this program was initiated there have been more than 1,425 applications for grants, and 1,048 have been approved. These grants have been made to 373 institutions in 49 States, the District of Columbia, and Puerto Rico. The Federal share of the cost of the approved projects has been approximately $230 million. As of December 31, 1962, there was a total of 431 completed projects. These facilities represent a Federal investment of $71,305,841. Supplementary grants for movable equipment in these research facilities have not been included in this total.

In looking ahead, it is likely that there will be increasing demand for assistance under this program in building child health research centers, research facilities in connection with new or modernized medical schools, and specialized centers for the management of health research data and information. It may be necessary, also, to call upon this program to aid in the development of broad environmental health research facilities.

Construction grants, municipal waste treatment works

Although Public Law 845 of the 80th Congress had set the stage for the modern Public Health Service water pollution control program, the Federal grants program for municipal waste treatment works was first authorized in 1956 by the 84th Congress (Public Law 660). The 1956 act authorized annual appropriations of $50 million for grants of 30 percent of the cost of sewage treatment works up to a maximum grant of $250,000 for a single project. Allotments to the States were made on a statutory formula based upon population and per capita income.

In 1961, the Congress in Public Law 87–88 amended the Federal Water Pollution Control Act to—

(1) Authorize annual increased appropriations of $80 million in fiscal year 1962, $90 million in fiscal year 1963, and $100 million for the fiscal years 1964 through 1967.

(2) Increase the 30-percent grant limitation from $250,000 to $600,000.

(3) Encourage communities to construct joint rather than separate projects by applying the individual grant limitation to each community's share of such projects up to a total of $2.4 million.

(4) Require the reallocation of unused State allotments to States having projects which cannot be approved because of lack of funds.

Public Law 87–88 has spurred further increase in construction and encouraged the development of multimunicipal projects. Contract awards rose to $449 million in 1961 and to a tentative $497 million in 1962. The first multimunicipal project application came from San Diego, Calif., where 10 cities joined together in a project costing $49 million. There are now 14 such projects located throughout the country.

Since 1956, 4,219 projects have been approved for grants of $366 million. Local communities have contributed $1,898 million of additional funds to meet the total project cost of nearly $2.3 billion. This is a ratio of 5 local dollars to each Federal dollar in grants-in-aid. These facilities will serve a population of 40 million and will improve the quality of 43,000 miles of streams.

There are indications that the backlog of needed treatment works is beginning to decline under the impact of the increased Federal aid now available. The population of communities discharging untreated raw sewage has been dropping, and significant improvement has been noted among communities discharging inadequately treated wastes. While unsewered communities are not usually important sources of stream pollution, they frequently experience serious ground water pollution and other public health problems arising from the individual disposal of sewage. The population of unsewered communities reported by State health authorities as requiring sewer systems and sewage treatment facilities is now 5.8 million.

The present backlog of needed municipal waste treatment works includes about 5,800 projects costing $2.2 billion. The elimination of the backlog of needs over a 10-year period together with needs issuing from population growth and obsolescence will require annual expenditures of $600 million in terms of current dollar valuation. Disposition of the backlog by 1970 would require annual spending of $700 million. Rising construction costs of about 2 percent per year will further increase these figures.

Construction of waste treatment works is expected to continue its present increase until the full effect of the $100 million annual grants authorization has been felt.

Mr. POND. I would like with the committee's approval to include some summary health manpower figures that I think will be of interest to members of the committee.

Mr. ROBERTS. Without objection.

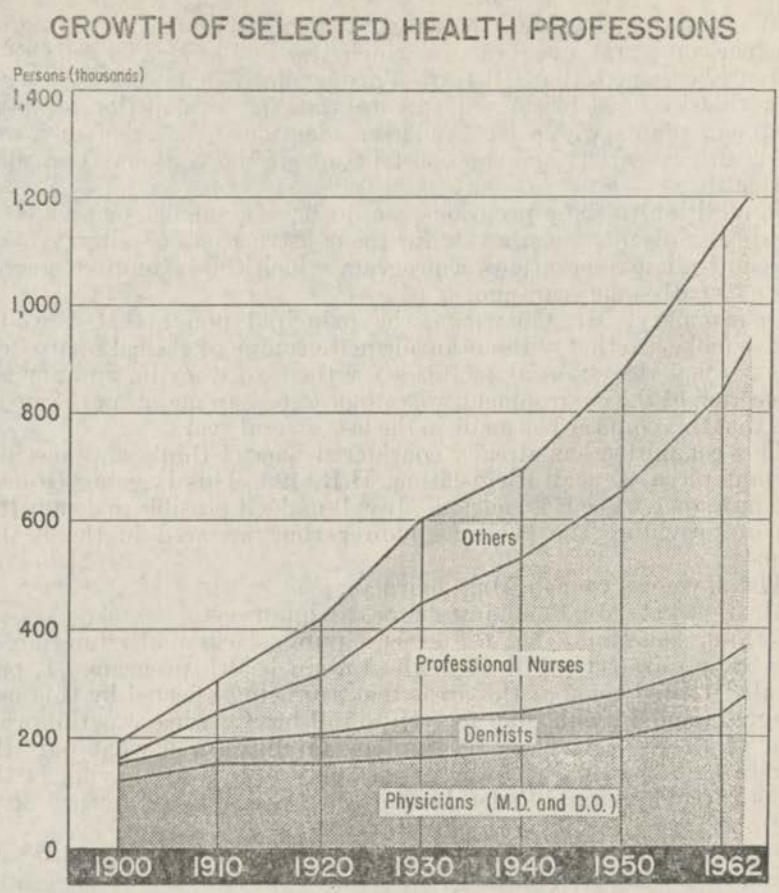
(The material referred to follows:)

Health manpower in selected occupations, United States

Tab		1949–50	1960–62
	Medical occupations:		
1	Physicians (M.D.)[1]	206,300	259,100
1	Physicians (D.O.)[1]	12,700	14,700
2	Administrators, hospital and medical programs	8,600	12,000
3	Chiropractors	20,000	25,000
4	Dietitians and nutritionists	22,900	26,700
5	Educators, public health	600	1,000
6	Medical assistants (in physicians' offices)	70,000	80,000
7	Medical illustrators	4,500	500
	Medical laboratory personnel:		
8	Medical technologists-technicians	30,000	68,000
9	Medical X-ray technologists-technicians	30,800	70,000
	Medical record personnel:		
10	Medical record librarians	4,000	8,000
11	Medical record technicians	8,000	23,000
12	Opticians and optical laboratory mechanics	19,800	21,000
13	Optometrists	17,800	19,400
14	Pharmacists	101,100	117,400
15	Podiatrists	7,100	7,600
16	Psychologists, clinical	3,000	8,000
17	Rehabilitation counselors	1,000	2 000
18	Social workers:		
	Medical social workers	3,200	4,500
	Psychiatric social workers	3,000	7,200
19	Statisticians and analysts:		
	Public health statisticians	1,000	2,000
	Public health analysts	1,000	3,000
	Therapists:		
20	Occupational therapists	2,000	8,000
21	Physical therapists	4,600	9,000
22	Speech and hearing therapists	1,600	7,600
23	Veterinarians[1]	15,800	21,600
	Total	596,400	826,300
	Dental occupations:		
24	Dentists[1]	86,900	104,000
25	Dental assistants (in dentists' offices)	55,200	82,500
25	Dental hygienists	7,000	12,500
25	Dental laboratory technicians	21,000	25,000
	Total	170,100	224,000
	Nursing occupations:		
26	Nurses, professional	375,000	550,000
27	Nurses, practical	146,000	225,000
27	Aids, orderlies, attendants	220,000	410,000
	Total	741,000	1,185,000
	Environmental health occupations:		
28	Sanitary engineers	6,000	8,000
29	Sanitarians	5,000	14,000
	Radiological health:		
30	Health physicists	----------	800
31	Clinical radioisotope technicians	----------	2,000
	Total	11,000	24,800
32	Scientists in medical research: Biochemists, biophysicists, bacteriologists, pharmacologists, and other scientists (excluding M.D., D.V.M., D.D.S.)	7,000	28,000
	Total health manpower	1,525,500	2,288,100

[1] Active and inactive. All other estimates are for active only.

Source: Estimates by Public Health Service, Division of Public Health Methods, April 1963.



Mr. Pond. Briefly, about 2.2 million people are currently working in the health professions or in ancillary fields of providing health services for the American people.

We know a good deal about the dentists, about nurses, about the physicians, and about the public health workers, but we have a great deal to learn about other kinds of professional personnel which are of concern to all of us in providing the public health services.

One of the major problems in the Public Health Service is to move ahead on the careful analysis of the total manpower needs for health services in the United States, and this we can do.

With respect to the manpower problems at the present, Dr. Shannon, Dr. Anderson, and Dr. Christensen have all discussed some of the training activities of the Public Health Service. These activities provide for assistance to students, for graduate work, and for professional training. They also provide funds for the stimulation of better training programs in universities and professional schools. They provide for research fellowships to train people who are needed to carry on the research efforts of the Nation.

In my statement, Mr. Chairman, I also discuss the three major construction grant programs in which the Public Health Service is currently engaged: the Hill-Burton program which has been discussed somewhat by Dr. Christensen, the program for construction of waste treatment plants which Dr. Anderson mentioned the other day, and the health research facilities construction of the National Institutes of Health.

In addition to these programs, we do have a smaller one which is highly significant, nonetheless, for the construction of sanitary facilities on Indian reservations, a program which this committee started down its path some years ago.

In summary, Mr. Chairman, the principal points that I would like to make are that without an adequate source of skilled manpower and without the essential facilities for them to work in, and for the protection of the environment, we cannot expect to maintain the progress that this country has made in the last several years.

This committee has already considered what I think is a most important piece of health legislation, H.R. 12. This is going to be a real milestone when it is enacted. It will make it possible to do a better job of providing the basic manpower that we need in the health sciences.

Thank you very much, Mr. Chairman.

Mr. ROBERTS. Mr. Pond, just one or two questions.

I think sometimes that the general public lacks understanding as to what we are trying to do in the Indian health program. I, personally, visited some of the areas that are being affected by this new program, and I would like for you to tell briefly what was the problem, why they lacked certain sanitary facilities, and what part the governing bodies of the Indian tribes played and are playing in the parts of the States and Federal role of the Federal Government in trying to do something about the situation.

Mr. POND. Basically, Mr. Chairman, when the Indian health program was transferred to the Public Health Service in 1955, the health conditions on Indian reservations and among the American Indian and Alaska native populations were abominable. They lacked essential sanitary facilities; they had very inadequate health services; they had very limited immunizing activities of the type most health departments and most private physicians provide for the people elsewhere in the United States.

The Service has been able, with the help of Congress, to mount a very substantial program for the construction of decent health service facilities, hospitals, clinics, and other facilities for the care of the Indian population. It has made very real progress in the development of decent sanitary facilities on Indian reservations so that the Indian population can be protected against the enteric diseases which were ravaging the tribes and still do in some areas.

The basic effort of the Service can be summarized in this way: We have attempted to provide decent health facilities and adequate health services to the Indian people. We have attempted to develop a decent sanitary environment for the Indian people and we have carried on, I think, a very effective job of trying to teach the Indian people how to live in a healthful fashion. This has been done cooperatively with tribal representatives and tribes themselves, and has elicited, I think,

real support from the Indian people as well as from the Service itself.

We have some data here which I think might be interesting to the committee. For example, in 1954, in the Indian population of the United States, there was a death rate of 54 per hundred thousand from tuberculosis; in 1961, this has dropped to 21.

Mr. ROBERTS. Would you give that figure again, please?

Mr. POND. It was 54 in 1954, 54 per hundred thousand population; and it dropped to 21 in 1961.

Among the Alaskan natives the death rate from tuberculosis in 1954 was 236 per hundred thousand. This has dropped to 37 per hundred thousand.

Mr. ROBERTS. What about the infant mortality? Have we made any improvement in that?

Mr. POND. We have, sir.

For Indian babies, the death rate per thousand live births in 1954 was about 65; in 1961 it had dropped to about 43. For the rest of the population, as a comparison, the infant death rate for the United States as a whole was about 27 in 1954 and it dropped only to about 25 in 1961. It is a very dramatic drop among the Indians.

Mr. ROBERTS. Dollarwise, what are we spending on that program?

Mr. POND. This year, we are spending around $56 million on the basic program, and the construction program is around $9 million.

Mr. ROBERTS. Is most of that money, as far as the Federal Government is concerned, in the form of technical assistance?

Mr. POND. In part. The greater part is for the provision of direct services, or services provided under contract.

Mr. ROBERTS. How much of the money is being supplied by the tribes themselves, and by the States affected?

Mr. POND. I will have to supply that information for the record, sir.

Mr. ROBERTS. Without objection.

(The material referred to follows:)

THE INDIAN SANITATION FACILITIES CONSTRUCTION PROGRAM

Public Law 86-121, commonly referred to as the Indian Sanitation Facilities Construction Act, was approved July 31, 1959. This law authorizes the Surgeon General of the Public Health Service to work with the Indians and Alaska natives in construction of sanitation facalities for their homes and communities. Projects initiated under this authority involve modernization, construction and extension of community and individual water supply, waste disposal and drainage facilities.

Projects are undertaken only with the full knowledge, understanding, and participation of the beneficiary groups. Indian participation is obtained in project planning, in project execution and in assumption of responsibility for operation and maintenance of completed facilities.

The program began in fiscal year 1960. Through fiscal year 1963, a total of 168 construction projects and 66 emergency projects and engineering investigations at an estimated Federal cost of $9,750,000 have been programed. It is estimated than an additional $65 million will be necessary to meet the remaining known needs. Construction progress as of February 28, 1963, can be summarized as follows:

Construction projects authorized	168
Public Health Service-tribal agreements executed	147
Projects essentially completed	68
Projects under construction	49
Agreements to be negotiated	21

Upon completion, Indian homes served by the foregoing projects will number more than 13,000.

During fiscal year 1963, an additional $3 million for 29 Indian sanitation facilities construction projects was made available under the public works acceleration program. Public Health Service-tribal agreements have been executed for 25 of these projects, and work is progressing rapidly toward initiation of construction activity.

In addition to the foregoing budgeted activities, the Division of Indian Health provides the engineering and technical supervision to the Navajo tribal shallow well and spring development program. During fiscal years 1960, 1961, and 1962, approximately 887 projects financed by the tribe were constructed. It is anticipated that an additional 300 projects will be constructed in fiscal year 1963. Each project represents a watering point which serves 5 to 15 Navajo homes.

In the conduct of this program to date, increasing understanding by the Indian people of the advantages of adequate sanitation facilities has been demonstrated. Substantial contributions of labor, money, and materials have been made by the Indians to construction projects. The extent of Indian contributions to date is equivalent in value to approximately one-third of the total construction effort.

This cooperative construction activity between the tribes and the Public Health Service requires (1) frequent consultation regarding design, supervision of construction and tribal participation in the project, (2) development of operational and maintenance organizations within the Indian groups for continued operation and care of completed facilities, and (3) instruction of Indian people in maintenance, repair, and protection of sanitary facilities. The staff necessary to satisfactorily perform these duties when implementing a million dollars in construction is 10 field positions. These include engineers, construction supervisors, sanitarian aids, draftsmen, clerical and staff assistants.

Dr. TERRY. Mr. Chairman, I have the figures here for your information.

In relation to the Indian health program for 1963, there is a total of $55,834,000 with an additional $9,335,000 for construction.

Mr. ROBERTS. Now, what form does the Federal construction take, Dr. Terry?

Dr. TERRY. Federal construction takes several forms.

First, it takes the form of the construction of hospitals jointly used by Indians and non-Indians, including assistance to communities for the construction of hospitals, outpatient clinics, and that sort of facility.

In addition to that, there are funds for construction of sanitation facilities, sewage disposal plants, water supply systems, even individual wells or wells for communities. Those are the two general areas.

Mr. ROBERTS. Do you see any trends in this programing? I mean by that, do you see any situation of a need for an increase or do you think that we are moving along very well within what we know and what we can do with the money that we have?

Dr. TERRY. As one looks back over our program since 1955 when this was given mainly as the responsibility of the Public Health Service, we have had gradual increases each year by the Congress, Mr. Chairman. One cannot move into this sort of program on a crash basis and suddenly change from the existing high death rate conditions to a situation comparable to the rest of the American people.

Consequently, what we have seen over these 7 years is a gradual buildup in terms of the number of personnel we have been able to put into the program, the establishment of facilities, the training and education of the American Indian, and the Alaska native to use those facilities.

I think we may expect over the coming years that we will continue to need some gradual increases similar to those we have received over the past 7 years.

Now, we expect, Mr. Chairman, quite frankly, at some point that we will reach an apex. In other words, what we are striving to do insofar as possible in all of these programs is to bring the Indian up to a health and sanitation standard which is comparable to his neighbors, to bring him up to an educational status which is comparable, and where he will gradually be integrated into the American community just as any of the rest of Americans.

This is going to take a long time, though we have already succeeded in many areas, in moving the Indians' health programs and sanitation programs into the community. This is a very gradual thing and I would hesitate to give a date when we could expect that we would have completely attained this end. It will take many years yet.

Mr. ROBERTS. I note that on page 11, Mr. Pond, of your statement, you speak of specialized facilities used in support of research such as animal resource centers.

Now, the question occurs to me: Do you set any construction standards in this area for contributing to the comfort of the animals used in the experimentation?

Mr. POND. Mr. Chairman, in the development of projects of this type, the applicant has certain basic standards obviously that he tries to meet. I will have to refer to Dr. Hundley who is better informed on this particular problem than I. We do not have, to my knowledge, any specific detailed standards for animal resources centers.

Dr. HUNDLEY. We do have now, Mr. Chairman, to some extent. A contract was let by the National Institutes of Health, to an outside organization. It resulted in a quite comprehensive description of what constitutes humane and proper care of animals as to feeding, housing, and so on. These were received about 10 days ago. They are being published. Once published we intend to promote their use.

Also, we do currently require that all grantees observe humane, sanitary care for any animals that might be used in their experiments.

Mr. ROBERTS. Of course, you know we are familiar with the fact we are using vast numbers and that from the press and from some of the recent occurrences in Virginia and, I believe NIH had a contract for the use of these animals, I feel that construction of proper facilities has not quite kept up with the growth of the use of these animals.

We are familiar, of course, with the fact that Food and Drug has made some progress in this direction and that they have, I believe, recommended going from cages to runways.

I would like for you to supply for the record any additional data that you may have in connection with this problem.

Mr. POND. We would be happy to do that, sir.

(NOTE.—This has been supplied to the committee.)

Mr. ROBERTS. Mr. Springer, do you have some questions?

Mr. SPRINGER. Yes.

I think I would have preferred to have asked these questions of Dr. Shannon, but in view of the fact I have been in and out on several things, I will direct them to Dr. Terry.

Dr. Terry, this is chart 1 of Dr. Shannon's statement. Do you have that?

Dr. TERRY. I will get it in a moment, Mr. Springer.

Mr. SPRINGER. If you will just look at that for a moment, please.

Dr. TERRY. Yes, sir. I have it.

Mr. SPRINGER. Now, this chart 1 for the record is NIH change in organization, research, noncategorical, categorical, and services.

Dr. TERRY. Yes, sir.

Mr. SPRINGER. Now, as I understand this chart, this is a complete outline of all of the various categories in which you do research.

Dr. TERRY. This is an outline of the organizational pattern, yes, sir, a complete organizational pattern of the National Institutes of Health as it existed in 1930, again in 1948, and at the present time.

Mr. SPRINGER. Now, for each one of those categories do you have a Board?

Dr. TERRY. It varies a bit. For instance, let me start with the second line.

Each of those Institutes has a National Advisory Council which is established by or pursuant to law. In addition to that, many of the Institutes have various special committees such as training committees, committees called Boards of Scientific Counselors for advice on their intramural research program. Each of those Institutes has a Council and has several other advisory groups depending upon the needs of their particular programs.

The Division of Biologics Standards has several advisory groups. For instance, there is a Board of Scientific Counselors and two advisory groups in relation to poliomyelitis vaccine.

The Division of Research Facilities and Resources has a Council which reviews proposals for construction of research facilities.

Mr. SPRINGER. Which one was that, Dr. Terry, please?

Dr. TERRY. Research Facilities and Resources, the second block in the top line.

Mr. SPRINGER. All right.

Dr. TERRY. The third and fourth, General Medical Sciences and Child Health and Human Development, were just authorized by Congress as Institutes in addition to the seven on the line below, and their authorizations provided for the establishment of a National Advisory Council to each.

So, the two new Institutes and all seven of the other Institutes have National Advisory Councils which are statutory in origin.

Mr. SPRINGER. May I just state at this point, I think you have covered pretty well what I had in mind.

Now, first of all, what is the purpose of those Boards and those Councils?

Dr. TERRY. Mr. Chairman, this is covered to a considerable extent in the background print, but let me sum it up for you very briefly:

The nature of the Council or Committee, the composition and the functions will vary depending upon the particular circumstances. On those Councils which are statutory in nature, the composition is prescribed.

Let me take the example of the National Advisory Heart Council. The statute requires that the Council consist of 12 outside persons, of whom at least six must be specialists.

Mr. SPRINGER. Might I just digress for a moment? Let that ride for a second, Dr. Terry.

Would you go back to Research Facilities and Resources?

Dr. TERRY. Yes, sir.

Mr. SPRINGER. What is the purpose of the Board there?

Dr. TERRY. The purpose of this Council is to advise and to assist the Surgeon General on this program and to recommend approval or disapproval of application for grants, for Federal funds to be allocated for the construction of research facilities as well as amounts.

Mr. SPRINGER. Is that statutory?

Dr. TERRY. Yes, sir.

Mr. SPRINGER. How many are on that board?

Dr. TERRY. I believe it is 12.

Mr. SPRINGER. Twelve?

Dr. TERRY. Yes, sir.

Mr. SPRINGER. Who appoints those members?

Dr. TERRY. Those members are appointed by the Secretary on recommendation from the program area, the National Institutes of Health, and the Surgeon General.

Mr. SPRINGER. All right.

Now, are there any restrictions on the qualifications of those members?

Dr. TERRY. There are certain statutory restrictions that I just mentioned in terms that certain numbers have to be specialists in the field.

Mr. SPRINGER. Specialist in the field of——

Dr. TERRY. I don't believe there is any such in particular in relation to research facilities, is there? What is the restriction?

Dr. HUNDLEY. You will find it in your background legal print, Mr. Springer.

The law in this case reads as follows:

> There is hereby established in the Public Health Service a National Advisory Council on Health Research Facilities consisting of the Surgeon General of the Public Health Service who shall be Chairman, and an official of the National Science Foundation designated by the National Science Board, who shall be ex officio members, and 12 members appointed by the Secretary without regard to civil service laws. Four of the members selected from the general public and eight shall be selected from leading mental, dental, or scientific authorities who are skilled in the sciences related to health—

and so on.

That is on pages 111 and 112.

Mr. SPRINGER. I have that. Thank you.

Now, Dr. Terry, all of these other boards are something similar to the one that has been described heretofore; is that correct?

Dr. TERRY. There are certain features in common with all of them, Mr. Springer, though they do differ in certain respects.

Mr. SPRINGER. All right.

Now, are all of these appointed by the Secretary except those designated by law?

Dr. TERRY. There is a variation. For instance, we have two advisory groups that are Presidentially appointed. One is the Federal Water Pollution Control Board, and the other is the Board of Regents of the National Library of Medicine.

There is one other appointed by the Secretary, the Federal Hospital Council; most of them are appointed by the Surgeon General.

Mr. SPRINGER. Most of them?

Dr. TERRY. Most of them; yes.

Mr. SPRINGER. That is you?

Dr. TERRY. Yes, sir; at the moment, at least.

Mr. SPRINGER. At the moment.

How long have you been Surgeon General?

Dr. TERRY. I have been Surgeon General—my official appointment dates from March 2, 1961.

Mr. SPRINGER. Who preceded you?

Dr. TERRY. Dr. Leroy Burney.

Mr. SPRINGER. All right.

Now, generally, from what economic group, what professional group, do the great majority of these appointees come?

Dr. TERRY. Most of the appointees, naturally, come from the professional groups, from the groups related to health.

Now, obviously, if it is a nursing committee, it will consist very heavily of persons from the field of nursing.

For instance, if it is an advisory council to the Heart Institute, it consists largely of physicians.

Certain others consists of other persons such as dentists and so forth.

Mr. SPRINGER. Let me ask you this, Dr. Terry: How many, roughly, of this group at the present time come from the professional groups such as presidents of colleges or administrators of programs within colleges?

Dr. TERRY. I would say it is close to half.

Mr. SPRINGER. Now, there is no conflict of interest that is applicable to these various boards, is there?

Dr. HUNDLEY. Yes, indeed. Very specifically, sir.

Dr. TERRY. Dr. Hundley could give you the specifics on this.

Dr. HUNDLEY. There are both laws and Presidential regulations that impose specific conflict-of-interest responsibilities on the members of councils and on ourselves as staff to see that there is no conflict of interest. Each of the members has to supply certain information on their financial interests so that a determination can be made.

Mr. SPRINGER. I get your point. Thank you very kindly.

Dr. Terry, suppose that the University of Siwash has a member of the board. They also have a great research center. Is there any conflict of interest if the president of Siwash sits on the board and gets a grant?

Dr. TERRY. Mr. Springer, the operation of these advisory boards and councils is so arranged that I think conflict of interest is avoided. For instance, if a member of the board is from the University of Siwash, as you suggest, and an application for a grant from that university came up for consideration, during the time it was considered and voted upon, he would leave the room and not participate either in the discussion or the voting unless the members of the council wished him to come back in to give specific information which was not included in the information at hand.

In the study sections, for instance, there is a very specific administrative requirement on our part that an application coming from an institution will be referred to a study section for scientific review which does not have a member from the same institution.

We are very conscious of the potential problem here and make a uniform and effective effort to avoid placing either the individual or ourselves in an embarrassing circumstance.

Dr. HUNDLEY. I might also add to that, Mr. Springer, that we have from time to time made some studies of the actions of study sections trying to compare the rate of approval of applications from institutions which happened to have a member in the scientific review group. These have shown that there is no evidence of bias. We would be glad to supply that kind of data to you.

Mr. SPRINGER. How often do you make such a study?

Dr. HUNDLEY. The last one was about a year ago.

Mr. SPRINGER. And that covered how many cases?

Dr. HUNDLEY. I think it was a year's operation, sir.

Mr. SPRINGER. Every single application that was made?

Dr. HUNDLEY. No, because we had to find instances where applications were coming before a particular group which did or did not have this potential conflict-of-interest situation.

Mr. SPRINGER. Let me ask you this, then, since you are answering these questions: Do you have any estimate of the amount of money that have been granted to a particular institution while either a president or an administrator or a member of the staff of that university was a member of the board?

That is a difficult question.

Dr. HUNDLEY. I don't believe we have ever done that specifically

Mr. SPRINGER. Is there any instance, Dr. Terry, to your knowledge, where a member of NIH ever left NIH's staff and went to another institution and then a loan was made to that institution subsequently?

Dr. TERRY. A loan or grant?

Mr. SPRINGER. Any money passing. I don't care if it was a loan or grant.

Dr. TERRY. I am sure there are numerous such examples. There are a large number of people over the years who have moved from the National Institutes of Health to various institutions. I think you must appreciate that that particular type of personnel that we have at the National Institutes of Health is most similar to the type of personnel in medical schools, universities, and other teaching institutions, so that it is natural that any changes that would take place in terms of personnel moving from one area to the other would be very heavily toward the university environment.

Mr. SPRINGER. Dr. Terry, do you have authority to grant in any way money for the salary of any individual within any institution?

Dr. TERRY. Yes, sir.

Mr. SPRINGER. You do?

Dr. TERRY. Yes, sir.

Mr. SPRINGER. Do you do that on many occasions?

Dr. TERRY. Yes, sir. We have quite a few in our research career program. We have a large number of persons who are granted salaries on application from the individual and the university to the Public Health Service.

Mr. SPRINGER. Do you know of any occasion in which personnel have left NIH and gone to work for some other organization and had his salary substantially increased by a grant from you?

Dr. TERRY. I don't know of a specific one, Mr. Springer.

Mr. SPRINGER. You say you don't know.

Dr. TERRY. I do not know. I do not say that such a thing has not existed, but I do not know.

32-692—64——18

Dr. HUNDLEY. I just wanted to make a point here, Mr. Springer. You asked whether the Surgeon General had authority to pay salaries. He does, but in a sense I want to be sure that you understand. Any such application, whether it is under the research career award program or part of a research grant, has to be reviewed by both study sections and councils that are composed of outside non-Federal scientists. If they recommend it, the Surgeon General can pay it; if they do not recommend the grant, he cannot pay it. This is written into law insofar as Council action is concerned. The requirement for study section or other scientific review to provide dual review results from administrative action on our part.

Mr. SPRINGER. Let me pursue this a little further.

This is not going to be general, and I am not going to follow it up with individual instances, but I am trying to get you policy.

Do you have authority to make a grant for an individual salary?

Dr. HUNDLEY. Yes, sir. We have authority to do this under our research authority.

Mr. SPRINGER. Separately from the question of doing research?

Dr. HUNDLEY. No. They are research awards either for training or for the doing of research.

Mr. SPRINGER. The doing of research?

Dr. HUNDLEY. Yes, sir.

Mr. SPRINGER. Can he be an administrator doing research and receive a salary?

Dr. HUNDLEY. Well, I suppose every researcher is an administrator in a sense, sir. We do not pay salaries to the administrators of research centers or medical schools. We might pay part of the salary of a person in a medical school who spent part time on research and part time on administration.

Mr. SPRINGER. I will let that rest for the present .

There is one thing that I would hope that I could do before we get into asking individual questions, which I am sure we will want to pursue later on.

If you can give within the last 2-year period, or you can go back 3 or 4 or 5, if you want to, the individual grants that were made and the amount of money that was involved in each one and the total overall of the number of grants that were made to institutions I don't care whether it is an educational institution or a research institution at the same time there was a member of the board serving and who also was an employee of the institution or whatever institution it was getting the research grant.

Dr. TERRY. Mr. Springer, I think this would be a practically impossible task, with the tens of thousands of grants that are made with the hundreds of people that serve on our council. I, frankly, think it would take us several months to work out such a piece of information.

Mr. SPRINGER. Well, may I say, Dr. Terry, I think you are going to be faced with this and it will be much more unpleasant, I think, to be forced to come up with individual instances in which this did take place than to openly and honestly come forward with the instances of where there were members of the board receiving grants.

Dr. TERRY. I dare say there have been thousands of such instances.

Mr. SPRINGER. I am not opening this up to make an accusation until I have the facts, but I think this is going to have to come out some time

as to who has been serving on the boards and whether or not grants have been made to research institutions or colleges or universities or whatever it was. With that, I will let it rest for whatever you want to do.

Dr. TERRY. I will assure you there have been literally thousands of such instances of grants made, recommended by council, in which there was a member of the council from that particular university.

Mr. SPRINGER. Would you turn to chart 3 for just a minute?

Mr. Chairman, I will thank you very kindly for your indulgence.

For the identification of the record, this is NIH functions and program components, 1963.

Dr. Terry, it is my understanding that when the appropriations committee meets they make their appropriations in accordance with the categories; is that correct?

Dr. TERRY. Yes, sir.

Mr. SPRINGER. Now, what you have attempted to do in chart 3, as I understand it, is that instead of setting these up by categories such as heart, cancer, and so forth, you have now tried to set them up under the functions which you actually have in NIH; is that correct?

Dr. TERRY. That is a correct statement.

Mr. SPRINGER. In the left-hand column, for the purpose of identification, is the number of millions of dollars which are spent in these various NIH functions and components; is that a correct statement?

Dr. TERRY. That is a correct statement.

Mr. SPRINGER. Now go down to the middle of the page in the box which is enclosed with the black border. The regular research projects are listed at $408 million.

Dr. TERRY. Yes, sir.

Mr. SPRINGER. This would be roughly half of your entire budget; is that correct?

Dr. TERRY. Of the NIH?

Mr. SPRINGER. Yes.

Dr. TERRY. Yes, sir.

Mr. SPRINGER. What was your total budget for 1963, just roughly?

Dr. HUNDLEY. $930 million.

Mr. SPRINGER. $408 million as against $930 million.

Do you believe that for the future it would be better for identification purposes for Members of Congress to have your appropriation set up under functions and components rather than categories?

Dr. TERRY. No, sir; I do not. Since it was available to the committee in the other form as a standard portion of the appropriation documents and in the background committee print, we merely wish to portray it in this manner because this form is not readily available in the other materials.

No, sir. I do not think that this would be better.

Mr. SPRINGER. Dr. Terry, the part that was revealing to me in having this chart before me, in these instances that you have set up under the boards in chart 1, I have to go through all of those to find out how much you are doing in research, for instance. I do want to know how much goes to research and this gives me a much better picture from a practical standpoint than it does to search through each one of these and determine how much research goes into each one of them.

This is very revealing to know you have $408 million in research, roughly, plus your eight centers, international centers, and your general research support.

This gives me a pretty clear picture of what you are doing. I may be wrong about this, but I think it would be much more to your advantage to have it done in this way, although I will admit that the question of cancer and heart has some popular appeal.

But in order to know what you are doing, when these things come before a Congressman, to have it in this form gives a better picture of how much you are actually doing in the form of research.

Do you have any comments?

Dr. TERRY. Mr. Springer, I would like to call your attention to the chart that we presented to you within the past 2 days which shows a breakdown of the appropriations. For instance, it takes each Institute and shows how much of the total funds for that Institute went into research grants, how much went into fellowships, how much went into training; and then, over in the area of direct operation, what the individual or various costs were there.

So, what we have attempted to do is to present information in various ways to give you an overall perspective so that you could look at it in terms of category or in terms of the sort of functional chart that we have just been discussing.

Mr. SPRINGER. Mr. Chairman, that is all.

Mr. ROBERTS. I thank the gentleman from Illinois.

Thank you, Dr. Terry, and your associates, for the exhaustive presentation which you have made of the numerous health programs administered by the Public Health Service.

The members of the committee and the staff will analyze the material carefully. The Chair will call further hearings at a later date on different aspects of these proposals.

In closing the public health phase of the hearings, let me say that I, for one, feel that it may be necessary to stagger the exploration dates of these programs so that the committee will have opportunity to scrutinize the programs at regular intervals.

Again, I want to express the sentiment of the subcommittee in thanking you and your associates for what I think has been a very clear presentation.

Dr. TERRY. Thank you, Mr. Chairman, and members of the committee.

It has been a pleasure for us to appear because we realize that the very life of our programs depends upon the proper understanding of our programs by the Congress and particularly, of course, on our legislative committee of the Congress.

Mr. ROBERTS. Mr. Rogers.

Mr. ROGERS of Florida. I just wanted to ask Mr. Pond on item 2 that he might supply some information for the record for us perhaps.

I notice that on page 4 of your statement you say:

> For many health occupations there has been no comprehensive study of manpower needs and training requirements. Such a study could provide a real incentive to the orderly development of training capacity.

Then on page 5 you say:

> In the past few years major studies have been made of needs of medicine, dentistry, nursing, environmental health, mental health services, and research.

Now, I think it might be well for us to know what areas you feel need study, particularly, and what is being done to bring about these studies or what should be done as far as legislation is concerned.

Also, I would like to know if you can give the committee information as to how we are meeting the needs of the studies that have been made in medicine, in dentistry, and in nursing because I know some of the programs that we have passed previously have been geared to the solution of this increased need for nursing, and so forth.

If you could, tell or project for the committee how these programs are helping to solve the need and in what magnitude they are doing it or whether we are failing to meet the needs of the projected study.

For instance, in nursing or in all of the programs that you are administering.

Mr. POND. Mr. Rogers, I will do my best to supply that information for the record.

(The information mentioned follows:)

HEALTH AMENDMENTS ACT OF 1956 (PUBLIC LAW 84-911)

A 3-year professional nurse traineeship program was established in August 1956 under title II of this act. In 1959 the program was extended to June 30, 1964. This act provides for long-term traineeships to increase the number of graduate nurses prepared for positions as administrators, supervisors, and teachers in all fields of nursing. A short-term training program was added in fiscal year 1960, designed to update management and teaching skills in nursing.

Total funds appropriated, 1957-62	$29,989,500
Number of long-term trainees, 1957-62	9,029
Number of short-term trainees, 1960-62	9,970

A 3-year public health traineeship program was established under title I of this act. In 1959, the program was extended 5 years.

The program's objective is to increase the number of trained public health personnel, with primary emphasis on needs of public health agencies for professional workers with a year or more of postprofessional academic public health work.

Total funds appropriated, 1957-62	$10,974,000
Number of trainees, 1957-62	4,241

PUBLIC LAW 85-544, GRANTS TO SCHOOLS OF PUBLIC HEALTH FOR PUBLIC HEALTH TRAINING

Section 314(c) authorizes appropriation of not to exceed $2,500,000 annually for grants-in-aid to schools of public health for provision of comprehensive professional training and other services.

There are 12 schools of public health accredited by the APHA for the granting of degree of masters of public health. These are the only institutions which meet the legal qualifications of this law.

In allocating funds among the schools the Surgeon General is required to "give primary consideration to the number of federally sponsored students attending each such school."

Total appropriations, 1959-62	$3,623,000
Total expenditures, 1959-61	2,326,008

DENTAL STUDENT TRAINING

Under authority of section 422(f) of the Public Health Service Act, training grants are made to dental schools for the operational costs of training dental students in the use of auxiliary personnel. These grants must be approved by the National Advisory Dental Research Council. Forty-four of the Nation's 48 dental schools participate in the program, training approximately 3,500 selected junior and senior dental students.

Funds, fiscal year 1963	$1,826,000

NATIONAL INSTITUTE OF MENTAL HEALTH TRAINING GRANTS

This program was established in 1947. NIMH training grants in the form of teaching grants and grants for trainee stipends are awarded to develop and strengthen programs in the broad spectrum of mental health training. Specific areas of training include graduate and undergraduate training in psychiatry, clinical and other psychology, psychiatric social work, psychiatric nursing, and social and biological sciences related to human behavior and mental health.

Number of trainee stipends awarded, fiscal year 1962	5,402
Amount of trainee stipend awards, fiscal year 1962	$17,939,419
Amount of teaching awards, fiscal year 1962	21,435,556
Total amount of training awards, fiscal year 1962	39,374,975

Further information on training programs is contained in the committee print, "Background Material Concerning the Mission and Organization of the Public Health Service," pages 94–100 and 114–116.

These programs have accomplished a great deal in meeting certain specialized health manpower needs.

In accordance with the law, conferences have been called for this summer to appraise the effectiveness and make recommendations with respect to the traineeship programs under sections 306 and 307. The conference considering public health traineeships will also review the program of grants to schools of public health. Reports of these conferences are by law to be submitted to the Congress by January 1, 1964.

The overall review of requirements which we plan will help to set the achievements of these ongoing programs into the total framework of need.

Mr. POND. The point I made on the first page of my prepared statement was that we have good information on a few of the professional and major categories, but there are numerous other types of manpower about which we know very, very little.

I did, with the committee's permission, insert into the record a tabulation of these very different categories. As you see this information, you will realize how little we really do know.

My plea really was for a total manpower review, to look at the whole problem of health manpower and not just pick off category by category.

(The following was submitted in reference to the above:)

Studies made in the past few years in medicine, dentistry, nursing, and certain other fields have laid the foundations on which the Public Health Service has been able to develop and support such recommendation as those upon which H.R. 12 was based. However, various of these studies have raised questions about the relationship of manpower needs in the professional field under review to the broad range of health manpower resources and requirements. For example, the committee recommending Federal aid for medical education in 1959 commented:

"The charge to this consultant group was to consider the needs in the field of medical education. It is necessary, however, to associate the problems of medicine with those of the related health professions. Physicians cannot carry their load of responsibility without competent and well-trained teammates and associates.

"There is increasing recognition of the interrelated responsibility of health workers with a variety of skills and educational preparations. One evidence of this is the development of university-based health centers with closely related schools of medicine, dentistry, nursing, and other health professions. * * * The growth of the allied health professions has had profound effects on the patterns and availability of medical care. In 1900, for every physician in practice there

was one other professional health practitioner; today, there are four such persons for every physician. * * * There are shortages of trained people in practically every one of the many professional and technical careers in the health field."

Examples of needs for ancillary personnel are those for physical and occupational therapists, the demand for which has been greatly increased as more programs for the chronically ill and aged—especially the out-of-hospital home care programs—get underway. The step-up of community programs in the neurological and sensory disease area and sight and hearing conservation also increases the demand for therapists as well as for speech pathologists, audiologists, medical social workers, etc. In some areas, such as medical technology, more uniform definition of the group is needed as a basis for better projections of need. In newer categories, such as homemakers or home health aids, the only estimates available are based on comparisons to other countries such as Denmark which has 100 per 100,000 population compared to our 1 per 100,000.

Recognizing the great need for a comprehensive study of health manpower supply and requirements, the Public Health Service is now developing plans for such a study which will continue through the next several years. The study should include all types and levels of skill from physicians to technicians, and should consider needs in personal health services, teaching and research, government service, and other fields of activity.

The study will first draw together available information. Then a number of field studies will be undertaken to identify staffing patterns and requirements in a variety of agencies which use health manpower, in both urban and rural areas. We will also study the availability of applicants for training, the types of training which are available and needed, and the adequacy of training facilities.

Our budget requests for 1964 and 1965 contain the funds for staffing this undertaking.

Out of the study should come a better understanding of health manpower supply and requirements, with forecasts and recommendations for the future.

Mr. ROGERS of Florida. I join the chairman in saying I think the presentations are excellent. There are many specifics that we need to go into but the general review, I think, has been excellent and most helpful.

Thank you.

Mr. ROBERTS. Thank you, gentlemen.

Thank you again, Dr. Terry.

The Chair would like to announce that it will seek to continue the hearings this afternoon at 2 o'clock provided we are able to get permission to sit, which I think we will be able to do, and at that time we will hear from the Honorable George P. Larrick, Commissioner of Food and Drug, and his associates.

I am just advised by Mr. Rhodes there is no session so we can meet again at 2 o'clock this afternoon in the same hearing room.

(Whereupon, at 12:15 p.m., the subcommittee recessed, to reconvene at 2 p.m., of the same day.)

AFTERNOON SESSION

Mr. ROBERTS. The subcommittee will please come to order.

Commissioner, it is a pleasure to have you and your associates before the subcommittee this afternoon. We always feel that you make a valuable contribution to the work of our subcommittee. We are happy to have you at this time.

You may proceed with your statement.

STATEMENT OF GEORGE P. LARRICK, COMMISSIONER OF FOOD AND DRUGS, U.S. DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE; ACCOMPANIED BY WILLIAM W. GOODRICH, ASSISTANT GENERAL COUNSEL, FOOD AND DRUG DIVISION; WINTON B. RANKIN, ASSISTANT COMMISSIONER; DR. O. L. KLINE, ASSISTANT COMMISSIONER FOR SCIENCE; DR. RALPH G. SMITH, ACTING MEDICAL DIRECTOR; DR. HENRY FISCHBACH, DIRECTOR, DIVISION OF FOOD; DR. BERT VOS, DEPUTY DIRECTOR, DIVISION OF PHARMACOLOGY; AND JOHN SANDERS, DIRECTOR OF THE ATLANTA DISTRICT

Mr. LARRICK. Mr. Chairman, it is a pleasure to appear before this subcommittee. We have had many contacts with the leaders and members of this committee and have long admired and appreciated their broad knowledge and interest in food and drug legislation. The American public is indeed indebted to you for the most comprehensive and effective food and drug legislation of any country in the world.

The Food and Drug Administration traces its origin to the Bureau of Chemistry in the Department of Agriculture. From about 1883 to 1906 the Bureau investigated conditions then prevailing in the production of foods and drugs. The alarming abuses revealed by these investigations, together with other disclosures, led to a demand for effective Federal control of interstate commerce in foods and drugs.

The first pure food and drug law was enacted in 1906. The Meat Inspection Act was passed the same year, first as a part of an appropriation act, but later as permanent law. The Meat Inspection Act is still administered by the Department of Agriculture. It closes the channels of interstate commerce to meat products which have not been produced under continuous Government inspection and marked as inspected and passed. A similar law, enacted in 1957, also administered by the Department of Agriculture, requires continuous inspection of poultry and poultry products.

The Food and Drugs Act of 1906 did not provide for continuous inspection. It forbade the interstate shipment of adulterated and misbranded foods and drugs but it placed upon the manufacturer the responsibility of complying without Government inspection of daily operations in the factory.

Its prohibitions were few; its exceptions and exemptions were many. Under its provisions the Government made infrequent spot checks to determine that manufacturers were complying. Nonetheless, it was by contemporary standards a most important and a highly successful piece of legislation.

While the Food and Drugs Act was an historic step forward, significant weaknesses in the law soon became apparent. As early as 1913 the Department of Agriculture recommended to this committee a broadening of the definition of food to include components of food; an extension of the definition of drugs to include all cosmetics and mechanical therapeutic devices; provisions to give authority to fix standards for food and drugs; increased penalties for violations; provision for factory inspectional authority; and authority for the regulation of advertising. Each of these suggestions has become law

but not until many years after 1913. While the 1906 act was amended six times in the first 30 years of its existence, it was apparent by the early thirties that a complete overhauling was needed. A horse-and-buggy law simply would not meet the needs of a changed and still changing food and drug industry.

Five years of legislative hearings led to the enactment in 1938 of the Food, Drug, and Cosmetic Act. The "Elixir of Sulfanilamide" tragedy, in which scores of persons died after taking a new drug inadequately tested by the manufacturer gave great impetus to the legislative process.

That same year the Wheeler-Lea amendment to the Federal Trade Commission Act granted Federal control over advertising of foods, drugs, and cosmetics. This was to correct a situation in which unwarranted claims were forced off the label only to appear in advertising. We recommended that control over advertising and labeling should be lodged in the same agency. However, this was not accomplished.

Fundamentally the Federal Food, Drug, and Cosmetic Act protects public health by insuring the purity, safety, and integrity of our foods, drugs, devices, and cosmetics and helps to promote honesty and fair dealing in the interest of the consumer and industry by requiring honest and informative labeling.

The continuing and accelerating industrial and scientific revolution in the industries which are subject to the law have led this committee to support a number of significant improvements in the act since 1938. We submit for the record a list of the amendments.

To mention a few there are the certification of insulin and antibiotics, pesticide chemical, food additive, color additive, and drug amendments.

(The list referred to follows:)

AMENDMENTS TO FEDERAL FOOD, DRUG, AND COSMETIC ACT

1939: An amendment providing temporary postponement of the operations of certain provisions of the Food, Drug, and Cosmetic Act.

1941: An amendment providing for certification of all batches of insulin to assure potency, purity, and safety of all insulin introduced into interstate commerce.

1944: An amendment changing the definition and standard of identity of dried skim milk. The definition was changed to nonfat dry milk solids or defatted milk solids.

1945: An amendment providing for certification of all penicillin introduced into interstate commerce.

1947: An amendment providing for certification of streptomycin.

1948: An amendment providing for Government jurisdiction over products that become adulterated after interstate shipment. This was enacted to correct the effect of an adverse court decision which denied such jurisdiction despite 40 years of unchallenged exercise of such jurisdiction by the Government.

1949: An amendment providing for certification of aureomycin, chloramphenicol, and bacitracin.

1949: An amendment making the import provisions of the law more flexible by providing for conditional release of violative imported articles to bring them into compliance with the act.

1950: An amendment setting up controls over oleomargarine to prevent public deception in the retail sale and serving of colored oleomargarine in both interstate and intrastate commerce.

1951: An amendment requiring that a drug which is not safe for use except under a physician's supervision be dispensed only on prescription of a physician and be labeled with the statement "Caution: Federal law prohibits dispensing without prescription."

1953: An amendment providing new statutory authority for factory inspection to correct the effect of a court decision denying such authority in the original Food, Drug, and Cosmetic Act.

1953: An amendment to substitute the chemical name chlortetracycline for the drug previously identified as aureomycin.

1954: An amendment simplifying procedures for the promulgation and amendment of food standards.

1954: An amendment authorizing the setting of safety limits for pesticidal residues on raw agricultural commodities.

1956: An amendment permitting use of a coal tar color, F.D. & C. Red No. 32, on the skins of ripe oranges.

1956: An amendment simplifying rulemaking in addition to food standard establishment, authorized by the act.

1956: An amendment changing the legal definition of nonfat dry milk solids or defatted milk solids to nonfat dry milk.

1957: An amendment of the seizure provisions of the act permitting exportation, under certain circumstances, seized and condemned imported articles.

1958: An amendment providing for preclearance by FDA of new food additives to assure their safety for food use.

1959: An amendment permitting the temporary listing and certification of a coal tar color, citrus red No. 2, for coloring mature oranges.

1960: An amendment authorizing use of suitable color additives in or on foods, drugs, and cosmetics in accordance with regulation prescribing the conditions, including maximum tolerances, under which they may be used safely.

1960: An amendment bringing the judicial review provisions of the Food Additives Amendment of 1958 under the uniform provisions relating to court review of Government agency orders.

1960: An amendment with respect to label declaration of the use of pesticide chemicals on raw agricultural commodities.

1961: An amendment extending certain portions of the transitional provisions of the Food Additives Amendment of 1958.

1962: Harris-Kefauver drug amendments strengthening Government control to assure the safety and efficacy of modern therapeutic agents particularly those dispensed only on prescription.

Mr. LARRICK. We thought in 1938 that the problem of poisonous additives could best be handled by a rule banning all of them except when required in production or unavoidable in good manufacturing practice. But this left wholly unregulated the additives of unknown or uncertain toxicity. And enforcement against cumulative poisons was difficult indeed.

The recent amendments have faced the problem by requiring advance proof that all proposed additives will be safe for their intended uses, even though in larger amounts and in other circumstances it may be clear that the additives cannot be classed as harmless or even nontoxic.

FDA administers three other laws relating to food. These are the Tea Importation Act of 1897, the Filled Milk Act of 1923, and the Federal Import Milk Act of 1927. I offer for the record a statement giving a brief summary of the requirements of each of these laws.

(The statement referred to follows:)

SPECIAL LAWS WITH RESPECT TO TEA AND MILK

1. The Tea Importation Act which was enacted by Congress in 1897 and amended in 1908 forbids the importation of impure and unwholesome tea. It requires imported tea to meet standards established annually by the Secretary of Health, Education, and Welfare on recommendations of the Board of Tea Experts appointed annually by the Secretary.

2. The Filled Milk Act, approved on March 4, 1923, forbids the shipment of filled milk in interstate or foreign commerce. Filled milk is milk, cream, or skimmed milk which has been blended with any fat or oil other than milk fat so that the resulting product is an imitation or semblance of milk, cream, or skimmed milk. (Certain pediatric products are excluded.) The act itself de-

clares filled milk to be an adulterated product, injurious to health, and a fraud upon the public.

3. Federal Import Milk Act, approved on February 15, 1927, regulates the importation of milk and cream into the United States for the purpose of promoting the dairy industry of the United States and protecting the public health. The act prohibits the importation into the United States of milk and cream unless the exporter holds a valid permit from the Secretary of Health, Education, and Welfare. In order to be eligible for importation, the milk and cream must be produced from healthy cows under sanitary conditions. The act authorizes inspection by U.S. enforcing officials of foreign producers wishing to ship to the United States.

Mr. LARRICK. Additionally, we administer the Caustic Poison and the Federal Hazardous Substances Labeling Acts, which will be discussed later.

Thirty cents out of every dollar spent by the American consumer goes to purchase products under the jurisdiction of FDA. Maintaining supervision over commerce in these products is obviously a tremendous job.

You have before you a committee print giving among other things information about the responsibilities imposed by the law. Thus it is not necessary to go into detail now on this point.

Briefly, the FDA is assigned the task of checking on:

Over 100,000 establishments dealing in foods, drugs, cosmetics, and therapeutic devices.

About 5,000 establishments dealing in hazardous household chemicals.

About 56,000 drugstores subject to the Durham-Humphrey amendment.

Over 6,000 manufacturers of chemicals used in food.

Over 300,000 public eating places subject to the margarine amendment.

While these responsibilities can be summarized in a paragraph, it is awesome indeed to consider that any one food (tuna, for example) or any one drug (thalidomide, for example) produced by any one manufacturer may call into action our total resources. And when such needs arise, excuses will not satisfy the American people. They demand a strong and effective Food and Drug Administration.

Over the years we have given first attention to health problems. When necessary, all other operations are sacrificed, temporarily, at least, to permit us to cope with situations that constitute hazards to health.

Next, we give attention to problems arising from insanitation, filth, and decomposition, particularly in the food field. And then, we give attention to cheats, deception, and frauds. But a cheat may cost a man his life, so the distinction is not always clear or easy.

Because of the nature of the laws we administer, FDA is fundamentally a regulatory agency, and this means that we must be prepared for immediate action. We must move effectively to meet impending danger, but we must move within the authority of the law. Our actions are always subject to court review.

To determine whether regulation is necessary, our 18 district offices and laboratories make periodic inspections of firms manufacturing food, drugs, therapeutic devices, cosmetics, and hazardous substances. They have to learn whether the shipments which these firms make

across State lines may be expected to comply with the requirements of the applicable laws.

We collect samples from interstate shipments, including merchandise offered for importation into the United States, and we analyze them as a further check on their legality. Where necessary, we take legal actions or in the case of imports, through the customs officials, we refuse to allow illegal merchandise to come into the United States.

It is important to remember that FDA's operations are carried out throughout the United States by field inspectors and chemists who deal directly with people at the grassroots level. A large part of our activity and the most important part in the final analysis consists of day-to-day operations all over the United States in which, without fanfare and without publicity, our scientists, whether in the laboratory or in the field, go about their job of safeguarding the food and drug supply of the Nation.

Only a few days ago one of our inspectors, posing as a prospective purchaser of a highly potent drug which causes hallucinations, made contact with two suppliers of the drug LSD–25. He gained their confidence and set up a buy in his own home.

Both he and his wife were concerned because they were dealing with law violators and because they had $10,000 worth of marked money for the transaction. They sprang the trap on two peddlers and thus closed up one more illegal source of supply.

When one of our inspectors walks into a small manufacturing establishment to make an inspection, he represents, for the moment, the U.S. Government so far as that factory is concerned. The owner is not particularly concerned then about how the law got passed or who administers it in Washington. He is concerned with the visit of our inspector.

We are proud of the way our men represent the Federal Government. They do a good job that is too often forgotten when the headline stories are written.

Through scientific research FDA maintains the competence to cope with technological changes that are occurring rapidly in all of the regulated industries. We utilize the results of basic research being conducted outside our laboratories in universities, medical schools, hospitals, research institutions, and elsewhere.

But, we also conduct studies within our own organization to obtain the particular data or methods needed to support regulatory activities. Our scientists perform chemical, nutritional, biological and microbiological, pharmacological, pharmaceutical, radiological, and related studies.

We also perform or contract for some human and veterinary clinical studies. It is important to recognize the kind of scientific information that the Food and Drug Administration needs. We need information about food, drug, and cosmetic manufacturing processes, about the changes that may take place during these processes.

We need information about the toxic effects and nutritional changes that may occur in daily manufacturing operations. We need rapid methods for examining samples in the field to determine whether they are safe and otherwise meet the requirements of the law. And, we must have a corps of scientists who are capable of reviewing the experiments being performed by others and reaching sound decisions as to their meaning.

Much of our processing of petitions for food additives and pesticides and applications for new drugs and antibiotics requires this type of skill, and it is not easy to secure. Our scientific and medical officers undergo an intensive training to prepare them to conduct such reviews.

Two of our scientists reported just this month at the annual meeting of the Federation of American Societies for Experimental Biology on a method that they have adapted for use in our laboratories in determining the potential toxicity of chemicals. The method involves the injection of a chemical directly into the yolks of fertile eggs before they are incubated so that we may learn the effect of the material on the chick embryo.

This procedure may turn out to have far-reaching applications. If the chick embryo reacts adversely to the chemical, this may provide a rapid means—

(1) Of identifying those substances that require further, more detailed testing; and

(2) Of indicating to the scientist the nature of tests of be performed.

And this illustrates, too, why it is essential in our opinion to have a highly qualified research unit such as we do have operating as an integral part of the FDA. Our research has to be oriented to the basic mission of FDA and it would be impossible in our view to get scientific results directly and immediately useful to an enforcement agency by relying solely upon research conducted in some other organization.

Certainly we need to give greater recognition to the scientific activities of the FDA, and we are taking steps to do so.

Two examples will illustrate some of the scientific work we are doing:

One procedure developed some years ago for manufacturing a chemical offered for use in food, looked fairly simple on paper. Two organic compounds were heated together under pressure to get a new food additive. The manufacturer concluded that this additive consisted of one complex compound. But our scientists were not sure.

They spent several days studying the process and found that the end product could vary widely depending upon the proportions of raw materials used at the start, upon the pressure at which they were cooked, upon the cooking temperature, upon the time of the cook, upon the amount of moisture present, and upon a number of other factors.

They calculated on theoretical grounds that even with these factors standardized, a total of 55 different chemicals, many of them never tested for safety in food, could result from the process. We refused to allow the mixture in food. Later, after 2 years of research, the manufacturer told us that his scientists had found 40 of the 55 chemicals in his product. So, it is especially important to be sure that synthetic products prepared for the food industry, and the drug industry, too, either have known composition, or are produced under very careful controls to insure a uniform end product. And there must be good specifications by which future batches can be checked for purity and uniformity.

The chemicals being used by industry today as pesticides and drugs and for other purposes have amazing potency. The regulatory sciensist must detect quantities expressed in terms of parts per million. One of the biological procedures perfected in our laboratories is so sensitive that it will detect one part of a very potent chemical in 500 million parts of food. This method is comparable in sensitivity to finding a needle in a million pounds of hay.

One of the principal means of helping manufacturers and consumers is through a broad program of education. Each inquiry received by FDA from a consumer or a manufacturer is an educational opportunity and prompt and helpful replies are an important adjunct to our regulatory duties.

Special units in our Bureau of Enforcement, Bureau of Medicine, and Division of Public Information supply a growing demand for information about the pure food and drug laws and related statutes. We have a consumer consultant program that furnishes a two-way street for exchanges of information with consumers.

And each year we sponsor a number of and participate in many consumer and industry conferences which contribute to greater understanding of the law. These activities are an important part of preventive enforcement which reduces materially the number of formal legal actions we must bring. Our educational activities will be further strengthened in the future.

We submit for the information of the committee examples of severals types of information material that are regularly prepared and distributed.

A very important part of our educational work, particularly as it relates to industry, consists of the issuance of regulations.

These are—

(1) Establish procedures for efficient and orderly operation;

(2) Give the Department's interpretation of portions of the law;

(3) Establish exemptions in accordance with provisions of the law; and

(4) Establish rules which have the force and effect of law.

The rulemaking process makes it possible for all concerned to know in advance exactly what actions are legal and what are not. This is a vast improvement over the situation in which a manufacturer proceeds at his own risk in the absence of a specific rule, trying to comply with the general terms of the law.

The Food, Drug, and Cosmetic Act authorizes the issuance of several kinds of rulemaking regulations, such as food standards, pesticide and food additive tolerances, label requirements for foods for special dietary use, and requirements for certifying insulin and antibiotic-containing drugs.

A number of the States already had some form of food and drug regulation in 1906. However, the passage of the 1906 Federal law stimulated the enactment of similar legislation in most of the States, principally to control traffic in foods and drugs which were not of interstate origin.

In order to secure greater coordination in the National and State enforcement the Secretary of Agriculture in 1914 created an "Office of

State and Federal Cooperative Food and Drug Control" in the Bureau of Chemistry.

This Office furnished information and assistance to State and municipal officials, so that Federal, State, and municipal offices were able to supplement each other's efforts. This later evolved into our present Division of Federal-State Regulations which is designed to stimulate cooperation among all food and drug control agencies.

We favor and have taken measures to support strong State and local operations. Many of the States already have helpful programs designed to deal with the illegal diversion of dangerous drugs from legitimate channels, with control of harmful residues of poisonous pesticides on food crops, to require adequate sanitation in plants producing fluid milk and in a number of other areas.

On the other hand, State officials generally are in agreement with us that improvement is desirable in our cooperative relationships.

The fiscal year 1963 appropriation provides funds for a study of State and local food and drug activities by specialists outside the Government. The results of the survey should prove helpful to all levels of government.

For the information of the committee we have several sets of the prospectus and background material that we recently made available to firms that may wish to bid on the contract for the study.

It is instructive to look for a moment at the resources that we had 10 years ago to handle the major obligations then upon us and see the significant changes that have occurred.

There has been tremendous growth of personnel. For practical purposes our staff did not increase during the 15-year period 1940–55. Since then we have made real progress. Whereas we had less than 1,000 budgeted positions in 1953, there were over 3,200 positions budgeted in 1963.

This year we are recruiting more people, many of them scientists with rare skills, than we had in the entire Food and Administration in 1953. The necessary highly skilled personnel are being recruited although in some fields the salary limitations make it extremely difficult. The average salary of one of our medical officers is approximately $15,000.

The average salary of a medical school professor is almost $21,000; of a medical specialist in private practice is almost $25,000, and of a medical school dean is $30,000. A similar situation exists with respect to the other scientists we employ.

It takes an unusual spirit of public service for a scientist to turn his back on the salaries available outside the Government and come with the Food and Drug Administration to assist in the vital work that we perform. But there is real satisfaction in the service we render, and we have attracted employees of outstanding caliber.

In 1953, our headquarters operations were centralized in two buildings 8 blocks apart—the laboratory scientists in the South Building of Agriculture and the administrative officers in what is now the Health, Education, and Welfare Building. One veterinarian conducted research in Beltsville, Md., at the Research Station of the U.S. Department of Agriculture.

Today we have two new buildings under construction: Federal Office Building No. 8, originally designed to house all of EDA's

Washington activities, will when fully occupied in 1964, take care of most but not all of our Washington laboratory work. A special pharmacological animal laboratory is now under construction at Beltsville; when completed it will furnish modern facilities for 75 people.

But when we occupy these new buildings in the fall of calendar year 1964, we will still need other space for 910 employees in the Washington area. To deal with this shortage we expect to propose further construction at two sites in the Metropolitan Washington area—one alongside the pharmacological animal laboratory at Beltsville, and the other adjacent to the Environmental Health Center proposed by the Public Health Service.

Until 1958 FDA field laboratories were housed in old and outmoded facilities. Many were housed in buildings constructed before the turn of the century. Construction funds have been made available to modernize 11 of 18 field installations. Seven are yet to be modernized.

Unfortunately, this does not relieve a very critical space situation now confronting us at headquarters. In Washington we are scattered in six locations. The administrative offices are in the Health, Education, and Welfare Building.

Much of our laboratory research is still being performed in the South Building of Agriculture, where some of the most important pharmacological experiments being conducted in the world are performed in the subbasement of a converted garage. Some laboratories have been moved over a mile away to a former nurses' home abandoned when Providence Hospital moved to its present location.

Some offices are in temporary buildings on the Mall (Tempo R and Tempo S). Expended veterinary research is conducted at Beltsville. Our Bureau of Medicine is still housed in Tempo S Building.

The medical officers are crowded two to a room and just recently we have started putting three to a room. This does not provide reasonable conditions for the very exacting reviews they must make. We have 40 medical officers and 20 employees on supporting staff due to arrive within weeks and no place to put them.

We have been working with the General Services Administration to try to find a solution to the very difficult and very urgent space problems. GSA is committed to an intensive search for suitable space but they inform us that there are no large blocks of space available in Washington suitable for housing the Bureau of Medicine—the Bureau which represents our most critical space problems.

We are faced with the prospect—at least until the office space in our new building becomes available in the fall of this year—of having to operate with makeshift space arrangements which are far from satisfactory. Secretary Celebrezze has indicated his fullest support in helping us to solve these extremely difficult space problems. There are, however, no simple or satisfactory solutions to them so far as the immediate future is concerned.

Until 1955, we had only about $45,000 per year available for equipment and facilities. A single instrument required for modern rapid analysis may cost almost that much. This year we have over $1¾ million to modernize equipment and facilities. However, a program started several years ago has vastly improved facilities in the field laboratories. They are well equipped for most of the work they perform.

The Food and Drug Administration has undergone many organizational changes. As our responsibilities increase it is only proper to seek new and better methods of discharging them. In 1948 we abandoned a system under which our field activities were supervised by three regional offices, located in New York, Chicago, and San Francisco and substituted a system in which each filed laboratory deals directly with the Washington offices. This led to more effective administration of our farflung scientific field activities and to more rapid, uniform, and equitable actions to protect consumers.

In 1956 in response to recommendations made by the First Citizens Advisory Committee we established five bureaus in Washington to permit more effective administration of both central offices and field operations.

This organization has served a very useful purpose, but it became apparent some 2 or more years ago that improvements could be made. As you know, the Secretary of our Department appointed a Second Citizens Advisory Committee to study our operations. This committee has recommended another reorganization of the Food and Drug Administration with which we agree in principle. Many of the recommended changes are changes that we in the Food and Drug Administration suggested to members of the committee.

Some organizational changes have already been made in preparation for the greatly increased workload resulting from the investigational drug regulations and the Kefauver-Harris drug amendments.

Five branches have been established in the Division of New Drugs:

The Controls Evaluation Branch evaluates the adequacy of laboratory and manufacturing controls proposed by manufacturers of new drugs.

The Investigational Drug Branch evaluates reports of proposed clinical tests of new drugs.

The Medical Evaluation Branch studies the medical safety and efficacy data in new drug applications.

The New Drug Status Branch consults with manufacturers and others about the application of the new drug section of the law to chemicals newly proposed for drug use and to new uses or dosage schedules for drugs already on the market.

The New Drug Surveillance Branch will review inspectors findings to determine that approved new drugs are being marketed in accordance with commitments contained in the new drug applications and will evaluate reports of adverse reactions to new drugs.

We are now studying with the Department other organizational changes which should be made following the broad guides suggested by the Second Citizens Advisory Committee.

Increasingly FDA has been seeking assistance and advice from outside experts. In the recent past, for example, we have sought advice from internationally recognized scientists on food additive and drug problems involving two nutrients, folic acid and menadione, certain antibiotic drugs, and the oral contraceptive Enovid.

Additionally, we are continuing and substantially improving our interchange of information with the Public Health Service of our Department, the U.S. Department of Agriculture, the National Academy of Sciences, and a number of other agencies within and without the Federal Government.

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The reports of reactions to drugs which manufacturers of new drugs and antibiotics must now furnish under the Kefauver-Harris amendments, will tremendously strengthen our present efforts to keep abreast of current developments in the drug field. We are working with the Public Health Service in its developing program to permit ready retrieval of scientific data, and in a number of its environmental health programs which you have already heard discussed.

But we need to do more. We are in the process of forming an advisory committee on investigational drugs. This will be made up of outstanding experts representing general medicine, pharmacology, and clinical pharmacology, experimental therapeutics, biochemistry, and other medical disciplines.

The committee will bring to the Food and Drug Administration the views of responsible scientists throughout the country on the very important problems of testing investigational drugs on man.

It will give advice that will help us administer the investigational drug regulations in the best interest of patients and science.

We expect to appoint other advisory committees to help us in our scientific activities and we anticipate the formation of a National Food and Drug Advisory Council to give the Commissioner advice on broad problems.

In 1952, the pesticide problem was not under control. We did not have a single enforceable tolerance stating a safe amount of insecticides or other poisonous sprays that could remain on food crops. The one tolerance that we had established several years earlier had been thrown out by the courts on a technicality. A public hearing held in 1950 with a view to achieving some element of control had yielded 46 volumes of testimony and exhibits which were inconclusive in many respects.

So we came to this committee and told our story. You endorsed workable pesticide legislation which was enacted in 1954. We immediately set out establishing the allowable residues for all pesticides that may be used in producing crops. At the present time, there are 2,500 tolerances established for 130 chemicals on food crops.

But publishing a regulation does not end the job. Each new tolerance that is established imposes an added workload. We must check to be sure that 600 million pounds of pesticides used each year by over 5 million agricultural employees are applied properly.

Last year, we sampled and examined approximately 7,000 shipments for pesticide residues. This year we expect to sample and examine 25,000. This will represent 1 percent of the shipments that move across State lines every year as a sampling. Statisticians tell us that when we check 1 percent of the crops we will then have a basis to determine with some degree of assurance whether that is enough or whether the coverage should expand further.

We are beginning to get control over food additives. As you know, we came to this committee following enactment of the pesticide chemicals amendment and asked for adequate legislation to deal with the tremendous increase in the use of chemicals in food processing and food handling.

The committee recommended and the Congress enacted the Food Additives Amendment of 1958 to insure safe use of about 2,200 chemicals by 73,000 food-handling establishments.

At that time we did not have one tolerance or regulation stating the safe conditions under which the hundreds of chemicals could be employed in food. Today we have issued about 500 orders that state safeguards to be followed in thousands of processes and chemical uses applying to the complete spectrum of foods that appear today on the supermarket shelf.

The transition period in which a new regulatory act becomes fully effective almost always presents real problems to the enforcement agency. In the food additive field for example, we are moving from the pre-1958 era in which the Government had to prove that an additive was unsafe in order to stop its use to the era in which no additive may be employed until its safety for the proposed food use has been established to the satisfaction of the Government.

This committee recommended and the Congress authorized a transitional procedure designed to safeguard the public health and permit the continuing use of hundreds of chemicals on which some additional work needed to be done before they could be given permanent authorization for use in food.

You will recall that the food additives amendment authorizes us to allow use of a food additive while the manufacturer gathers evidence to support his petition for an approving regulation. We do this by extending the effective date of the law. However, before granting such additional time we must find—

> that such extension involves no undue risk to the public health and that conditions exist which necessitate the prescribing of such additional period * * *.

On the basis of such findings we extended the effective date of the food additives amendment for almost 2,300 chemicals. In each case the available scientific evidence was carefully considered by scientists representing several disciplines and a conclusion was reached that temporary continued use of the article would not constitute an undue risk to the public health. We were unable to make such a finding for some products formerly used in food.

A great many of the extensions have been closed out as we issued food additive regulations. By the end of this calendar year we anticipate that less than 1,000 chemicals, principally flavors and certain packaging materials, will need further time.

Last year, we recommended improvements in the laws regulating drugs, including antibiotics. The Kefauver-Harris amendments enacted last October conveyed a significant portion of the modernized control necessary. Revised regulations to correct abuses that had developed in the distribution of drugs for clinical testing had already been issued in proposed form. They are now in effect. Today, clinical testing of a new drug which is in interstate commerce may only be performed after appropriate studies are undertaken to safeguard the patients on whom tests are made and after an appropriate report has been submitted to the Food and Drug Administration. We have already had to stop one proposed clinical test.

The amount of clincial investigation that goes on in the United States is extensive. We have already been advised that there are over 2,600 studies currently underway on new compounds and our best estimate at present is that there will be 2,000 or more new studies each 12 months.

In addition to the responsibilities involving proposed clinical tests our medical staff must deal with new drugs proposed for marketing, and changes proposed in new drugs. We have a new situation here in which new drugs must be examined and approved for effectiveness, as well as for safety, and in which all reports of clinical and other experience with the new drugs after they are approved for marketing must be kept and brought to our attention.

If any signs of danger or failures in clinical use appear, we are required to withdraw or change the conditions of our approval. We are required to follow prescription drug advertising, and to simplify drug nomenclature. We must improve quality controls in all drug manufacturing, and we are beginning to certify all antibiotics to human use. This is a tremendous workload which will require more scientists, supporting personnel, and space to do the job that is expected.

Following enactment of the Kefauver-Harris amendments we drew up proposed implementing regulations with respect to good drug manufacturing practices, revised new drug procedures required by the new act, and improved controls of labeling and advertising. We have received comments on the proposals and final regulations are now being drafted.

Additionally, after consultation with antibiotic producers, we have drafted and are in the process of issuing proposed regulations to govern the certification of all antibiotics for human use in accordance with the new law. Here again we need space and personnel.

In 1960, with the support of this committee, the Congress enacted the Federal Hazardous Substances Labeling Act. This requires cautionary labeling on hundreds of hazardous materials intended or suitable for household use, including products such as paints, floor cleaners and waxes, solvents and lighter fluids, metal polishes, and a variety of toys.

Before 1960, only a dozen caustic and corrosive substances required special labeling when they appeared in articles used around the home. The reason was that in 1927, when Congress approved the Caustic Poison Act, these 12 chemicals were the ones that had shown the need for special labeling. However, the number of new chemicals used in household products grew rapidly, and we estimate that about 300,000 common trade items now used in and around the home require label warning.

Implementing regulations were issued promptly after enactment of this law, and we have brought 59 court actions to require illegally labeled merchandise to meet the requirements of the law. For example, one of the products killed a child who drank it. The label bore no warning of its hazard, thus the child's father was not alerted to take precautions that could have saved the youngster.

About 10 years ago we virtually abandoned operations against cheats such as short weight, debasement of food with cheap ingredients, inconspicuous labeling practices, et cetera. This was necessary because of budget cuts which required us to drop scientists from the payroll.

We have resumed work in this area, and have found some serious abuses. In the past 3 years we have initiated seizures of over 600 shipments of foods, drugs, and cosmetics that presented cheats in one form or another.

To the extent possible under existing authority we are attempting to bring the situation under control.

Congress is now considering a "truth in packaging" bill that would strengthen our ability to protect the public, and we have supported the proposed legislation.

There are a number of legislative proposals endorsed by the President in his "consumer protection message" last year and the "health message" this year which will be coming before this committee.

New therapeutic devices should be proved safe and effective before commercial marketing. New cosmetics should be tested for safety. The factory inspection authority which was extended and clarified last year with respect to firms manufacturing prescription drugs should be extended and clarified with respect to all other manufacturers of food, drugs, and cosmetics. The FDA should have authority similar to that of most other regulatory agencies to require the production of evidence in hearings.

The Food, Drug, and Cosmetic Act should be amended to require warnings on food, drugs, and cosmetics where necessary to protect consumers, comparable with label warnings required on other products by the Hazardous Substances Labeling Act. And there should be greater control over the illicit distribution of habit-forming sedative and stimulant drugs such as barbiturates and amphetamines.

This concludes my prepared statement.

We have present:

Assistant General Counsel William W. Goodrich, Food and Drug Division; Assistant Commissioner Winton B. Rankin; Dr. O. L. Kline, Assistant Commissioner for Science; Dr. Ralph G. Smith, Acting Medical Director; Dr. Henry Fischbach, Director, Division of Food; Dr. Bert Vos, Deputy Director, Division of Pharmacology; and Director of the Atlanta district, John Sanders.

Mr. Sanders directs the laboratory and inspection operations in the southeastern United States. He is one of 18 men who supervise our fieldwork with people at the grassroots. He is prepared to discuss briefly, if you wish, one of the significant jobs that we are attempting to handle at this time—control of illicit traffic in habit-forming, depressant, and stimulant drugs, such as barbiturates and amphetamines.

The highways between here and Florida have been a principal problem of our concern. We are inspecting and prosecuting violations vigorously in this area.

Mr. Sanders is also available to answer other questions that you may have about any other field activities in the southeastern part of the country.

All of us are available for questioning.

Mr. ROBERTS. I notice that you have an attachment to your statement, Commissioner, setting out amendments to the Federal Food, Drug, and Cosmetic Act, starting with 1939.

Mr. LARRICK. That is right, Mr. Chairman.

Mr. ROBERTS. Do you wish to discuss any of those annotations?

Mr. LARRICK. I have discussed the ones that I felt had the greatest significance. I would like to attach them for the record. If any of the members have questions on any of them, we will be glad to discuss them further.

Mr. ROBERTS. Thank you very much.

I am particularly happy that you have referred to the educational work which you are doing in the field of drugs as they affect highway

safety. I am sure that the gentleman from Ohio is familiar with one very tragic thing that occurred, I believe, in the city of Cleveland not too long ago or a truck being driven by a driver who had been allegedly taking amphetamines collided with, I believe, a private vehicle, and about six or seven deaths, I believe, resulted. I am not sure that either one of the vehicles was in interstate commerce at the particular time. If I remember the article in the press, it seems that the truck went over the middle strip dividing a four-lane highway.

Mr. LARRICK. That is correct. And all evidence indicated that the truckdriver who went over the strip was under the influence of these pills.

Mr. ROBERTS. Now, they are referred to by various colloquialisms, I guess you could call them, as bennies, pep pills, thrill pills, copilots, and, I suppose, goof balls.

You do have legislation to punish the violation or the use of these pills in interstate commerce; do you not?

Mr. LARRICK. Yes, Mr. Chairman. When this committee considered the Durham-Humphrey amendment, at the time the problem, as we saw it, had to do with the fact that a great many medicines had become so potent that they should not be used in self-medication, but should be used only on prescription.

So the legislation was passed basically to divide drugs into two categories—those that are safe for self-medication, and those that are not. And then among those that are not for self-medication are these amphetamines, barbiturates, and similar drugs which are used for nonmedical purposes. But the legislation which was passed back in 1951 did not anticipate the type of criminal, underground, bootleg traffic that we have today in the drugs that you have been speaking of.

Mr. ROBERTS. Is it not true that we still have some of these caffein-based tablets or liquids that can be obtained over the counter?

Mr. LARRICK. Yes; we have a number of proprietary medicine type of driver's pills with an amount of caffein in them that is roughly comparable to a cup or two of coffee. They are not in the same class at all with the goof balls.

We do not see any harm in a man taking a drink of coffee, assuming that he does not drive to the point that he does go to sleep. But we do not think the coffee itself, or the pill which contains a comparable amount of caffein, is a problem.

Mr. ROBERTS. I think there is one on the market called "No Doze."

Mr. LARRICK. I believe that is correct, sir.

Mr. ROBERTS. You might think I am a user of these things, I know so much about them. But I am wondering if you think that perhaps more authority is needed for investigation of these, what some people consider to be, harmless preparations, would be helpful to the general public.

Mr. LARRICK. Well, yes, I think the same type of factory inspection authority that was given to us last year in the case of prescription drugs should be given to us across the board.

As I said in my prepared statement, we do anticipate that some proposals of that sort will be forthcoming from the present administration.

Mr. ROBERTS. Now, so far as the tranquilizers—Equanil, Miltown, and similar tranquilizers are concerned—practically all that now is under the prescription procedure; is it not?

Mr. LARRICK. All of the true tranquilizers are on prescription.

Mr. ROBERTS. What, in your opinion, is responsible for the apparent ease with which some of these tranquilizers are obtained? I frequently pick up a paper and see where someone has been able to get a tremendous load of these things. Do you think they have been prescribed too frequently, or what is your opinion on that?

Mr. LARRICK. Well, I think you are talking of sleeping pills, the barbiturates and related medications that are not true tranquilizers, but do cause people to commit suicide and have other harmful effects. I know there is a tremendous bootleg traffic in that type of merchandise, and a great many of the people who use these drugs for nonmedical purposes buy them just like they buy any other bootleg article. And I think our laws are not good enough to deal with that adequately.

Coming to your second question, I think very able people in the medical profession have increasingly recently given advice to their colleagues designed to cause them to be more discriminating in giving prescriptions of these tranquilizers.

Mr. ROBERTS. Don't you think, too, Commissioner, that as a nation, that we have kind of gone overboard in depending on tranquilizers and that sort of business?

Mr. LARRICK. I think we take up fads in this country. I think we have gone overboard in many things. But, yes, I think we tend to overdo it.

Mr. ROBERTS. Does your administration have any figures as to the amount being legally used at the present time?

Mr. LARRICK. We could get you some estimates. Now, the degree of the accuracy I would not want to guarantee. But we could get something in the nature of a reasonably good estimate of the amount produced of these compounds.

Mr. ROBERTS. Now, I think it would be very helpful for the record.

(The following letter was received from Mr. Larrick:)

DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE,
FOOD AND DRUG ADMINISTRATION,
Washington, D.C., May 10, 1963.

Hon. KENNETH A. ROBERTS,
Chairman, Subcommittee on Health and Safety,
Committee on Interstate and Foreign Commerce,
House of Representatives, Washington, D.C.

DEAR MR. ROBERTS: When we appeared before the Subcommittee on Health and Safety on April 26, 1963, you requested that we supply you with an estimate of the amount of barbiturates and amphetamines being legally used at the present time.

For some time the question of the total U.S. production of barbiturates and amphetamines has posed a problem for those attempting to assess the use and potential misuse of these drugs since available production data were incomplete. We recently initiated a survey of all known manufacturers, brokers, and distributors of basic amphetamine and similar stimulant chemicals and barbiturate chemicals because of our need for accurate and current information about the amounts produced, the amounts exported and imported, and the identity of all firms engaged in such enterprise. Our initial report from this survey concerns the domestic production of basic amphetamine and barbiturate chemicals. The information obtained does not depict total production of the basic forms of these drugs because (1) records maintained by several of the basic manufacturers were inadequate and (2) two of the Nation's largest pharmaceutical manufacturers, Eli Lilly & Co., Indianapolis, Ind., and Parke, Davis & Co., Detroit, Mich., declined to provide information concerning their production of these drugs.

Although incomplete because of the above-noted limitations, our survey revealed that almost 102,000 pounds of amphetamine and desoxyephedrine bases and salts were produced in calendar year 1962. This is enough basic material to produce over 4.5 billion 10 milligram tablets. Our survey revealed that in calendar year 1962 over 654,000 pounds of barbituric acid and derivatives were produced. This is enough basic material to manufacture over 4.5 billion 1 grain capsules. We have no way of estimating the additional quantity of such tablets and capsules which could be produced from the basic materials manufactured by Eli Lilly & Co. and Parke, Davis & Co.

In view of the tremendous quantities of these drugs which we have found diverted into illegal channels, we estimate that no more than one-half of such drugs produced are sold legally.

Mr. O'Brien also requested that we supply the committee with a list of specific examples of cooperative efforts between the Food and Drug Administration and the Public Health Service, and the number of scientists we employ who have M.D. or Ph. D. degrees, and the number who have masters' degrees.

The following is a partial list of subjects about which the Food and Drug Administration and the Public Health Service scientists and technicians consult and exchange information on a routine basis:

Program	*Point of contact in PHS*
Shellfish, milk, and food sanitation	Division of Environmental Engineering and Food Protection.
Pesticides	Chief, Bureau of State Services.
Radioactivity	Division of Radiological Health.
Cancer chemotherapy, psychopharmacology, drug information derived from research grants program, reporting adverse reactions of drugs, under investigation at NIH.	National Institutes of Health.
Communicable disease reports	Communicable Disease Center, Atlanta.
Biologic standards	Division of Biologic Standards, NIH.
Vital statistics	National Vital Statistics Division.
Civil defense activities	Division of Health Mobilization.
WHO study of international adverse drug reaction reporting.	Division of International Health.
Drug reaction reporting	PHS hospitals.
Hazardous substances	Poison Control Branch, Division of Accident Prevention.
Medlars	National Library of Medicine.
HEW Scientific Communications Committee.	Office of Surgeon General through Office of the Secretary.

The latest example of the extensive cooperative work between the Public Health Service and the Food and Drug Administration is a memorandum of understanding between NIH and FDA which was recently approved. A copy is attached.

As of March 1963, we had 162 scientists who hold Ph. D., M.D., or D.V.M. degrees, and 227 others who hold masters' degrees.

Sincerely yours,

GEO. P. LARRICK,
Commissioner of Food and Drugs.

Mr. ROBERTS. I take it from your testimony you think that this is a field that really needs looking into at this time?

Mr. LARRICK. I do—very much.

Mr. ROBERTS. Now, going into the pesticide picture, the sprays and applications of chemicals to plants—you know, of course, of the recent book by Rachel Carson, and the great interest that has been shown throughout our country in the business of residues that may not be contributing to the general health and welfare.

Do you feel that that is an area that ought to be more completely explored than it has been done so far?

Mr. LARRICK. Yes. As I said in my testimony, I think that so far as our phase of it is concerned, that the Congress has been progressively giving us more facilities to go into it deeply. I think we need to constantly reevaluate the means by which we determine what tolerances should be allowed.

I think that the amount of sampling and the amount of investigation in the field, to see that they are using these things properly, should be increased.

I think Miss Carson's book, and the recent concern that has been manifested in this area, has caused a greater concern to be had about the sum total of the effect of all of these things on our environment. I think this has done good.

Mr. ROBERTS. Do you think there is any logical way that we can define or devise a responsibility between the Department of Agriculture and the Food and Drug and any other agency that might have jurisdiction?

Mr. LARRICK. Yes. I think the committee that Mr. Boisfeuillet Jones chairs, and other groups, and to some extent our own voluntary getting together with Fish and Wildlife, Agriculture, all of our groups in Health, Education and Welfare, are helping in this regard.

I think we very much need to work together constantly on all of these problems so that the sum total of the problem will be seen, rather than each one of the separate segments.

Mr. Goodrich reminds me that when you passed the pesticide law in 1954, you did establish a relationship between the Department of Agriculture and us; when a new pesticide is proposed, the manufacturer has to first go to the Secretary of Agriculture and make a showing to the Secretary of Agriculture that this pesticide will do what is claimed for it in the way of an agricultural advantage.

Say it is going to kill aphids on beans—he must prove to the Secretary that it will kill the aphids on the beans and show him how much of it will remain on the beans. Then having done that, the Secretary transmits all that information to us, and the manufacturer applies to us for a tolerance. He submits poof that if the product is used as he proposes, it will not leave a residue on the beans that will be toxic to the people that eat the beans. Then we can establish the safe tolerance.

So on those things, we do work together with Agriculture, day in and day out.

Mr. ROBERTS. I have really been quite disturbed about this situation in the agricultural field. I might relate a situation that occurred down in my district. There were some type of tomato poisoning, and two children, after the container had been emptied, were playing with these sacks, and it resulted in death to one and serious injury to the other child. I think there are many more of those things we do not know about.

Sometimes I suppose the effects of that sort of contact may not show up, or it may be attributed to some other cause.

Mr. SCHENCK. Mr. Chairman, do you want to clear up what you mean by the container?

Mr. ROBERTS. Well, the way I had the story was the man who was in the fertilizer business, who sold this, told me about it. He assumed—in fact, they did find the sacks in which the substance had been carried

into the field, where the tomatoes were poisoned, and the children got concentrated doses.

I don't know—I know we live in an age of peril, we always have—where you are going to have these things happen.

But it does seem to me that there must be some better way of protecting the public in these things.

Of course, I have followed your appearance over on the other side, and I know that there is Senator Humphrey's idea that we need, I believe he calls it, a Food and Drug Institute of some kind where we could get some rapid answers to the many problems that are associated with the new chemicals and drugs which apparently are flowing into the market in greater numbers than over before.

I thought your illustration of the two compounds, I believe, that you mentioned that later turned out to produce about 40 different chemicals was quite apropos of this situation.

Mr. LARRICK. Well, we certainly agree with everything that you have said.

Mr. ROBERTS. Mr. Schenck.

Mr. SCHENCK. Thank you, Mr. Chairman.

I'm sorry I did not get to hear all of your statement, Commissioner, but I will certainly read it.

Mr. LARRICK. Thank you, sir.

Mr. SCHENCK. In the legislation that was approved last year, the so-called new drug bill, there were certain standards set up for determining the qualifications of investigating people—investigating the use of drugs, and the reports that will be required by them.

Has the Food and Drug Administration set up rules and regulations covering those people?

Mr. LARRICK. Yes, Mr. Schenck.

I wonder if I could ask Dr. Smith, who is in charge of this operation, to give you a brief statement.

Mr. SCHENCK. I would be happy to have it.

Dr. SMITH. Mr. Schenck, we have regulations which are now effective, which cover the field of investigational drugs. Of course, one of the requirements is that the manufacturer or the sponsor of the drugs submits to us, before he begins clinical investigation, a considerable amount of information. That information includes the names of the investigators and their qualifications.

Mr. SCHENCK. Are those qualifications pretty well spelled out, as to what you require?

Dr. SMITH. We have made no definite, or at least set down no definite standards for the time being.

We have to consider each particular drug as an individual case. That is, some drugs require one kind of investigation; some drugs require another kind. Even with the same drug, some investigators will undertake a much more demanding study than others will.

For example, in the early stages there is conducted what is known as clinical pharmacology. This is the first time that the drug has been introduced into man. These studies are usually conducted by men in well-established institutions who have had particular training in that field.

They try to find out something about the fate of the drug in the body. For example, if it was given by mouth, how rapidly it is ab-

sorbed into the system, what levels it reaches in the bloodstream, how rapidly it is excreted. In other words, how the body handles it.

And also they get some idea, by studying with very low doses and working up, an idea of the tolerance to the drug, or what would be a safe dosage range—what dose would produce the therapeutic effect, and what dose would produce undesired side effects.

Now, later, of course, there may be wider clinical trials which may require less training, even with the same drug, after the limits of safety have been initially established. There may be a gradation of requirements of investigators even for the same drug and, of course, for different classes of drugs. So that it is very difficult to set up stated standards of what an investigator must have done and what he must be, and so forth.

We have to look at each one individually.

Mr. SCHENCK. Then, I take it, Dr. Smith, from your comment that the pharmaceutical manufacturer has a certain amount of discretionary freedom in deciding qualifications of the investigators he is going to use?

Dr. SMITH. He has. Undoubtedly, these regulations will make him cognizant of the necessity of choosing well-qualified investigators. And of course, that information is submitted to us and if we do not agree in any particular case that the investigator is qualified to undertake what is described that he will undertake, we can object.

Mr. SCHENCK. Then the burden of proof as to the qualification of the investigators is actually on the pharmaceutical manufacturer at the present time?

Dr. SMITH. That I believe is true; yes.

Mr. SCHENCK. So if he has any doubt as to the qualification of his investigators, he might be inclined to be a bit more severe for fear he would run contrary to the Department's desires, is that right?

Dr. SMITH. I believe that is quite right.

Mr. SCHENCK. Well, now, we were discussing another question which I think would probably be along your line. But I also have a question about the enforcement methods against the illegal sale of drugs requiring a prescription, but which is bootlegged, so to speak.

Who is responsible for the enforcement procedures to control the sale of these dangerous drugs?

Mr. LARRICK. The law is charged to us for enforcement. We gather the evidence and then present it to the Attorney General, who prosecutes it through the several U.S. attorneys throughout the country.

Mr. SCHENCK. And this does not come, necessarily, under the narcotics enforcement.

Mr. LARRICK. No. It doesn't come under narcotics enforcement at all.

Mr. SCHENCK. Could the narcotic people do this along with their other work and therefore obviate the necessity of dual organization?

Mr. LARRICK. If the law were changed, they could. That is a matter for the Congress to decide; who enforces it. That was given a great deal of consideration, Mr. Schenck, when the hearings were before the Ways and Means Committee and later, as you recall, before Interstate and Foreign Commerce. And it was decided that this type of thing would be placed under the Durham-Humphrey amendment.

Now this year, the President established an Advisory Commission on Narcotic and Drug Abuse, and among the things that they came up with in their interim report is that a very grave problem does exist in the case of drugs that are not now under the Narcotics Act, but which are, in fact, what they called dangerous drugs, the amphetamines, barbiturates, and other dangerous drugs. They recommended enactment of legislation for strict Federal regulation in this field which follows the general pattern of legislation which was included in the omnibus drug bill which Mr. Harris introduced in the last Congress at the request of the administration.

That is the status. There are several bills pending.

Mr. SCHENCK. I was wondering, Commissioner, whether or not we weren't duplicating a set of Government personnel which we could do without and still be safe.

Mr. LARRICK. I don't believe that I am the one to answer that. I am willing to undertake this job. The enforcement of the type of job that is covered by this amendment is not particularly a pleasant job. It is dealing with the lowest type of characters in America, dealing with criminals, and we—the Congress of the United States decided that this is a job they wanted us to undertake and we have undertaken it. We do think that it should be done and we will leave it to the Congress to decide who does it. But we do not think that the tools that are presently available to do it with are adequate.

It will take a lot more people, too.

Mr. SCHENCK. For what purpose?

Mr. LARRICK. With the number of people we now have, we can't trace down all these bootleggers.

You see, now if we catch somebody with a bunch of amphetamine that they are bootlegging, under the law we have to prove that this 500,000 pills moved in interstate commerce and it is very difficult to prove the source of something you find at the back door of a bar.

We have an intricate way of doing it by measuring markings on pills and relating them back to particular tablet machines, in some factory. But it is very complicated. We do think that to deal with this traffic will require new legislation, no matter who enforces it.

Mr. SCHENCK. That, of course, is my question, you see, whether or not it can be done more efficiently with people who are already experienced in handling narcotic violations and also handling this particular kind of people who are bootlegging these materials.

Mr. LARRICK. Well, as I said, that is a decision for you people to make and for the political administration.

Mr. SCHENCK. Now, Mr. Commissioner, I have just one other question. It has been my understanding in looking at the labels of various food materials that they are mostly fortified with various kinds of vitamins which are purported to be adequate for good health.

Certain vitamins—particularly vitamins A and D are included in rather large quantities which, I understand, are less required by adults than are required by children. At the same time, there has also been a tremendous growth in the vitamin pill industry and in the sale of all kinds of pills to get rid of that tired feeling. I am under the impression that there are some new diseases developing by an overdosage of particularly A and D vitamins which are stored in the system, so I understand, and that these are causing a group of illnesses not heretofore apparent.

Have you run into that?

Mr. LARRICK. I think I will ask Dr. O. L. Kline, who is a nutrition expert, to answer that, if I may?

Dr. KLINE. Mr. Schenck, the present requirements under the Food, Drug, and Cosmetic Act require that products containing 50,000 units or more of vitamin D, or more than 50,000 units of vitamin A per daily intake must be sold on prescription. We recognize that these amounts can be harmful if used over a considerable period of time. We are not aware of disease conditions that exists today as a result of taking amounts less than this.

We are, however, very much aware of the fact that such amounts are quite unnecessary for nutritional purposes, and June 20, 1962, we published proposed changes in our regulations for labeling of foods for special dietary use, which, if promulgated, would prohibit the distribution of products containing such large amounts of vitamin A and D if offered for nutritional purposes.

Mr. SCHENCK. Those two vitamins are stored, are they not, in the system?

Dr. KLINE. That is right. If taken in excess, they are stored in the liver, and as the liver becomes saturated, this constitutes, in effect, a foreign body reaction and causes physiological difficulty.

Mr. SCHENCK. Are those regulations to which you referred now in operation?

Dr. KLINE. No; they have been published in proposed form. We have before us a considerable number of comments, in the number of some 40,000, as a matter of fact, to review and to evaluate. The next stage is a publication of a final order which would include any changes to meet the constructive comments that have been received. That final order would then be subject to review and perhaps to a public hearing.

Mr. SCHENCK. Do you have any anticipated time schedule on that?

Dr. KLINE. No; I am afraid I can't give you any estimate of time.

Mr. LARRICK. We would have proceeded with that with dispatch, but when this new drug law was passed, it gave us a whole group of new regulations to put out, and to be frank with you, we sort of put this one aside until we get the much more important new drug regulations in effect.

We have about 10 basic rules and regulations to get out in that area, and then we will proceed with this one.

Mr. SCHENCK. Do you have any up-to-date estimation as to the total dollar volume of vitamins that are sold over the counter, so to speak?

Mr. LARRICK. We estimate that $400 million worth of vitamins and minerals were sold in 1961. These were sold through drugstores, hospitals, mail-order houses, food stores, house-to-house salesmen, and in other outlets.

Mr. SCHENCK. $400 million total, dollar value?

Mr. LARRICK. Right.

Mr. SCHENCK. In 1961?

Mr. LARRICK. 1961; yes.

Mr. SCHENCK. That is your latest figure?

Mr. LARRICK. That is the latest figure.

Mr. ROBERTS. Mr. O'Brien?

Mr. O'BRIEN. Which agency administers the law with respect to biologicals?

I might suggest before you answer that, that you might explain for the benefit of the committee the difference between biologicals and drugs.

Mr. LARRICK. Well, biologicals, Mr. O'Brien, of course are drugs. Long before the Food and Drug Act of 1906 was passed, there were some very acute problems that arose with respect to some medications that were in the general category of smallpox vaccine. The virus serums and toxins are roughly in that general class of compounds that protect against typhoid fever, smallpox, or similar diseases. That is not an exact description, but it is for all practical purposes what they will do.

These problems arose about the purity, the strength, and the safety of these commodities. There was no Food and Drug Administration. There was a Public Health Service, with skilled people who could deal in this area. When the Congress decided to regulate in this area, they did pass a law and they gave that law to the Public Health Service and they have administered that law ever since.

Mr. O'BRIEN. But biologicals are made from tissue, are they not?

Mr. LARRICK. Yes; basically; biologicals means they are made from tissues. Congress put some under that act—arsperamine, for example, from World War I, is not strictly in the category you mention, but basically that is what that means.

Mr. SCHENCK. The difference between them and antibiotics is that the antibiotics are made from the process of fermentation?

Mr. LARRICK. That is a difference; yes.

Mr. O'BRIEN. The provisions of laws do differ, then, with respect to biologicals, don't they, to some extent?

Mr. LARRICK. Yes.

Mr. O'BRIEN. When you say they are the same, there is a statutory differentiation?

Mr. LARRICK. There is a difference in the problem, yes. Biologicals are made by very few manufacturers. It is a very highly specialized type and kind of manufacture, and they are used almost exclusively, as far as I know, by the medical profession.

Mr. O'BRIEN. What I am leading up to is, is there a difference in the administration of these provisions, between the administration of those relating to biologicals and those relating to drugs?

If so, are these differences in administration justified?

Mr. LARRICK. Well, the Congress decided that on the biologicals, they would proceed by licensing each manufacturer, and licensing is a very strict process, in my judgment.

So that law is administered as a licensing law.

Now, in the case of the thousands of manufacturers that we regulate, they didn't decide to have a licensing statute. As a matter of fact, they specifically rejected it. While we have gotten closer and closer to it by the evolutionary changes in the statute over the years, we still don't have a straight out-and-out licensing law.

In my personal opinion, for the purpose of the biologicals the pattern that Congress laid down to regulate it and the procedures that have been used in the administration of that statute have been signally successful.

I am not one to be disposed to recommend changes in things that work and I am quite satisfied, from where I sit, that they are doing a good job and will continue to.

Mr. O'BRIEN. That answers my question, because as I understand these hearings, while we are interested in finding out where we have been and where we are going, I think we would be making a very great mistake if we didn't occasionally take a look at what Congress itself had mandated and find out what changes were necessary.

Mr. LARRICK. If you want to make some changes for the sake of conformity, you could find differences between the two laws. But since they work, why bother?

Mr. O'BRIEN. My next question is with reference to bottom of page 18 of your statement. You make reference to a National Food and Drug Advisory Council. Now, I, and I think some members of the committee, and more particularly the chairman, have received some mail in support of such a formation. May I ask if that is the general attitude of the industry?

Mr. LARRICK. I don't think I can state with assurance what the general attitude of the industry is.

I think that there is a very great consensus of viewpoint among the responsible element of industry and the responsible element of the scientific community that have a reason to have an interest in our work, who believe that our responsibilities are getting greater all the time and the technological problems that we are confronted with are growing to the extent that we do need to constantly expand our access to the best brains in science in America to be able to discharge our obligations to the best possible advantage.

Mr. O'BRIEN. Doctor, also on page 18, you state that you are working with the Public Health Service on two particular programs.

Are these two instances the only ones in which you have cooperative scientific activities?

If not, would you give the committee a list, at least a partial list, of other specific examples of cooperative efforts with the Public Health Service?

Mr. LARRICK. There are many others and we will be very happy to comply with your request for a list.

Mr. O'BRIEN. Fine.

Also, there has been—there have been received by members of this committee and Congress generally, mail about the regulations under the recent drug amendments insofar as they relate to the use of the common name in labels, and so forth.

Would you please explain what the regulations would require and what would the statutory provision require in this respect?

Mr. LARRICK. If I may, I would prefer that Mr. Goodrich, our general counsel, answer that question.

Mr. GOODRICH. The regulations require that wherever the proprietary name of a drug is used, the established name, which is either the name we have established by regulation or the name established in the U.S. Pharmacopoeia or the common or usual name, appear in conjunction, in size at least half as large.

This was one of the issues taken to the conference committee. The House voted to require a statement of the generic name, established name, at the first place and most prominent place. The conference committee rejected that and said that the established name should appear each time the trade name appears and in type at least half the size of the trade name.

That is what the regulations require.

Mr. O'BRIEN. I remember that quite well. I was on that conference committee. That was one of the rounds that we lost.

Mr. LARRICK. You probably know more about the details of that than we do.

Mr. O'BRIEN. I am thinking of the record.

May I ask, Doctor, what is the amount of the 1963 appropriation for your agency?

Mr. LARRICK. The total appropriation for Food and Drug Administration for fiscal year 1963 is $28,280,000.

Mr. O'BRIEN. And how much of that goes to the payment of salaries of scientists?

Mr. LARRICK. The remuneration of scientists out of that $28,280,000, we have divided for our purposes into two categories; one, headquarters, which is $6,288,000; the other is field, which is $8 million, which makes a total of $14,288,000 out of the total of $28,280,000.

Mr. O'BRIEN. How much goes to scientific equipment and operations, exclusive of salaries?

Mr. LARRICK. That figure I would have to get calculated for you.

Mr. O'BRIEN. Will you supply it for the record?

Mr. LARRICK. If I may; thank you.

I want to be sure I have your question.

You want to know the amount of money from our 1963 appropriation that we expended for scientific equipment?

Mr. O'BRIEN. Yes.

Mr. LARRICK. I do have that. It is $1¾ million.

Mr. O'BRIEN. How many scientists do you employ? If you are looking it up——

Mr. LARRICK. I have it here.

Mr. O'BRIEN. Perhaps the other two questions—you could answer all three.

How many have M.D. or Ph. D. degrees and how many have masters' degrees?

I assume that some of the Ph. D.'s and M.D.'s might have masters' too.

Mr. LARRICK. They would.

Let's see:

In the first place, our total staff for Food and Drug is 3,232 people. Of scientists we have 758 in headquarters and 867 in the field, or a total of 1,625.

Now, almost 25 percent of all of our scientific personnel have advanced degrees.

But we don't have the number that have masters' degrees.

That we can get and supply for the record, if we may.

Mr. O'BRIEN. I would appreciate it if you would. That concludes my questions.

Mr. LARRICK. There are 43 M.D.'s.

Mr. O'BRIEN Thank you very much, Doctor

Mr. SCHENCK. Would you have, Mr. Larrick, any estimation of your 1964 budget, how it compares with 1963?

Mr. LARRICK. We have just learned that the House Appropriations Committee, sending the bill to the floor, recommended an appropriation of $35,805,000 for salaries and expenses, which represents an increase of $7,865,000 in salaries and expenses over fiscal 1963.

This would employ—permit a staff increase of 635 people—315 of which would be the result of the legislation we have been talking of that you passed last year; 51 people would work on imported drugs, 41 on food additives, 20 on pesticides.

In addition to that money, the budget proposed $11,973,000 for buildings and facilities.

The Congress cut that back and gave us planning money for some of the buildings. I don't have the exact figure. We were proposing four laboratories in the field be rebuilt this next year. They cut it back to two, and we were proposing a new laboratory building at Beltsville that I have mentioned in my testimony, and there they gave us the planning money, which indicated approval of the project, but they did not include money for the construction. So that made a cutback, I believe, of some $7 million, approximately $7 million from the approximately $12 million for buildings and facilities.

Mr. SCHENCK. How does your $7,835,000 compare with your request?

Mr. LARRICK. That was our request.

Mr. SCHENCK. So you were allotted the request?

Mr. LARRICK. That is right.

Mr. ROBERTS. I believe you were present this morning when I asked one of the NIH witnesses a question as to some guidelines for construction being laid down, as far as grantees are concerned, to do a little bit better job in this matter of care of animals used in experimentation. I used at that time, I think, or referred to the example that Food and Drug has been setting in the field. I am sure you know that mailwise this requires quite a bit of time of this subcommittee.

Well, male-and-female-wise. Animalwise, too.

The problem, however, it seems to me, was pretty well highlighted by some of the revelations of the Virginia incident. I understand that there have been successful prosecutions of some of those cases and I would like for you to tell us what you have done in that field so that we might have something in the record with reference to the efforts made.

Mr. LARRICK. Dr. Bert Vos, who is the project leader in that field, is here and I would like to have him answer it.

Dr. VOS. We have under construction now at Beltsville what is known as our Special Pharmacological Animal Laboratory. The ground for that was broken last fall and the present estimated date of completion is in December of this year. The cost is approximately $1¾ million. It will have facilities for just under 500 dogs. There will be about 480. These will be in individual runs, one individual space for each dog. There is an outside run which has an area of 4 by 12 feet and an inside run of 4 by 6 feet and the dog is able to go in and out at will; that is, he has complete access in either direction.

The dogs are provided with automatic drinking water fountains which give fresh water.

They will be fed daily a measured quantity of food. There will be two veterinarians in the area who will attend to the medical needs of the dogs. There will be 1 caretaker for each 48 dogs, 1 technician for each 96 dogs.

In addition, there will be pharmacologists, physiologists, biochemists in attendance also to study the dogs.

We have a picture here, an artist's sketch of the building. There is a slight difference, as it is being constructed. It will have only five such wings and it shows six there.

Mr. ROBERTS. Doctor, in your opinion, do you think that this emphasis on humane treatment rather than on the other kind, which in many cases amounts to cruel treatment, will mean that we will get a better quality of research from animals that are properly cared for?

Dr. VOS. It should lead to that, yes.

Mr. ROBERTS. We have had that testimony from some very eminent physicians including Dr. Herbst in Washington, who is considered on of the finest urologists in the country and also Dr. Paul Kiernan, who is one of the founders of the Washington Clinic. I would like to commend the Commissioner and your associates for taking what I think is a forward step.

I think it would be good news to the thousands of people in the country who are concerned with the type of care that animals have been receiving. It could contribute a great deal and I can see nothing that can be gained in humane society by what are admittedly some cruel practices we have seen in the past.

Mr. LARRICK. Thank you very much, sir.

Mr. ROBERTS. Mr. O'Brien?

Mr. O'BRIEN. I agree with the chairman that a great many people will be pleased to know what your Department is doing. But isn't it a fact that many organizations and institutions which use animals for experimentation do not have anything near what you are doing?

Mr. LARRICK. Yes; there are many that don't need all that we need. We have rather a unique problem insofar as dogs are concerned. Many hospitals and many institutions use dogs for very short-range tests. The great bulk of the testing that we do is to try to evaluate what will happen to a man if he consumes a little bit of a chemical for a lifetime, so we do a lot of work on rats, for their lifetime. Then we use dogs for 2 to 3 years. If we don't keep those dogs very well, if we lose the dog after we have a year and a half's investment in him, we have lost $10,000 or $15,000. But I think everybody should take good care of their dogs and I think we have more reasons than just humane reasons to take very good care of the dogs.

Mr. O'BRIEN. Do you think there is going to be any large-scale voluntary following of the humaneness displayed by your Department in other places?

Mr. LARRICK. Look, if I take care of the Food and Drug Administration, that is all I can hope to do.

Mr. O'BRIEN. I will have to confess that this may be just a little warmup for a battle in another arena a little later.

Mr. ROBERTS. I might mention, Doctor, that I introduced what I think is a reasonable bill on this subject, which would provide that there should be some standards on the subject—that is, where grants or contracts are involved. And I think, too, that some of the sources of procurement of these animals need to be examined. There are many instances where very valuable animals have been picked up by very unscrupulous people and have been fed into this situation. I feel that there is a need for some reasonable legislation in the field.

Mr. LARRICK. I should add, Mr. O'Brien, before we built our facility, we went out, for example, to the National Institutes of Health.

I personally went out and saw how they were taking care of their dogs. We learned a lot from them and they showed us, I thought, some very fine practices. We went to some of the medical schools in the area. As a matter of fact, some of the places we went were some of the places Mrs. Free and Mrs. Stevens suggested that we could go to advantage to see places that were taking good care of their dogs.

Mr. O'BRIEN. I am glad to hear that. I do feel that there are a great many people who feel this is all fine, but they don't want anything to be done about it by the law. In other words, they are willing that dogs have teeth but that laws have none.

Mr. ROBERTS. Again, I would like to thank you, Commissioner, and your associates, for your presentation. You have been very helpful, as you have been in the past. I want to congratulate you on the fine presentation you made.

Mr. LARRICK. Thank you very kindly, sir.

Mr. ROBERTS. The hearings will be in recess until further call of the Chair.

(Whereupon, at 4 p.m., the committee adjourned, subject to the call of the Chair.)

ORGANIZATION OF PUBLIC HEALTH SERVICE

TUESDAY, MAY 14, 1963

House of Representatives,
Subcommittee on Public Health and Safety
of the Committee on Interstate and Foreign Commerce,
Washington, D.C.

The subcommittee met at 10 a.m., pursuant to recess, in the caucus room, Cannon Building, Hon. Kenneth Roberts (chairman of the subcommittee) presiding.

Mr. Roberts. The subcommittee will please be in order. We are resuming hearings today on H.R. 2410, which has for its purpose the reorganization of the Public Health Service, and other purposes.

Today we will hear from Boisfeuillet Jones, who is Special Assistant to the Secretary (Health and Medical Affairs), Department of Health, Education, and Welfare.

Tomorrow we will hear from Mr. Staats of the Bureau of the Budget, and later, at a date to be announced, we will hear from Dr. James Wiesner from the White House.

Mr. Jones, you may proceed with your statement.

STATEMENT OF BOISFEUILLET JONES, SPECIAL ASSISTANT TO THE SECRETARY (HEALTH AND MEDICAL AFFAIRS), U.S. DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE

Mr. Jones. Mr. Chairman and Mr. Nelsen, the Department of Health, Education, and Welfare appreciates the opportunity to appear before this committee as it undertakes a broad review of the health activities of the Federal Government. We appreciate, too, the interest which prompts this review.

The Federal Government has a vital role in the health of the American people. Its increasing concern about health and health protection has been reflected in strengthened programs, primarily within the Department of Health, Education, and Welfare, but also in other Federal departments and agencies.

A review of the organizational and administrative structure through which the Government discharges its health responsibilities can be very helpful in charting future national directions and goals. It can also help the Department appraise our stewardship of the programs which have been entrusted to us.

You have reviewed the programs of the Public Health Service and the Food and Drug Administration in considerable breadth and depth. The health activities of the Department are concentrated principally in these two agencies, but important health programs are located in other constituents of the Department. A review of these other pro-

grams will complete the picture of the health activities of the Department.

Before proceeding with this review, however, a brief sketch of the health, education, and welfare activities of the country—and particularly the Department's contribution to this total national effort—appears necessary to give a context to the examination of our programs. Although health, education, and welfare are thought of as separate fields, they are intimately related, and many of our programs involve more than one of these fields. The Federal role in health, education, and welfare is but one segment of a much larger national effort in which enormous contributions are made by private individuals and organizations and by State and local governments. All of these activities combined accounted for an estimated total of $95 billion in 1962. Of this total, about $31 billion were spent for health purposes—25 percent by the public sector (government at all levels) and 75 percent by the private sector.

The scope and complexity of activities of the Department of Health, Education, and Welfare in fiscal year 1963 are suggested by its almost 80,000 employees, its over $5.3 billion in appropriations, its over $15 billion in benefit payments from trust funds, and its more than 100 separate programs.

A large proportion of the Department's budget—almost 90 percent—goes to agencies, institutions, and individuals outside the Federal Government. Funds are allocated to the States in the form of grants-in-aid to match or supplement State and local expenditures for health, education, and welfare programs, and to colleges, universities, hospitals, and scientific institutions as grants for research and training programs.

Of the Department's total estimated expenditure in 1963 for health activities, the Food and Drug Administration and the Public Health Service account for $1.6 billion.

The remaining $600 million will be expended by the other constituents of the Department for health and health-related purposes. These activities will be highlighted briefly.

WELFARE ADMINISTRATION

Through grants-in-aid to the States, the Federal Government helps meet the needs of dependent children who are deprived of parental support or care, and the needy aged, blind, and permanently and totally disabled. This support includes payment for medical care to the extent provided in the various State plans for public assistance programs. The importance of medical care in these programs is illustrated by the fact that during fiscal year 1963, medical vendor payments will account for some $860 million of the estimated $4.2 billion which will be spent for assistance under the federally aided programs. In addition to these payments made directly for medical services, part of the money received by recipients will go toward the purchase of medical care.

In recent years there has been an increasing emphasis on the medical care elements in the public assistance programs. In 1960, the Congress increased the Federal aid for medical care expenditure made by the States on behalf of persons receiving old-age assistance and estab-

lished the medical assistance for the aged program. Under this program, the Federal Government aids the States in providing medical care for older persons who have sufficient resources to meet their everyday needs but require help with their medical expenses. At the same time, the Bureau of Family Services, which administers the public assistance programs, was charged with the development of guides and standards in the medical care area.

In other programs, which fall within the jurisdiction of the Children's Bureau, assistance is given the States in extending their services for promoting the health of mothers and children and for locating and providing required medical, surgical, and other services for crippled children. Grants to the States for maternal and child health services will total $25 million in fiscal year 1963. Grants for crippled children's programs will be $25 million. In addition to this financial assistance, advisory and consultative services are made available to the States.

VOCATIONAL REHABILITATION ADMINISTRATION

Several aspects of the work of the Vocational Rehabilitation Administration involve medical and related services in preparing handicapped people for useful occupations. This year it is expected that more than 110,000 handicapped men and women will be rehabilitated and returned to work through the Federal-State program of vocational rehabilitation.

About $25.5 million in Federal and State funds will be used for diagnostic and evaluation purposes, for medical, surgical, and hospital services to reduce or eliminate the disability, and for the purchase of artificial limbs and other appliances. Of this amount, about $16 million are Federal funds. Such health activities will account for approximately 22 percent of the total expenditures by the States, with the remainder allotted for such services as vocational evaluation, job training, placement, and tools and licenses.

The Vocational Rehabilitation Administration also supports research into the problems of disability and rehabilitation, as well as a training grant program to expand the supply of trained workers to provide services to the disabled. In 1963, the medical phases of these programs will account for about 36 percent of the total costs, or some $8.6 million.

ST. ELIZABETHS HOSPITAL

The total mission of St. Elizabeths Hospital is, of course, health related. St. Elizabeths Hospital provides treatment for several categories of mentally ill persons, including residents of the District of Columbia, beneficiaries of the Veterans' Administration and other Federal agencies, and mentally ill persons charged with or convicted of crimes in U.S. courts.

The hospital has an average in-patient population of 6,700 and a staff of 3,900 employees. Extensive research and training programs are carried out in conjunction with patient treatment activities. In fiscal year 1963, St. Elizabeths Hospital is operating on a budget of $25.7 million, of which the Federal appropriation accounts for $6.3 million.

U.S. OFFICE OF EDUCATION

Through grants to State departments of education, the Federal Government provides financial help in establishing and operating educational programs for the preparation of a variety of health service workers, including licensed vocational or practical nurses, dental and medical assistants, surgical technicians, and the like. Of the more than $15 million expended in 1962 for such training programs, approximately $5 million, or one-third, were from Federal funds.

In addition to such training programs operated under public vocational education for many years, in 1956 the Congress initiated a specific 5-year program of Federal assistance to States for the training of practical nurses and other similar health workers. This program was extended in 1961 through June 30, 1965.

DISTINCTIONS IN HEALTH MISSIONS AND PROGRAMS

The programs I have just described, along with those you have reviewed previously, have several similarities. Since they are all health programs or include health components, they contribute to the total well-being of the people of this country They require the skills of highly trained professional and technical personnel from a variety of scientific and medical disciplines. And they use certain basic resources and facilities in common.

On the other hand, the health programs of the several agencies of the Department differ in many important respects. Each has been established by the Congress in response to a specific national need.

The first difference is historical. The Public Health Service, for example, dates back to the very beginnings of our Nation, when the needs of commerce and national defense prompted the Federal Government to take action to safeguard the health of merchant seamen. The Food and Drug Administration, the Vocational Rehabilitation Administration, and the Welfare Administration, however, are all products of the technological and social developments of the 20th century. Aside from the obvious difference in stages of development resulting from the dates of their establishment, these agencies have developed strong traditions of their own. They utilize channels with the public and with the professions which have developed separately over the years.

The second point of difference is that each agency has a mission in the health area which is distinct from the health missions in the other agencies. This distinction affects the organization, methods of operation, and relationships of the agencies. Let me illustrate with a few examples.

Health activities, as we have seen, constitute a significant proportion of the work of the Vocational Rehabilitation Administration. The goal of VRA, however, is to reach a specific kind of individual—the handicapped or disabled—and to rehabilitate that individual for productive employment. Health activities, therefore, are a means to carry out that objective. The goal of the Public Health Service, on the other hand, is the health of the public in general. For the Service, health is an end in itself.

Later in this presentation, the health protection activities of the Food and Drug Administration and the Public Health Service will be

discussed in some detail. Within the context of their respective missions, however, the point should be noted that the enforcement activities relating to health protection differ significantly in each agency. The objective of the Food and Drug Administration is to protect the consumer as an individual. The objective of the Public Health Service environmental program is to provide a healthy environment for individuals in the community at large.

The different health missions of the agencies of the Department derive from different authority, even different constitutional authority. The several programs are under the jurisdiction of different committees of the Congress. And relationships vary significantly, not only with the Congress but with affected individuals and with participating groups or agencies. Some programs of the Department deal primarily with State agencies, or with interstate and regional bodies. Others work directly with local authorities. Still others have important relationships with universities, medical schools, research institutions, and professional groups. And finally, some programs involve the general public directly.

If we examine the health activities of the Department in a framework other than organizational, however, we can group them functionally in three major categories: (1) Protection; (2) service; and (3) research. Under each of these broad headings, we are concerned not only with the end product but with the necessary ways and means of attaining it—notably, with the adequacy of skilled manpower and with the physical facilities and resources that are needed.

Several agencies have programs which come under one or more of these groupings. It follows then that coordination of similar activities is essential. In a Federal agency with a large element of decentralized responsibility, certain programs must be coordinated in order to meet common purposes.

Coordination is built into the work of the Department of Health, Education, and Welfare. It ranges from informal exchanges among our professional and technical personnel to the creation of formal and continuing intradepartmental committees and coordinating groups. Agencies of the Department collaborate in research and investigation, in demonstration and pilot projects, and in training programs. Exchange of information is fostered through professional organizations and through symposia and conferences.

One of the principal functions of the Office of the Secretary is to provide mechanisms for coordination or to insure that these mechanisms are established. Society is changing so rapidly, however, that new health problems are arising constantly, requiring new approaches to coordination.

It appears desirable, therefore, to examine the factors in American society which have contributed to the health problems we face today, and their relationship to the functional groupings of protection, service, and research.

HEALTH PROTECTION

In recent history, science and technology have completely transformed man's concept of the universe, of his place in it, and of his own physiological and psychological systems. Man's mastery over nature has been vastly extended, including his capacity to cope with

diseases and other threats to human life and health. Yet these benefits have not been won without risks in terms of environmental hazards and of economic effects.

Public health and safety in the cities, on the farm, in workplaces, and in travel can no longer be assessed in terms of relatively simple exposures of a generation ago, such as bacterial contamination of air, water, and foods; low-powered machines; and high concentrations of toxic substances in certain occupations. Today, viruses, machines of tremendous speed and power, prolonged low-level exposure to ionizing radiation, and tens of thousands of potentially toxic chemicals must be considered as predominant features of the American environment, affecting the entire population.

Similarly, technological advance brought forth the chemotherapeutic era. Thousands of chemical compounds have been added, in recent years, to the therapeutic armamentarium of physicians for the treatment of disease and the protection of health. Yet each of these compounds, regardless of its degree of benefit, entails some degree of hazard.

It is apparent that in terms of providing a healthy environment and protecting the consumer, these beneficial technological advances have placed the American people directly on the horns of a dilemma, for there is also risk and hazard in these advances. The problem is how to maintain a healthy environment and protect the consumer while at the same time retaining the benefits of modern technology.

Decisions directed toward implementing health protection measures concerning toxic substances in the environment fall into broad classes.

First are those instances where the substance is hazardous and there it little or no benefit. Here the principal problems of control are finding means to prevent the substance from finding its way into the environment or to remove it from the environment.

Second are those instances where the substance has benefits but some hazard. Here the problems of health protection are in finding a means of restricting the toxic substance to a level which minimizes the risk, and/or limiting its use to those circumstances where the greatest amount of good will result, and where the benefits clearly outweigh the risks.

Four basic requirements are necessary for sound decisions in this area:

(1) There must be sufficient scientific data available so that an assessment can be made of the biological effect, both beneficial and harmful, of the toxic substance.

(2) There must be knowledge of the dissemination of this toxic substance in the environment.

(3) There must be a clear determination based on the scientific data of the balance between risk and benefit in varying situations.

(4) There must be a determination of the measures needed for health protection which take account of the relationship between risk and benefit.

In carrying out its responsibilities in the field of protection of individuals against chemical, biological, radiological, and other hazards, the Department of Health, Education, and Welfare has two broad programs. Each of these programs requires us, first, to marshal the

necessary scientific facts, and second, to minimize public health risks. In the marshalling of facts these two programs have some likenesses but also important differences; as to techniques in minimizing risks to the public, they have almost nothing in common.

One of these programs is conducted by the Food and Drug Administration and the other by the Public Health Service.

The first of these programs is based upon the new drug section of the Food, Drug, and Cosmetic Act of 1938 and upon four laws recommended by this committee since 1954 and enacted by the Congress—the Pesticide Chemicals Amendment of 1954, the Food Additives Amendment of 1958, the Color Additives Amendment of 1960, and the Kefauver-Harris Drug Amendments of 1962. The second is carried out under the broad authority of the Public Health Service Act of 1944 and under the Water Control Act of 1956 as amended in 1961 and the Air Pollution Control Act of 1955.

The FDA programs are based on the premise that it is the responsibility of those who introduce substances of unknown, uncertain, or toxic potential into our food and drug supplies to first assemble adequate scientific facts to establish that the substances, as used, are safe. Industry has been charged by the Congress with testing new drugs, antibiotics, pesticides, food additives, and color additives and making them available for use only in those ways that are consistent with the public health. Violations are dealt with case by case, commonly through seizure of the offending article.

The recent history of these important public laws is fresh in all our minds. We believe that they are well conceived and that, in general terms, they are adequate to the tasks of the 1960's. Should defects appear, we shall come to the Congress and ask for correction.

The Public Health Service program is not subject to similar treatment, either scientifically or in the processes of enforcement. The objective of the Public Health Service's program is the identification, analysis, and evaluation of the hazards at their sources; the development of procedures and programs to prevent these hazards from occurring; and finally, the application of preventive measures, primarily by industry and local public bodies. Such activity comprehends research, of course, but also includes training of State and local technicians, technical assistance, financial aid, cooperative activities, the collection and dissemination of information, and in some cases (water pollution control and interstate quarantine) Federal regulatory and enforcement actions.

Because pollutants from many sources are commonly mingled in the same water or air, moreover, remedial action must be directed in the main to total situations. What each individual person or enterprise contributed to the pollution must be assessed in relation to what all others are contributing. Summary enforcement is out of the question. We cannot require that a cubic yard of air be properly labeled, or ask a court to seize and condemn it.

These two agencies may be protecting the same individuals from the same chemicals, but their ways of doing it are totally unlike, and so far as we can see, must remain so.

On the other hand, since the Food and Drug Administration and the Public Health Service share in the Department's total responsibility for providing a health environment and protecting the consumer,

and since carrying out this responsibility rests on the strength of our scientific activities, it is essential that:

1. The scientific competence and facilities within these agencies be of the highest quality and efficiency;

2. The coordination between these two agencies permit the maximum flow of scientific information and the maximum efficient utilization of scientific manpower; and

3. The communication between the scientists of the Department and the scientific community as a whole be open and full.

HEALTH SERVICE

Health service constitutes the second major grouping of health activities within the Department. This function consists chiefly of two parts: Those activities which provide health care directly to legally designated beneficiaries, and those activities which contribute indirectly to the utimate goal of health services, for the public.

The direct health activities for legally designated beneficiaries are located in the Public Health Service and were described to you earlier in these hearings. While there is some need to coordinate these programs with other departmental health activities, the greatest need is for coordination with other agencies of the Government.

The Bureau of Medical Services of the Public Health Service has close working relationships with the Coast Guard, Bureau of Prisons, Bureau of Indian Affairs, and others. These are long-established relationships and are functioning in a highly satisfactory manner.

For the public in general, the activities of the Department which aid in the provision of health services are of overriding importance. It is here that the fruits of research are applied to health care for people. In this area, the Department performs the traditional governmental functions of resource development, resource distribution, and dissemination of knowledge. I hardly need to point out to you that these responsibilities are shared by private and public institutions, insurance systems, professional groups, and all pertinent agencies supported by tax funds, public subscription, and private resources. The role of the Department is one of assistance, particularly where the need is so urgent as to require the resources of the Federal Government.

There has been a growing concern for the provision and financing of health services to all segments of the population. Adequate supplies of well-qualified health personnel, appropriate hospital and medical facilities, and more efficient methods of providing health care are viewed as major national needs.

One of the great challenges confronting us is the time lag between the discovery of knowledge and the development of methods for its practical application. More often than is supposed, the lack of satisfactory resources and organization for providing health services is a major barrier to adequate health care of all the pubic.

The Department is deeply involved in meeting some of these challenges. Many of our health activities are designed to increase the supply of health personnel. These programs, some of which were described to you earlier, cover a wide variety of skills needed for adequate health services. We are helping to train professional workers in rehabilitation, care of the mentally ill, nursing education, public health, research, and many other areas.

Similarly, these programs are assisting in the development of the hospital and medical facilities which are the setting for proper health services. And through the activities of the Welfare Administration, we are assisting in the financing of medical care for large numbers of people in need.

But resources, facilities, and personnel must be organized into programs if effective healtlh service is to be available in the right place and at the right time. Consequently, the Department, through grants, demonstrations, and the dissemination of information is intimately involved in program development. How does a rehabilitation program become part of a continuum of prevention, curative, and rehabilitative services in the community? What is the proper role of the outpatient clinic in the community? How are standards of health services met in the purchase of medical care for welfare recipients?

These are some of the program questions in which the Department participates with many other governmental and nongovernmental agencies and groups. The end point of all programs, both within and outside this Department, is the provision of health service of the highest level permissible within our present knowledge. This calls for the utmost cooperation between the Department and a vast array of public and private groups.

Since health service functions are located organizationally in almost all of the constituents of the Department, coordination is always necessary. It is also a normal and natural aspect of operations.

For example, informal exchanges among our professional and technical personnel are almost impossible to chart or to describe in concrete terms. Yet they are among our most effective methods of coordination. We are quite aware of the fact that this goes on within the Department day by day, hour by hour. We believe this exchange is a sign of strength.

There are reasons why this informal communication occurs. Chief among these is the knowledge a program director has of the professional and technical skills available to assist him in other parts of the Department. For example, Food and Drug Administration personnel seek information and consultation from the scientists and technicians of the Public Health Service on pertinent problems.

Also, the health service programs of the different agencies frequently converge in the same universities, the same hospitals, or the same communities. Every program director is aware of the possibility of overlap and duplication.

In many instances, however, informal coordination cannot be relied upon completely, and formal mechanisms must be established. This can range from collaboration on specific projects to intradepartmental committees on either a continuing or ad hoc basis. These mechanisms not only serve existing programs but also help in the development of new programs. Translating the report of the President's Panel on Mental Retardation into the program for the mentally retarded, which is now before the Congress, required coordination and consultation among most of the agencies of the Department. This was effectively done through a departmental Committee on Mental Retardation.

HEALTH RESEARCH

Health research constitutes the third major grouping of health activities within the Department. This function consists of two

parts: research, which is conducted in the laboratories of the Department—intramural research; and research activities which are supported by grants and contracts—extramural research. In terms of dollars, the latter activities are by far the largest.

The focal point of health research in the Department is in the National Institutes of Health. You have heard an extensive review of these activities earlier in these hearings, and there is little to add.

One observation, however, seems important to an understanding of our role in health research. While all research has as its purpose the production of knowledge, there is a difference between the health research activities of the National Institutes of Health and of the other PHS bureaus and agencies of the Department. The objective of the National Institutes of Health is to develop knowledge for the prevention, treatment, and cure of diseases of man. Health research in other agencies serves as a means of producing knowledge to meet the specific objectives of those agencies. The objective of the community health service programs of the Bureau of State Services, for example, is the application of knowledge to protect and promote the health of the public. The research activities of these programs are oriented around this mission.

It is appropriate, therefore, that such research is located primarily in communities throughout the Nation and is designed to find better methods of applying health knowledge. Also, research activities of the Vocational Rehabilitation Administration can be visualized in a similar manner.

It is apparent, however, that coordination among the health research activities of the various agencies of the Department is essential. Knowledge is knowledge—if it is produced in the laboratories of the Public Health Service and is useful to carrying out the mission of the Food and Drug Administration, then it should be available to FDA. The same can be said for the laboratory results of the Food and Drug Administration as they relate to the mission of the environmental health activities of the Public Health Service. In fact, the area of intramural scientific activities is precisely where coordination between the Food and Drug Administration and the Public Health Service is most important.

In the extramural research programs of the Department, coordination of another type is essential. Most of the extramural research is carried out by academic institutions, hospitals, research institutes, industry, and community agencies. The same institution may be receiving grants for research work from various sources within the Department and for various purposes. Coordination is needed to prevent duplication and overlapping.

This is why, for example, the grants executive of the Vocational Rehabilitation Administration sits in on various study section and council meetings at the National Institutes of Health. This likewise is the purpose of the Science Information Exchange of the Smithsonian Institution which all our agencies use along with other Federal agencies.

Coordination is also needed in grants management policy. The development of mechanisms within the Public Health Service for coordination of grants management policy are certainly steps in the right direction.

CONCLUSION

From the foregoing, it is apparent that coordination of the Department's complex and far-reaching health activities is a continuing necessity. We view it as one of our most important responsibilities.

A considerable amount of coordination develops empirically and in response to the needs of our various programs. Much of it can be planned, however. We are constantly developing and refining such plans; and we put the plans into effect as rapidly as circumstances permit.

Some of the factors that will aid us in coordinating our programs now and in the future are—

(1) Providing a climate that fosters coordination as a part of daily operations.

(2) Placing related functions in close proximity to each other.

(3) Improving the exchange of information, particularly science information.

(4) Getting the benefit of regular and systematic advice from outside scientists and leaders in public affairs.

(5) Improving administrative and management practices within the Department.

Mr. Chairman, it has been the purpose of this presentation to make clear that the pattern of development and manner of operation of the Department's health programs have been and are consistent and rational. This is so even though the programs were authorized to meet specific needs at different periods of history, even though they have distinct missions, and even though some are under the jurisdiction of different committees of the Congress.

The essential features in this pattern are:

(1) Federal involvement in a health problem occurs only upon demonstration of a national need.

(2) Federal participation consists essentially of grants-in-aid, accompanied by professional and technical guidance, to stimulate and assist local action; and of support, through grants and contracts, to individual institutions where the particular activity needed in the national health interest is located.

(3) Direct operations of the Federal Government serve specific objectives, develop the competence needed to provide professional leadership in meeting our national health objectives, conduct research, and regulate and control interstate health problems.

During the course of these hearings, we have tried to do several other things: describe in detail each of our health missions and programs; outline the role of the Department in providing direction and coordination for these programs; and suggest that no major overhaul of these programs seems desirable at this time.

We do recognize two handicapping situations as of now, however. One is the lack of authority for the Public Health Service to make organizational and administrative adjustments as shifts in emphases may require. The other is the need for additional policy level personnel in the Department for more effective policy determination and coordination.

Finally, Mr. Chairman, we recognize the importance of the review of the health activities of the Federal Government that is being

undertaken by this committee. We view it as a positive step forward in the evaluation of Federal health responsibilities. We wish to express our thanks to you, Mr. Chairman, and to the members of the committee for providing this forum and for this further demonstration of your interest in these programs and responsibilities.

Thank you, Mr. Chairman.

Mr. ROBERTS. Thank you, Mr. Jones, for a very fine statement which emphasizes the need for greater coordination in the administration of the various health programs that come within the Department of Health, Education, and Welfare.

Just for the record, your title is that of Special Assistant to the Secretary (Health and Medical Affairs)?

Mr. JONES. That is correct, Mr. Chairman.

Mr. ROBERTS. Has your position been created by specific provision in the Public Service Act, or just how was it created?

Mr. JONES. It was created, Mr. Chairman, originally as a part of the reorganization plan under which the Department of Health, Education, and Welfare was created.

The position was one of several specifically provided for by the reorganization plan. These consisted of the Secretary, the Undersecretary, two Assistant Secretaries, and the Special Assistant to the Secretary (Health and Medical Affairs), which is the position that I am now occupying.

It later provided for an Administrative Assistant Secretary, and there is, of course, the General Counsel for the Department.

Mr. ROBERTS. Could you name some of your predecessors?

Mr. JONES. Yes, Mr. Chairman. The first incumbent in the position was Dr. Chester Keefer of Boston University who is presently director, Boston University-Massachusetts Memorial Hospitals Medical Center.

He was followed by Dr. Lowell Coggeshall, who was then head of the biological sciences division of the University of Chicago and is now vice president of the University of Chicago.

He was then followed by Dr. Aims McGuinness, who now is with the New York Academy of Medicine. He was followed by Dr. Craig, who at that time, was with the Mayo Clinic. Dr. Craig died while in office and the position then remained unfilled until I was nominated for the position by the President.

Mr. ROBERTS. And you are not an M.D., are you?

Mr. JONES. I am not an M.D.

Mr. ROBERTS. What are the specific responsibilities which you are expected to discharge?

Mr. JONES. Under the reorganization plan, Mr. Chairman, the protocol for the position is quite specific and I would like to supply this for the record if it is agreeable.

(The material follows:)

REORGANIZATION PLAN NO. 1 OF 1953

SEC. 3. *Special Assistant.*—There shall be in the Department a Special Assistant to the Secretary (Health and Medical Affairs) who shall be appointed by the President by and with the advice and consent of the Senate from among persons who are recognized leaders in the medical field with wide nongovernmental experience, shall review the health and medical programs of the Department and advise the Secretary with respect to the improvement of such programs

and with respect to necessary legislation in the health and medical fields, and shall receive compensation at the rate now or hereafter provided by law for Assistant Secretaries of executive departments.

Mr. ROBERTS. Without objection that may be done.

Mr. JONES. Generally speaking, the position is expected to advise the Secretary on the major health and medical affairs activities of the Department and to recommend such changes, such legislative programs, as may improve the operation of the programs in the Department. It is in essence an advisory position to the Secretary.

Mr. ROBERTS. Just for the record, I would like to get a few of the specific attainments that you feel qualifies you for this position.

I know, of course, of your work in connection with the survey of the needs for doctors, dentists, and other public health personnel, but if you would care to give that or supply it for the record, I think we would like to have it in the record.

Mr. JONES. I would be glad to give it to you. I can give it to you orally now, if you would like me to do so.

Mr. ROBERTS. Fine.

Mr. JONES. The wording of the reorganization plan which establishes this position provides that the holder of the office shall be nominated from among persons with wide nongovernmental experience in health affairs.

It does not require that the incumbent be a doctor of medicine. I became interested and involved in health affairs primarily through administration rather than through professional participation. I was in administration at Emory University following service in the Second World War.

While serving as dean of administration in 1952, I was asked to develop a plan for the further improvement and strengthening of the health activities of Emory University, including the schools of medicine, dentistry, nursing, the basic health sciences, the hospitals, and related health activities.

I was responsible for designing the plan for such development and subsequently was asked to make the plan work, as often happens when one has this kind of an assignment.

I was later made vice president and administrator of health services for Emory University. I served on the Commission on Human Medicine of the Southern Regional Education Board, which is a compact among 16 Southern States for collaboration in higher education.

One of the areas of interest of the commission was to build strengths State by State and institution by institution, supplementing each other rather than duplicating.

I served on the National Advisory Health Council and as such was chairman of a subcommittee on environmental health. The Council approved the report of this subcommittee, which recommended to the Surgeon General that special emphasis be given to the problems of environmental health in anticipation of an increasing problem in this area.

Subsequently, in response to a request from the Labor and Welfare Subcommittee of the House Appropriations Committee, the Surgeon General appointed a larger group to conduct a more complete study of environmental health and I was asked to chair this committee, which I did.

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The report of this group became a committee document of the House Appropriations Committee in 1960 in a special publication of hearings on environmental health.

I was asked by the Senate Committee on Appropriations to chair a consultant group on medical research which produced a report directed primarily toward an examination of the adequacy and effectiveness of the programs of the National Institutes of Health.

This report was submitted to the Senate Appropriations Committee in May of 1960 and became a matter of record at that time.

This, Mr. Chairman, is my general background. I might add that in accepting appointment for my present position, I did so on the condition that I could secure leave from my position at Emory University.

The board of trustees granted me an indefinite leave of absence to serve in this capacity.

Mr. NELSEN. Mr. Chairman.

Mr. ROBERTS. Mr. Nelsen.

Mr. NELSEN. You stated a moment ago that you would supply your responsibilities for the record. I was particularly interested in your responsibility relative to the Food, Drug, and Cosmetic Act, if you would spell that out a little bit.

Because of our experience with legislation a year ago I wondered what part you play relative to that phase of the activities of the Department.

Mr. JONES. I can give that to you specifically now or supply it for the record.

Mr. NELSEN. I would like to hear it right now if you don't mind.

Mr. JONES. Mr. Chairman, the Secretary of Health, Education, and Welfare appointed a Citizen's Advisory Committee to report on activities of the Food and Drug Administration in terms of its organization and its activities since 1956 when the first Citizen's Advisory Committee report was made.

When Secretary Celebrezze came into office in August of 1962 the report of this second Citizen's Advisory Committee was imminent. Secretary Celebrezze asked that I take direct responsibility for him, by assignment, to review the Citizen's Advisory Committee report and to work with the Commissioner of the Food and Drug Administration.

He did this by memorandum to me which I can provide for the record. It is very brief. I can read it now if you would like.

Mr. NELSEN. It is not necessary for you to supply it for the record. I was interested in finding out if the responsibility that you assumed is by statute, or by the Secretary, or the Commissioner of Food and Drug, and obviously it was by direction of the Secretary, as I understand it.

Mr. JONES. The Secretary has the statutory responsibility for Food and Drug activities.

Mr. NELSEN. I understand.

Mr. JONES. He also has direction of my activities as adviser to him and he gave me a specific assignment in this regard.

Mr. NELSEN. Thank you.

Thank you, Mr. Chairman.

Mr. ROBERTS. Thank you, Mr. Nelsen.

What about the statutory responsibilities of the Public Health Service? Are they vested in the Surgeon General or in the Secretary?

Mr. JONES. Primarily they are in the Surgeon General, Mr. Chairman. I think they appear in the backup material which your committee has made available in detail.

There is some difference. Primarily they are vested in the Surgeon General. Some activities are in the Secretary.

Mr. ROBERTS. I was going to come to that with this question. Is there actually a difference between statutory responsibilities vested in the Secretary and delegated by him, say, to the Food and Drug Administration, and statutory responsibilities vested in the Surgeon General but exercised subject to the general supervision of the Secretary?

Mr. JONES. There are statutory differences of this sort in terms of authority in the Department.

Mr. ROBERTS. Does the Under Secretary or the Assistant Secretary have any responsibilities in the areas of the Public Health Service and Food and Drug?

Mr. JONES. Yes. The Assistant Secretary for Legislation has considerable responsibility by assignment in the total legislative program of the Department. This involves legislative considerations on matters which the Department and Administration propose to the Congress. He also has the responsibility for the preparation of reports requested by committees of Congress on legislation otherwise introduced in the Congress.

This is a total departmental responsibility and necessarily rests in an assistant secretary who oversees this entire responsibility. In terms of one particular program, the Water Pollution Control Act, the technical and professional problems in this area are in the Public Health Service.

The Secretary has assigned to an assistant secretary the oversight of the enforcement functions and a general review of activities in this area.

Mr. ROBERTS. Who is responsible for the enforcement of the activities in the area that you have just described? What person?

Mr. JONES. It is under the general jurisdiction of Assistant Secretary Quigley by assignment of the Secretary. He serves with the Water Pollution Control Board, a presidentially appointed body that operates within the activities of the Department.

The general policies are recommended by the Board. The Assistant Secretary, Mr. Quigley, oversees enforcement action. The actual enforcement activities are carried out by the staff under his direction and based on the technical and professional data, competence, and staff work provided by the appropriate division in the Public Health Service.

Mr. ROBERTS. I will take just a brief recess. I have a phone call to make.

(A brief recess was taken.)

Mr. NELSEN. Mr. Chairman, before we leave an earlier question that you asked about the statutory responsibility and differences, I wonder if we couldn't have it spelled out a little bit what are the statutory differences. This is in response to your question No. 11, Mr. Chairman. Relative to your responsibilities, Mr. Jones, I was interested in what the difference was really.

Mr. JONES. Mr. Nelsen, my own responsibilities in terms of the particular post I hold are strictly advisory to the Secretary. By the

reorganization plan, the salary was set at the level of assistant secretary.

Secretary Ribicoff asked for a change in this particular job because it really operates, and should, at the level of an assistant secretary.

It would provide more flexibility to him in his ability to assign administrative duties.

He can do it now, but people do not understand what the title "Special Assistant" means. It can mean a whole lot of things. The title of assistant secretary does have meaning. This applies primarily to extra departmental activities.

Within the Department, there is no question about what the title means. It can mean anything the Secretary wants to make it mean.

Mr. NELSEN. In other words, there is no statutory authority granted to you other than the authority granted by the Secretary of Health, Education, and Welfare and the things he wants you to do, so when you speak here you really speak for him. Do you not?

Mr. JONES. That is correct.

Mr. ROBERTS. Mr. Nelsen, does that conclude your questioning?

Mr. NELSEN. Yes.

Mr. ROBERTS. Insofar as the Secretary is concerned, do you have greater responsibility for Food and Drug than for the Public Health Service?

Mr. JONES. No, sir.

Mr. ROBERTS. You have, you might say, a coequal status as far as your responsibilities are concerned?

Mr. JONES. That is correct.

Mr. ROBERTS. I would like you to give us an idea of the expansion of activities that have come about since you went to the Department. Could you do that?

Mr. JONES. Mr. Chairman, I can do this in several ways, I think. One would be to show the growth of the Department's programs in terms of new programs, new appropriations, and new personnel.

Mr. ROBERTS. I would like that because I know of some of these programs that we have given you by legislative action. You may want time to supply that for the record.

Mr. JONES. I would like to do that. I can give you several examples of activity that have taken a great deal of our time.

(The material follows:)

Increases in selected appropriations, 1961 through 1963

	Total D/HEW	Total PHS	Total FDA
1961	$3,942,315,000	$1,040,366,000	$20,454,000
1962	4,628,904,000	1,391,952,000	26,416,000
1963	5,255,284,000	1,593,726,000	30,996,000

Increases in employment, 1961–63

As of—	D/HEW	PHS	FDA
Jan. 31, 1961	65,434	27,993	2,019
Jan. 31, 1962	73,347	30,358	2,283
Jan. 31, 1963	77,521	32,708	2,795
Apr. 30, 1963	78,393	33,427	3,156

Major legislation affecting the Department of Health, Education, and Welfare, 1961–62

	Brief description	Date enacted
87th Cong.:		
Public Law No. 19	Food Additives Transitional Provisions Amendment of 1961.	Apr. 17, 1961
Public Law No. 22	Amends title II of the Vocational Education Act of 1946, relating to practical nurse training.	Apr. 24, 1961
Public Law No. 31	Amends title IV of the Social Security Act to authorize Federal financial participation in aid to dependent children of unemployed parents; also includes Federal payments for foster home care of dependent children, 1-year extension of appropriation authorization for training grants for public welfare personnel, and increases maximum medical care expenditures (in behalf of old-age assistance recipients) with respect to which there will be Federal participation.	May 8, 1961
Public Law No. 64	Social Security Amendments of 1961	June 30, 1961
Public Law No. 94	Amends the Federal Property and Administrative Services Act of 1949, as amended, to authorize the use of surplus personal property by State distribution agencies.	July 20, 1961
Public Law No. 88	Federal Water Pollution Control Act Amendments of 1961.	July 20, 1961
Public Law No. 262	Establishes a teaching hospital for Howard University, transfers Freedmen's Hospital to the university.	Sept. 21, 1961
Public Law No. 274	Juvenile Delinquency Control Act of 1961	Sept. 22, 1961
Public Law No. 294	Authorizes wider distribution of books and other special instruction materials for the blind and increases the appropriation for this purpose.	Do.
Public Law No. 276	To make available teachers of the deaf and other specialists for individuals with speech and hearing impediments.	Do.
Public Law No. 344	Extends for 2 additional years Public Law 815 and 874, 81st Cong., and provides for the application of such laws to American Samoa.	Oct. 3, 1961
Public Law No. 395	Assists in expanding and improving community facilities and services for the health care of aged and other persons.	Oct. 5, 1961
Public Law No. 400	Amends title II of the National Defense Education Act with respect to the periods for which loans under that title are made.	Do.
Public Law No. 415	Manpower Development and Training Act of 1962	Mar. 15, 1962
Public Law No. 447	Authorizes $32 million over a 5-year period to assist in the construction of educational television facilities.	May 1, 1962
Public Law No. 510	Authorizes the President to carry on a program of aid to refugees in the Western Hemisphere (Cuban refugee program).	June 28, 1962
Public Law No. 543	Public Welfare Amendments of 1962	July 25, 1962
Public Law No. 692	Amends title III of the Public Health Service Act to provide Federal assistance for health services to the nearly 1,000,000 domestic migrant workers and their families who are employed annually to produce and harvest our agricultural crops.	Sept. 25, 1962
Public Law No. 715	Captioned films for the deaf	Sept. 28, 1962
Public Law No. 761	Air Pollution Act. Extends the existing legislation for 2 years, until June 30, 1966, retaining the $5,000,000 annual ceiling of the present act. The Surgeon General is given additional authority to conduct special studies of the problem of automobile exhaust fumes.	Oct. 9, 1962
Public Law No. 781	Drug Amendments of 1962. Amends the Federal Food, Drug, and Cosmetic Act to assure the safety and effectiveness of drugs, authorize standardization of drug names, and clarify and strengthen existing factory inspection authority with respect to drugs.	Oct. 10, 1962
Public Law No. 786	Permits the donation of surplus Federal property to schools for the mentally retarded and handicapped, educational television and radio stations, and libraries.	Do.
Public Law No. 838	Establishes new Institutes for Child Health and Human Development, and General Medical Sciences, at the National Institutes of Health.	Oct. 17, 1962
Public Law No. 868	Vaccination Assistance Act of 1962. Authorizes project grants by the Public Health Service to States and local communities for intensive community vaccination programs.	Oct. 23, 1962

Mr. ROBERTS. Certainly.

Mr. JONES. One has been in managing the relations with professional groups interested in the health professions education assistance bill, which your committee reported out favorably and the House has adopted.

Mr. ROBERTS. I might say a lot of the motivation for that act came from the report which you made. I believe there were two. You made one, I believe, the Bayne-Jones report, and then you made one on your own, did you not?

Mr. JONES. Yes, sir; I made one. But I was not the Jones in the Bayne-Jones. Dr. Stanhope Bayne-Jones is a hyphenated Jones.

Mr. NELSEN. Will the chairman yield? Is it true there is more than one Jones family in this area also?

Mr. JONES. Yes; but there is only one Boisfeuilliet Jones. Mr. Chairman, there have been three reports that have been widely publicized that are of special interest to your committee.

One was known as the Bayne-Jones report, which was the first in a series of three. This had to do with the general research responsibility in the health area. There was a Bane report under Mr. Frank Bane as chairman, which was entitled, "Physicians for a Growing America."

This had to do with the physician and dentist supply problem.

The third is the one that I chaired, known as the Jones report. I sometimes think I was selected as chairman only because my name was Jones, because we had a Bayne-Jones, a Bane, and then a Jones report. The Jones report had to do exclusively with medical research, primarily the effectiveness of the National Institutes of Health in its program.

Mr. ROBERTS. You say you are going to mention some more of these acts. Would you rather supply it for the record?

Mr. JONES. I will give you several examples if you would like. The problems of radioactive fallout became relatively acute shortly after this administration came into office.

It has been a continuing problem. The Secretary of Health, Education, and Welfare is Chairman of the Federal Radiation Council and I was asked to represent him on the Council in dealing with its operations.

The problems of fallout, the biological effects, the possible preventive health measures, the countermeasures, the various considerations of balance of benefit and risk; all of these matters have been extremely sensitive to handle and have taken a great deal of time in our Department as well as in other pertinent agencies.

The problem of pesticides in the environment has been of deep concern to us and has taken a great deal of time, beyond that which had been experienced prior to this administration.

Miss Rachel Carson's book "Silent Spring" generated additional interest in this particular problem, although the Department had given much attention to this problem before her book. But certainly this instituted additional interest.

The thalidomide incident led to a great deal of concern about our drug regulations from the standpoint of the management of protection in the use of new chemicals as therapeutic agents.

Then the report of the Joint Commission on Mental Illness and Health required a response by the Federal Government.

The President asked a committee of top governmental officials, the Secretary of Health, Education, and Welfare who served as chairman, the Administrator of Veterans' Administration and the Secretary of Labor, with the Council of Economic Advisers and the Bureau of the

Budget participating as observers, to provide a position for the Federal Government through recommendations to the President.

I was asked to chair the working group to develop this program. Mental retardation, however, was handled through a separate study group. These two programs were then factored together in our Department and the result was the President's message on mental health and mental retardation.

Mr. ROGERS of Florida. Who was it who handled the mental retardation?

Mr. JONES. Our Department established an intradepartmental committee on mental retardation. The President had appointed a panel on mental retardation which did an exhaustive study of mental retardation over a period of a year. That panel worked with our departmental committee and I was represented on this committee personally by my associate during this process.

However, the point I was making, Mr. Chairman, was that the study of this Joint Commission report and the Federal Government's role in mental health took a great deal of time and many meetings.

The result was the program that the President submitted to the Congress which has come before your committee.

Mr. ROBERTS. Has there been an increase in air pollution activities? Do you have anything to do with that?

Mr. JONES. Only in a general way. The Public Health Service has jurisdiction in this area and is working effectively in this field.

Another basic concern of mine in the position that I hold has been to develop the environmental health concept as a part of the health protection responsibility of the Federal Government, as you have provided.

The promotion of environmental health as a recognized area of activity of the Public Health Service, with the proper organization and facilities with which to carry this out, increasingly has occupied a considerable part of my personal time and interest.

I think it is one of the most important things we have before us. It involves questions of environmental hazards, questions of pollution, questions of protecting the general public against the hazards which they themselves have no choice about at all.

Mr. NELSEN. Would you yield?

Mr. ROBERTS. I yield.

Mr. NELSEN. You mentioned a moment ago pesticides and fallout. I just wondered whether to your knowledge there is much duplication of research in that field? It seems to me I have some bulletins coming across my desk from the Department of Agriculture dealing with that subject and it seems to me also out at the Department of Agriculture Experimental Farm, that they are doing a good deal of work on fallout.

I wondered if there is a duplication of the same activity in several departments. Of course, we look with a great deal of concern as to the personnel involved.

We want to be sure you have enough, but we want to be sure also that we are not duplicating. Do you have any observation relative to that?

Mr. JONES. Mr. Nelsen, I think the agencies with parts of responsibility in this area have done a reasonably satisfactory job of coordinating their efforts to avoid unnecessary or unwarranted duplications.

The missions are somewhat different under the Department of Agriculture than under the Department of Health, Education, and Welfare. Working relationships have been developed to avoid duplication and to encourage coordination.

Our major problem is that we are not doing enough in the way of basic research to determine the biological effects of an accumulation of these substances which may be toxic or may not in varying amounts over a long period of time as they accumulate in the human body. One of our strong pleas is to develop an appropriate vehicle for the coordination of the basic research that involves interdisciplinary activity among the various scientific disciplines that should be brought to bear in an effort to determine toxicological and pharmacological effects. These form the scientific basis for the more specific activity involving air pollution control, water pollution control, the protection of food from residues and the like. They also form the basis for scientific judgment on new drugs, on food additives, and color additives. The whole gamut of what man does to himself in relationship to his environment either in the form of his voluntary acts as consumers, which would be the jurisdiction of the Food and Drug Administration, or his involuntary exposures such as is true of polluted air and polluted water.

Mr. ROBERTS. One more question and then I will pass on to other members. We had Commissioner Larrick before us on another occasion and Mr. O'Brien, and I believe I asked some questions about whether or not he needed additional authority and personnel in connection with this problem of amphetamines, bennies, thrill pills, goof balls, and so forth, and we received a report from the Commissioner dated May 10, in which he outlined the survey that has been made.

He says it is somewhat incomplete, but the best knowledge they have is that there are 102,000 pounds of amphetamines, and I can't pronounce this next one, but it is some type of benzedrine base in salts, were produced in calendar year 1962.

> This is enough basic material to produce over 4.5 billion 10-milligram tablets.

He then says:

> In view of the tremendous quantities of these drugs which we have found diverted into illegal channels, we estimate that no more than one-half of such drugs produced are sold legally.

This seems to point out a very bad situation in this field. I would like your comment on that.

Mr. JONES. Mr. Chairman, the White House Conference on Narcotics included attention to this particular problem. I think the data brought out there and the survey within our Department to which you refer, make it abundantly clear that some new effort must be made, including, I think, legislative authorization to provide more effectively for control of these drugs that you mentioned here.

They are not now being successfully controlled. There would be a question of whether this should be appropriately a function of the Bureau of Narcotics or a function of the Food and Drug Administration.

Mr. ROBERTS. Do you anticipate that the Department may send up some legislation in this field?

Mr. JONES. I think, Mr. Chairman, that the Administration will propose some legislation in this field. I shall be glad to check this and advise your committee on it if you like.

Mr. ROBERTS. I would like to say to the other members of the subcommittee the Chair has consumed too much time.

Mr. Rhodes, do you have any questions?

Mr. RHODES. Thank you, Mr. Chairman.

Mr. Jones, would you give us a little more information on the type of work that is being done at the National Institutes of Health?

Mr. JONES. Mr. Rhodes, in reference to their total research activity, or in reference to some specific field?

Mr. RHODES. I understand that you study just several of the most serious of crippling and killing diseases. Is that correct?

Mr. JONES. Yes. The Institutes of Health are organized primarily along disease category lines. They are designed to provide a framework of research effort to find the answers to disease problems that constitute our major health concerns as of now.

There are seven of these Institutes that are categorical in nature. The Congress last year, supported by your committee, passed legislation and for two new Institutes, one for Child Health and Human Development, which is a horizontal institute in nature as contrasted with the vertical categorical one, and an Institute of General Medical Sciences, which has the broad mission of support of basic sciences which undergird research in the categorical areas.

The work of the National Institutes of Health has had a tremendous impact on our scientific knowledge in the some 18 years of their existence. I think the results of their impact has been presented to you by Dr. Shannon, the Director of the Institutes, and the Surgeon General.

In my own personal experience, I think I can not only point to the work being done by the National Institutes of Health at Bethesda, but beyond that to the tremendous impact of the grants programs in strengthening biological sciences all over the country, Mr. Rhodes.

In my judgment, every medical school in this country would be in serious trouble to keep up with advancing knowledge in the biological sciences, were it not for the grant programs of the National Institutes of Health.

Considerably more of its resources go toward supporting research effort in institutions about the country—the university with strong programs of biology and chemistry, the schools of public health, medicine, dentistry, the major hospitals that have research capacity, and some of the private research institutions.

This program, I think, cannot be minimized in terms of the impact on health not only in this country, but around the world. It has been as responsible for pushing forward by many years our ability to manage some of these more severe health problems which require the most sophisticated kind of research.

I think the National Institutes of Health are doing a remarkably effective and efficient job, especially under circumstances that have become rather difficult for them in the last several years.

Mr. RHODES. Mr. Jones, on page 7 you mention a budget of $25.7 million for the St. Elizabeths Hospital, of which $6.3 million is appropriated by the Federal Government. Where does the other money come from?

Mr. JONES. The District of Columbia, Mr. Rhodes.

Mr. RHODES. Are all the employees there on the District of Columbia payroll?

Mr. JONES. No. They are on the St. Elizabeths payroll, but the District of Columbia reimburses for the patients of the District that are served at St. Elizabeths on a formula basis that has been developed by the Budget Bureau and approved by the Congress.

Mr. RHODES. What part of that money is raised by collecting from the patients or families of the patients?

Mr. JONES. Some portion of it, Mr. Rhodes. I don't know to what extent this constitutes a major part of the income. I can get that for you if you would like to have it.

Mr. RHODES. Yes; I would

Mr. JONES. I can give you a breakdown of the sources of income and the expenditures.

(The material to be furnished follows:)

Source of funds, St. Elizabeths Hospital, 1963

SALARIES AND EXPENSES	
Direct appropriation	$6,332,000
Reimbursements:	
District of Columbia	17,594,000
Veterans' Administration	1,316,000
U.S. Soldiers' Home	112,900
Public Health Service (Indian health)	37,600
U.S. nationals	210,500
Cafeteria sales	44,660
Sale of scrap	12,000
Officers board	7,340
All other	19,000
Total, salaries and expenses	25,686,000
BUILDINGS AND FACILITIES	
Direct appropriation	8,095,000
Total funds available	33,781,000

None of these funds were received by the hospital from patients as payment by them for hospital services. Collections from patients and families of patients at St. Elizabeths Hospital are made by the District of Columbia and in 1963 such collections amounted to $1,852,624.

Mr. RHODES. Mr. Jones, in matching-fund grants to the States, is this money all earmarked for specific programs, or is it simply allocated to the States for Public Health Service? Is it earmarked, for instance, for programs like aid to dependent children, or aid to the blind?

Mr. JONES. Under some of the public assistance programs a State can develop its own plan in terms of the qualifications of eligibility, the basis of need other than strictly a welfare recipient.

They can determine the extent of the service provided in their State plan. They submit the plan and once it is approved the grant program under the welfare activities then becomes a matter of reimbursment by the Federal Government for a share of these expenses at whatever level these expenses turn out to be.

In the grant-in-aid programs under the Public Health Service, as contrasted with welfare administration, for the most part, these are

specifically directed toward disease problems or categories of national concern, as have been specifically authorized by Congress. Grants are made to States for control programs in various disease categories and for other special purposes in relation to the recognition of a national need by the Congress.

Mr. RHODES. Thank you.

That is all.

Mr. ROBERTS. Mr. Nelsen?

Mr. NELSEN. Do the Under Secretary and the Assistant Secretaries have any responsibility in the Public Health Service and the Food and Drug under the Food and Drug Act?

Mr. JONES. No. The Under Secretary and the Assistant Secretaries derive their particular responsibilities, Mr. Nelsen, from the authority of the Secretary.

He assigns their duties rather than to have their duties provided directly by Statutory authority.

Mr. NELSEN. Then actually the only authority the Assistant Secretaries and the Under Secretary have is the same as your own, and that is the authority that is delegated to you by the Secretary. Is that right?

Mr. JONES. Except that the Reorganization Act that created the position I hold spelled out specifically the kind of responsibility the incumbent in the position I hold was to have, which is not true of the other jobs.

The Under Secretary is the No. 2 man in line of authority and serves as Acting Secretary when the Secretary is not there.

Mr. NELSEN. He is not named in the Reorganization Act; is he?

Mr. JONES. He is named. Yes, by position, but the duties were not prescribed except in general terms of the kind I suggest. I can provide that whole section—it is very brief—of the Reorganization Act for you that has this spelled out if you would like.

(The material mentioned follows:)

REORGANIZATION PLAN NO. 1 OF 1953

SEC. 2. *Under Secretary and Assistant Secretaries.*—There shall be in the Department an Under Secretary of Health, Education, and Welfare and two Assistant Secretaries of Health, Education, and Welfare, each of whom shall be appointed by the President by and with the advice and consent of the Senate, shall perform such functions as the Secretary may prescribe, and shall receive compensation at the rate now or hereafter provided by law for under secretaries and assistant secretaries, respectively, of executive departments. The Under Secretary (or, during the absence or disability of the Under Secretary or in the event of a vacancy in the office of Under Secretary, an Assistant Secretary determined according to such order as the Secretary shall prescribe) shall act as Secretary during the absence or disability of the Secretary or in the event of a vacancy in the office of Secretary.

Mr. NELSEN. In other words, the Secretary has a pretty wide variety of responsibilities and a pretty big job?

Mr. JONES. That is right, and too few people, Mr. Nelsen, to adequately carry out the functions of the Secretary in relation to the constituent agencies of the Department.

It is for this reason he has asked for additional assistants at the assistant secretary level.

Mr. NELSEN. Wouldn't there be some merit to a little more statutory authority to people in lesser positions and responsibility with it?

It seems to me that as we go down the list it all goes back to the Secretary himself.

It seems to me it is a pretty big operation.

Mr. JONES. I think, Mr. Nelsen, it should be this way. The Secretary is the person held responsible as head of the Department. He should have the freedom to organize the activity of his office and to divide the responsibilities among the people made available to him by congressional authority. These responsibilities shift from time to time and he should have the freedom to make the necessary shifts of assignment according to the abilities of the people in these particular jobs, according to the loads that may develop such as some of the problems I have suggested here that have required particular attention from time to time.

Mr. NELSEN. In your office, Mr. Jones, what assistants do you have in the discharge of your responsibilities? How many do you have working for you?

Mr. JONES. I am entitled under the particular staffing pattern of the approved budget to two staff assistants and to three secretarial positions.

I now have as staff assistant Dr. William H. Stewart, who is a board-certified pediatrician, a medical doctor, who has had wide experience in the Public Health Service.

He was assigned to this detached duty from the Public Health Service at my specific request, so the Public Health Service is reimbursed for him.

Mr. NELSEN. Are they under civil service?

Mr. JONES. No, sir. He is in the Commissioned Corps of the Public Health Service on detached assignment and responsible exclusively to me in his work, but he retains his professional relation with the corps.

I am now negotiating for the addition of a second staff assistant who I hope also will be a medical doctor, likewise, qualified particularly to deal with these difficult professional problems of chemicals, drugs, and the like, to give us this kind of additional professional assistance.

Mr. NELSEN. Is there any information available as to the number of positions in the Department that are under civil service and the number that are, shall we say, appointive?

I am just a little curious. Do you know in the Rural Electrification Administration most of our people were under civil service, including my two assistants?

Mr. JONES. I am sorry. I don't understand.

Mr. NELSEN. That wasn't my previous point, but my curiosity has been aroused and I am just curious. If you do have that information I would like to have it for the record.

Mr. JONES. Yes, sir. I can provide it.

(The information follows:)

Paid HEW employees by type of appointment as of Apr. 30, 1963

Total paid	78,393
Competitive, career	45,048
Competitive, career-conditional	22,404
Competitive, limited tenure	2,039
Excepted, permanent	6,096
Excepted, limited or conditional	2,797
Presidential appointments	9

Mr. NELSEN. Another question I would like to ask is in the formulation of the budget as far as the Department is concerned. Do you have any responsibility in that area?

Mr. JONES. Yes, sir; I do. The Secretary has appointed a budget committee that is chaired by the Under Secretary and consists of the two Assistant Secretaries, the Administrative Assistant Secretary, the General Counsel, and myself.

These are the policy people in the Office of the Secretary and I do participate in the budget hearings in the Department.

Mr. NELSEN. I have another question, Mr. Chairman. In the legislation of a year ago on the so-called Food and Drug Act, we had several things to try to correct and one of the things that seemed to be to some degree controversial was the provision for advertising as compared to labeling.

As I recall, the generic name and the trade name were to be mentioned in labeling, and it was our assumption that we had written a pretty good record not to go overboard and requiring an unnecessary amonut of language in advertising.

Yet, it seems that there was some conflict in the record between the House and Senate as to what finally happened and I don't know if the record is so written that the Food and Drug hands are tied, but it was my understanding through all of this negotiation that there should be reasonable requirements in advertising. Yet, in the labeling, of course, more careful attention should be given.

In this area, do you have some responsibility of interpretation as to this language and things of that kind?

Mr. JONES. On policy issues, Mr. Nelsen, we do become involved as a representative of the Secretary to whom these matters, if they cannot be resolved, otherwise are referred, and we make recommendations to him in the resolution of policy issues of this kind.

Sometimes he doesn't take them. Sometimes he does. However, the responsibility ultimately is his. However, we are involved in policy decisions that affect health and medical affairs activities of the Department all the way through.

Mr. NELSEN. This leads to a question here. What happens when an outside interest like the drug manufacturers, for example, complain that a Food and Drug Administration decision or proposed decision in a particular situation is not based on a correct history and correct statutory interpretation or was contrary to commonsense?

How do you proceed in a situation like this? For example, the one I cite; if we have a conflict, how would you proceed to correct a situation?

Mr. JONES. Perhaps the best way to answer that question, Mr. Nelsen, is to discuss the development of the new drug regulations, the investigational drug regulations primarily.

There was a great deal of concern when the Food and Drug Administration issued its preliminary regulations having to do with investigation of drugs. These required a tightening of procedure and a reporting to the Department which sponsors of new drugs had not been required to provide before.

The scientific community, the academic community, and scientists in industry involved in the development of drugs were deeply concerned that such regulations might inhibit the development of new drugs.

We encouraged the Food and Drug Administration to meet with representatives of these groups as they have been accustomed to doing at times in the past.

I personally met with Food and Drug people and met with representatives of the scientific community, both in and out of Government and in and out of industry, and through a whole series of conferences that went on from perhaps September through December of last year, we were better able to interpret in the final regulations the intent of the regulatory agency to resolve some of the concerns, and most of the concerns I think, that were expressed by the scientific community.

It is in that context of participation in development of regulations that involve policy questions and relationships with the scientific community that the representative of the Secretary does become directly involved, and probably should be, and is welcomed, I might say, by the Commissioner of the Food and Drug Administration.

Mr. NELSEN. Of course, in the interpretation of acts of Congress, I presume that you would want to be on the absolute safe side as to interpretation, and we would want you to be.

Mr. JONES. Yes, sir.

Mr. NELSEN. Sometimes we fail to communicate to the necessary degree so that a Department enforcing an act of Congress does not have all the clarification they need, and I did have this one particular instance in mind.

I think we moved a little perhaps to the cautious side and further than we needed to, but it is not something that cannot be repaired if that is true.

Mr. Chairman, those are all the questions at the moment.

Mr. JONES. Mr. Chairman, may I go back to one of Mr. Nelsen's earlier questions? I will provide the exact numbers for the record, but I think it would be important in terms of the Presidential appointees as contrasted with civil servants or career people——

Mr. NELSEN. Yes.

Mr. JONES. The President when he came into office had virtually a handful of appointments to fill the policy positions in the Department. They numbered 9 out of almost 80,000 employees. When policy is a responsibility of the Executive under the statutory authority that the Congress has provided, and which require interpretation of authority and the exercise of the judgments having to do with policy decisions, the Secretary in our Department is handicapped by the relatively few people available to help him with this broad task that you suggest.

Mr. NELSEN. I think we understand that when responsibility is delegated to an individual he must have people to work with him. I do recall down in the Rural Electrification Administration I had one but I selected all of my top people from the ranks and had some good ones, very good ones.

Mr. JONES. Yes. This in no way minimizes the effective role of the career public servant in the Department.

Mr. NELSEN. I understand.

Mr. JONES. Because they provide the continuity which is quite important.

Mr. NELSEN. Thank you, Mr. Chairman.

Mr. ROBERTS. The gentleman from Florida.

Mr. ROGERS of Florida. Thank you, Mr. Chairman.

Speaking of the new drug law now, I noticed in the paper this last week that a statement was attributed to Dr. Frances Kelsey which dealt with difficulty evidently in finding space and personnel to handle the data flowing into the FDA under the new law and the new regulations and I think the columnist insinuated that drug companies were purposely inundating the agency with this mountainous paperwork trying to keep Dr. Kelsey from performing her functions.

Of course, under the new law and the regulations, manufacturers must supply additional information on the testing of new drugs that was not required before.

Certainly, in making these statements Dr. Kelsey is not implying that they should not furnish this information, I presume?

Mr. JONES. You are quite correct, Mr. Rogers.

Mr. ROGERS of Florida. What steps have been taken now to provide the necessary space and personnel to handle this information that is required by the law?

Mr. JONES. Dr. Kelsey was appointed Chief of Investigational Drug Branch, Division of New Drugs, Bureau of Medicine.

The recruiting of physicians for the Bureau of Medicine, I am informed, has been successful beyond that which we had anticipated.

They now have commitments of 60 professional people to fill 57 authorized positions, so that they are, if these people fulfill the commitments they have made, being recruited successfully.

Mr. ROGERS of Florida. What is the time limit on that?

Mr. JONES. This is over the next 6 weeks——

Mr. ROGERS of Florida. Within 6 weeks?

Mr. JONES. They will be coming in. The amount of space available to the Bureau of Medicine is totally inadequate. There has been a 15-percent increase in the personnel authorized for the Food and Drug Administration for each of the last few years.

They have gone from 1,000 to something over 3,000 employees in 5 years. I can give you the exact figure. I think it is in the testimony that Mr. Larrick provided for you earlier, which I will not repeat.

Federal office building 8, a building adjacent to the headquarters of Health, Education, and Welfare, is under construction for the Food and Drug Administration.

It will be inadequate when completed. It is not built to the size asked for at the time it was planned, but it is even less adequate now.

This building will not be available until October 1963 for some of the offices. It will be another 2 years, so we are told, before the laboratories in this building are fully available.

There has been in the last 2 weeks a development in which Dr. Kelsey's branch and the Bureau of Medicine, in toto, have been provided an additional 11,500 square feet of space in the building they now occupy, and which is adjacent to the space they now have.

The Secretary last week made a personal inspection of this space. He has asked specifically that certain things be done to improve it.

The Administrator of the General Services Administration is fully cooperative and trying to provide space. Office space is at a premium in Washington and it is very difficult to get, but Dr. Kelsey's situation has been greatly relieved by the additional space made available within the last 2 weeks. On the point of whether or not the drug industry is

deliberately providing this large volume of data, I do not believe this is a factor at all.

Mr. ROGERS of Florida. They are simply complying with the law?

Mr. JONES. They are complying with the law. There are some 2,500 drugs under investigational use for which plans of investigation must be filed by June 7 to be able to continue the investigational use after that date.

We observed last week some of the paper submitted for new drug applications. This is also a part of the responsibility of the Bureau of Medicine. They range in size from one volume to one stack comprising 53 volumes about 8 feet high.

This is a space problem that is very difficult and it involves a great deal of work in a very brief space of time.

Mr. ROGERS of Florida. The papers that are submitted are those that have been requested to be submitted under the law. Are they not?

Mr. JONES. Yes. The drug industry is not deliberately inundating the Bureau of Medicine or the Food and Drug Administration.

They are responding to requirements of law.

Mr. ROGERS of Florida. Is there any way to cut down that paperwork and still get the necessary information?

Mr. JONES. If there is such a way, Mr. Rogers, it will come out in the experience over a period of a year or two. It would be unfair, I think, to assume that there can be a change now when the program is just coming into being and we have not had the experience to know what can be cut down and what cannot.

The sponsors are responding to what our interpretation of the intent of Congress was in the Drug Amendments of 1962 and I think the companies are responding appropriately and properly.

I think the only concern that the companies have which I have heard them express is whether or not the Food and Drug Administration can secure and maintain, in sufficient volume, the qualified people properly needed to process these documents. This is a problem in which we are deeply engaged now.

Mr. ROGERS of Florida. What has disturbed me a little bit about this is the fact that the statements were made saying we didn't have the necessary space and didn't have the necessary personnel.

As I recall, Dr. Kelsey herself, I think, came over and testified on the bills, I guess last year, maybe the year before, and I wondered why provisions were not made as soon as Congress passed the law to provide the necessary personnel and space.

Why must it wait all of this time and become critical? Why couldn't it have been done in the meantime?

Mr. JONES. Mr. Rogers, it takes a great deal of time to create space where it doesn't exist. If it were just a question of going out and renting 50,000 square feet of office space, this would be very simple.

Mr. ROGERS of Florida. I notice now they are tearing down temporaries right now a block or so away from Health, Education, and Welfare. I just noticed them coming in today, and the last few days they have been tearing these down and yet we are crying for space. Who makes that decision?

Mr. JONES. The General Services Administration has the responsibility on request from the departments.

Mr. ROGERS of Florida. But you have requested the necessary space?

Mr. JONES. Oh, yes. They are well aware of this.

Mr. ROGERS of Florida. And so it is now in GSA's lap?

Mr. JONES. Yes. They have been working very hard to find space that doesn't exist.

Mr. ROGERS of Florida. But they are tearing some down that does exist.

Mr. JONES. Well, on Independence Avenue, they are tearing down one of the temporaries, but I think this had to be to effectively use other buildings.

Mr. ROGERS of Florida. But you have received an additional 11,500?

Mr. JONES. And it has relieved the situation temporarily. We are still not out of the woods but we have made some progress. The long-term plan, Mr. Rogers, provides that the Department will have available for the Food and Drug Administration the present Federal Bureau of Investigation Building, which is immediately south of the new Federal Office Building No. 8.

This will be available only after the new Department of Justice Building is authorized and built. This is 5 or 6 years off probably but there is a tunnel already constructed between the new Food and Drug Building and the FBI Building in anticipation of this.

Furthermore, we have made a policy decision that to the extent that space will not be or isn't provided permanently in the Health, Education, and Welfare complex in Washington, then we will concentrate at the Beltsville, Md., site where we already have animal laboratories and we are now building a pharmacological laboratory. We also have authorization for plans for an additional building at Beltsville. Between these two sites then, we would hope to get authorization from the Congress to provide adequately for our needs, but the timelag is the problem.

It just takes time to get space. It takes time to identify and recruit personnel.

Mr. ROGERS of Florida. Of course, all of this additional data that is required is to facilitate the prompt evaluation and so the manufacturer and the investor can know and take action to prevent unnecessary hazards?

Mr. JONES. Yes. I think it is important to remember, too, Mr. Rogers, what the Congress did as a matter of policy in the Harris-Kefauver drug amendments and the regulations that came out of the Department in relationship to these amendments.

The failure of the Food and Drug Administration promptly to review the investigational drug reports will in no way stop the investigations.

It gives the Food and Drug Administration the data to determine whether or not the investigation is being carried on by the sponsor in a manner that assures reasonable consumer protection.

The Food and Drug Administration then has the obligation on review of this data to move in and stop it or to require its modification in those instances where it is evident to the Food and Drug Administration that consumer protection is not adequate. The burden is on the Food and Drug Administration to review promptly those that are most suspect, and then to move right ahead with all the review. They can move in at any time their reviews indicate a need, but the investigation can go on and will not be stopped by these reports.

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Mr. ROGERS of Florida. Do you foresee any difficulty in communicating with the sponsor with all of this information coming in? For instance, if you get a report of an adverse effect, would that be immediately communicated to the sponsors?

Mr. JONES. Immediately.

Mr. ROGERS of Florida. So they can take whatever action is necessary?

Mr. JONES. They give priority to the obviously difficult situations. Adverse reports would be factored right into the communications system. Most of the sponsors would voluntarily take action immediately once they had the information. We are also working very hard on the communications aspect of adverse drug reactions.

Mr. ROGERS of Florida. The internal organization of Food and Drug and Public Health Service also comes within your jurisdiction?

Mr. JONES. Yes; I oversee this for the Secretary.

Mr. ROGERS of Florida. The actual internal organization?

Mr. JONES. They are the responsibility of the respective constituent agency heads. The Commissioner has this responsibility, the Surgeon General has this, and the Secretary has the approval.

Mr. ROGERS of Florida. For the Secretary you are the one who would handle the internal organization perhaps if they came up?

Mr. JONES. In collaboration with the administrative assistant secretary of the Department who has the general administrative function of the Secretary's office, but you are correct in your assumption.

Mr. ROGERS of Florida. Are there any specific reorganization proposals pending with respect to either of those agencies, Food and Drug Administration and the Public Health Service?

Mr. JONES. Yes, sir. The Public Health Service has asked in the bill before your committee for specific authority which would be immediately used to provide a Bureau of Environmental Health, and a sister Bureau of Community Health Services. This would discontinue the Bureau of State Services because these two new Bureaus would be created out of it.

The Food and Drug Administration is studying along with us the recommendations of the Citizen's Advisory Committee which did make recommendations for major organizational shifts.

This report was a very constructive report. It was very direct. It pulled no punches. We consider it highly constructive.

The major recommendations of this report will be adopted by the Food and Drug Administration. A major portion of the report is devoted to organizational recommendations.

I think the Food and Drug Administration is getting geared and moving rapidly toward an organizational pattern that pretty well reflects the recommendations of this report.

Mr. ROGERS of Florida. Could you let us have the specifics of what you are planning later on? And what about the discussion of aspects of the Mental Health Institute perhaps to be made into a bureau?

Mr. JONES. This is a matter that is much more complex than would appear on the surface. The Surgeon General has appointed a task force in the Public Health Service which is reviewing this particular issue at this particular time.

The ramifications of creating a Bureau of Mental Health are pretty widespread in the Service. I can give you some of the details.

For example, if you create a Bureau of Mental Health, do you retain a National Institute of Mental Health independent of the Bureau of Mental Health. This is the pattern in the other categorical institutes where research is the focus in the institute and the community service programs are focused in the Bureau of State Services. This is just one illustration of one type of question that needs to be answered.

Mr. ROGERS of Florida. When do you anticipate that report will be completed?

Mr. JONES. The task force has only recently been organized. I would hope that it will be fairly soon because it is an issue that will need to be resolved if Congress is successful in adopting the mental health and mental retardation legislation, which we strongly hope will become a program this year.

Mr. ROGERS of Florida. There has been some talk in the pharmaceutical industry, too, that they would be interested in the creation of an Advisory Council on Food and Drugs.

Has anything been done to consider this proposal?

Mr. JONES. Yes, sir. There was a specific recommendation in the Citizen's Advisory Committee report for the appointment of a National Advisory Food and Drug Council.

This Council will be appointed. The Commissioner expects to do this and our anticipation is that the Council will be in operation in time to review the implementation of the Citizen's Advisory Committee report probably this fall.

Mr. ROGERS of Florida. The Advisory Council will be in effect?

Mr. JONES. This would be our expectation.

Mr. ROGERS of Florida. What legislative authority does the Secretary use to provide this Council?

Mr. JONES. His general authority under the Food and Drug Act which does provide for advice from nongovernmental consultants.

Mr. ROGERS of Florida. So that he can do with his present authority in the Department?

Mr. JONES. Yes, sir. That is correct. This Council we think, will be a very important adjunct to a continuing review of the Food and Drug programs by representatives of the public, of the regulated industries, of the consumers, and of the scientific community.

Mr. ROGERS of Florida. What was the time limit when you expect this to be functioning?

Mr. JONES. We would expect it to be in operation probably by late fall, although we haven't set a timetable. It takes some time to select and establish the Council.

Furthermore, we wish time to put into effect as many of the recommendations of the Citizen's Advisory Committee prior to the creation of this Council so the first job would be to take a look at the implementation of the recommendations.

The Citizen's Advisory Committee is in and of itself a form of advisory council, although more specific in objective. We think a continuing council would be a very useful asset to the Commissioner and he feels this way about it.

Mr. ROGERS of Florida. When you firm this up could you let the committee have the details of it for the record?

Mr. JONES. Surely.

(The information was not available for insertion in the record at this time.)

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Mr. ROGERS of Florida. Also, there have been some suggestions I believe about the establishment of a scientific or research institute within Food and Drug. What is the statutes on this proposal?

Mr. JONES. This proposal calls for a Food and Drug Institute. If one reads the recommendations carefully, the Food and Drug Institute, as proposed, is essentially a vertical organization within the Food and Drug Administration of the activities that have to do with medicine and with science.

The general concept is quite sound. The Commissioner expects to follow the pattern fairly closely. We would concur strongly in this pattern.

Whether it will be called an institute or what the nomenclature will be of the exact pattern of organization is not clear at the moment, but generally it will follow the design as recommended and will effectively function with science having representation all the way up to the Commissioner.

Mr. ROGERS of Florida. When should this be affected?

Mr. JONES. Just as soon as possible. It ought to be fairly quickly now.

Mr. ROGERS of Florida. Three months? Six months?

Mr. JONES. Oh, yes; undoubtedly so.

Mr. ROGERS of Florida. And would you let us have the details for the record?

Mr. JONES. Yes, sir.

(The material follows:)

U.S. DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE

FOOD AND DRUG ADMINISTRATION, WASHINGTON, D.C.

A REORGANIZATION OF THE FOOD AND DRUG ADMINISTRATION

A reorganization of the Food and Drug Administration was announced today by Anthony J. Celebrezze, Secretary of Health, Education, and Welfare.

The reorganization adopts salient features from recommendations of the Second Citizens Advisory Committee on the Food and Drug Administration, which made its report in October 1962.

In making the announcement, Secretary Celebrezze said:

"An important feature of the reorganization is the upgrading of the scientific functions. I expect the reorganization to improve FDA operation all along the line, and thereby provide more effective protection of the consumers' interests.

"The reorganization will not entail the expenditure of additional funds. It adjusts existing functions and deploys the staff so that they will be able to operate more efficiently," the Secretary said.

George P. Larrick, Commissioner of Food and Drugs, made the following comment:

"The plan which has been approved by Secretary Celebrezze has been designed to modernize the structure of the Food and Drug Administration in the light of its new and growing responsibilities. It is a foundation for progressive strengthening of consumer protection in regard to foods, drugs, medical devices, cosmetics, and household chemical products over the next 10 years."

An important feature of the reorganization will be the appointment of a National Advisory Council to the Food and Drug Adminisrtation comprised of representative citizens under the chairmanship of the Commissioner of Food and Drugs. It will advise the Administration on national needs and the effectiveness of program policies.

A new Associate Commissioner, who will be a scientist, will give leadership from the Office of the Commissioner to the programs and functions having to do with medicine, science, and research.

Two new Bureaus with scientific activities are established—a Bureau of Scientific Research, supporting FDA's basic mission of consumer protection, and a Bureau of Scientific Standards and Evaluation, which will handle safety clearance functions in regard to pesticides, food additives and colors, and develop scientific data to be used in setting standards and tolerances. These Bureaus replace the present Bureau of Biological and Physical Sciences.

No change is contemplated in the present Bureau of Medicine, which has recently been reorganized to handle new responsibilties under the Kefauver-Harris Drug Amendments of 1962.

Enforcement activities will be consolidated in a single Bureau of Regulatory Compliance replacing in part the Bureau of Field Administration and the Bureau of Enforcement, which presently have divided enforcement responsibilities.

Educational functions of the Food and Drug Administration are emphasized in the creation of a new Bureau of Education and Voluntary Compliance. This will include the Division of Advisory Opinions, formerly in the Bureau of Enforcement, which answers industry inquiries on compliance problems. The Bureau will also include the Industry Education Branch, and the Consumer Education Branch and Consumer Inquiries Section from the present Division of Public Information, and the consumer consultant program now in the Office of the Commissioner. Press and public information services will be carried on by a new Office of Public Information.

All positions involved in the reorganization are in the career civil service. The following list released by Commissioner Larrick shows the organization units and top personnel of the Food and Drug Administration as they will be under the new plan:

Commissioner of Food and Drugs, George P. Larrick.
Deputy Commissioner, John L. Harvey.
Associate Commissioner, to be appointed.
- Special assistant to the Commissioner for National Advisory Council and Special Projects, Dr. Kenneth L. Milstead.
  - Office of Public Information, W. F. Janssen, Director.
  - Office of Federal-State Relations, James C. Pearson, Director.
  - Office of Emergency Preparedness, Dr. H. G. Underwood, Director.
- Assistant Commissioner for Planning, Winton B. Rankin.
- Assistant Commissioner for Science Resources, Dr. O. L. Kline.
- Assistant Commissioner for Regulation, Malcolm R. Stephens.
- Assistant Commissioner for Operations J. Kenneth Kirk.
- Assistant Commissioner for Administration, Leo L. Miller.
- Bureau of Medicine, Director to be appointed; Acting Director Ralph G. Smith, M.D.
- Bureau of Scientific Research, Director to be appointed; Deputy Director Dr. Daniel Banes.
- Bureau of Scientific Standards and Evaluation, R. S. Roe, Director.
- Bureau of Regulatory Compliance, Allan E. Rayfield, Director.
- Bureau of Education and Voluntary Compliance, Director to be appointed; Deputy Director Shelbey T. Grey.

Mr. ROGERS of Florida. Of course, we have all read at some time some criticism of the administration of research project funds at NIH. Has your office played any role in evaluating the criticism and initiating new steps to correct any of this?

Mr. JONES. Yes. We have reviewed, with the responsible authorities in the Public Health Service and their bureau, the National Institutes of Health, their proposals for strengthening the administration of their grants program.

We have been able to make suggestions on their plans. We have been able to interpret these plans to some of the scientific community and we have followed this very closely. Personally, I am quite pleased with the method of management and the tightening of the management mechanism that has been evolved by the National Institutes of Health.

I might add that we are getting complaints from the scientific community as to some aspects of the tightened controls.

Mr. ROGERS of Florida. Too much tightening?

Mr. JONES. Yes, this is a complaint. Personally, I think that the proposals that have been discussed pretty extensively throughout the country with the scientific community are justifiable and reasonable and I think properly administered. They will result in a net gain in the management of the NIH grants program without doing harm to the freedom of scientists or to their reasonable requirements for accountability.

The biggest problems, Mr. Rogers, center around whether or not there will be directed research.

In other words, inhibit the freedom of the scientist to determine what he should do.

Mr. ROGERS of Florida. In other words, you want certain research to follow certain lines?

Mr. JONES. The scientist wants to be free to follow leads from his original plan. All that is required where there is a major departure from the research for which the project was approved is that there be a report back to the NIH and a reapproval of the change of direction.

Mr. ROGERS of Florida. You want the scientist to check with them?

Mr. JONES. Which is perfectly reasonable. The other thing has to do with the accountability of time of investigators. Research knows no barriers of time. Some of these scientists work all night or work on weekends and they were afraid that the restrictions of accountability pose undue hardship. I think here again the requirement that NIH is proposing that the time be accounted for after a quarter of a year has passed, reporting what part of the time was legitimately spent on research as supported by the project, are reasonable. I think they are beginning to understand that.

Mr. ROGERS of Florida. I would agree with you 100 percent.

Mr. JONES. I think they have been more afraid of what might happen than what is likely to happen under these procedures.

I think there is understanding being achieved and I think that it is going to be a great help.

Mr. ROGERS of Florida. About two more questions and then I will conclude. Of course, the bill before you vests the authority to reorganize the Public Health Service in the Surgeon General?

Mr. JONES. With the approval of the Secretary, I believe.

Mr. ROGERS of Florida. Yes. Is there any particular difficulty, do you feel, in vesting it in the Secretary or in the Surgeon General?

Mr. JONES. I think it is appropriate to vest it in the Surgeon General

Mr. ROGERS of Florida. As approved by the Secretary?

Mr. JONES. As approved by the Secretary. This gives the Secretary all the authority he needs to be assured of——

Mr. ROGERS of Florida. There is no objection by the Secretary to that?

Mr. JONES. No, sir.

Mr. ROGERS of Florida. Doesn't the President have authority to do this under the Reorganization Act?

Mr. JONES. Yes, he does.

Mr. ROGERS of Florida. Is there any reason why he doesn't?

Mr. JONES. This was a matter of decision by the administration. It was decided that presenting a positive proposal to the Congress for full review under the jurisdiction of your Committee as you have given it would be preferable than to present a reorganization plan requiring action.

It calles for an active affirmative action instead of an active negative action on this particular matter.

Mr. ROGERS of Florida. I must say I agree with you 100 percent there also. I think the Congress would feel that this is a proper effort to come before the committees and obtain the necessary legislation after going into it thoroughly.

Mr. JONES. The reorganization mechanism is a very effective one if there is a major overhaul and there is pretty good understanding of the whole background, as was true in the creation of the Department of Health, Education, and Welfare. But this time it represents something that your committee appropriately should have time to deliberate and not feel pressed by the 60-day limitation on action.

This was the thinking of the administration as I understand it.

Mr. ROGERS of Florida. Thank you.

Thank you, Mr. Chairman.

Mr. ROBERTS. Thank you, Mr. Rogers.

Two quick questions. I realize you couldn't possibly conduct a day-to-day review of the operations of the two agencies, but do you have a plan of evaluating the effectiveness of the two agencies in administering the laws which they are supposed to carry out?

Mr. JONES. Mr. Chairman, this is a continuing responsibility. It is hard to respond directly except to say this is a responsibility of the Secretary which he expects to exercise and does in the normal contact with the operating agencies.

I think it is very important to say that neither I nor others in the Office of the Secretary, become involved in the direct operations of the agencies.

Except where there are problems or except where we see the need for some change. It is the function of the Office of Secretary primarily to see that the policies are properly implemented and designed.

Mr. ROBERTS. Maybe we can pin it down this way: Do you ask questions on your own, or does the Secretary refer specific questions to you, or do the agencies come to you for approval of policies?

Mr. JONES. All three; there is no restriction on how a problem comes into evidence.

We would like to think that we, ourselves, watch the operations closely enough to identify problems in time to get action on them.

This isn't feasible and possible always. I will give you one illustration. At the time we were considering and then proposed the new Institute of Child Health and Human Development, there immediately arose a question of duplication with some of the activity of the Children's Bureau in the Welfare Administration.

Mr. ROBERTS. I remember that.

Mr. JONES. So we moved in immediately and provided, by consultation between representatives of the respective agencies, a method of coordination which would avoid such duplication.

This is the kind of activity that we feel obligated to perform, and do as we are able to do so.

Mr. ROBERTS. Any further questions?

Mr. ROGERS of Florida. Let me ask one.

Mr. ROBERTS. Mr. Rogers?

Mr. ROGERS of Florida. You know about this space problem on storing these records. I don't know, and it would have to be checked, but it was my understanding that they had done away with a good bit of the activities of the gun factory down here, and, of course, that is now under GSA.

Maybe it is disposable now. I wonder if that has been gone into by GSA as providing a warehouse where these things could be stored. Has that been checked into?

Mr. JONES. Yes, sir. At the end of last week I learned that space at the gun factory was being considered as a possible site for some of this activity.

Mr. ROGERS of Florida. Would you let us know what response you get from GSA on that, and if not this committee would be interested in finding out about it.

Mr. JONES. Yes.

(The information follows:)

Due to some sudden changes in the space assignments and reappraisal of the requirement, it has been possible for us to provide space for the Bureau of Medicine files in Tempo S. This is an expedient which we are making and will relieve the situation, at least temporarily.

Mr. JONES. One of our big problems is the separation of the components of a program. For example, the Pharmacology Division and the Bureau of Medicine both have to review many of these applications that come in, and if they are too far separated they can't easily coordinate their judgments.

Mr. ROGERS of Florida. I realize that. I was just thinking it was a place to put them. Dr. Kelsey said that she had material two times the height of the Washington Monument and she couldn't get it in a 20 by something room, and I am sure that is true.

Mr. JONES. This is a very worthwhile suggestion and I will be glad to report to you what seems to be the case.

Mr. ROGERS of Florida. It would be helpful to have this information.

Mr. JONES. We are deeply concerned about this space problem and we are most appreciative of your concern.

Mr. ROBERTS. Thank you, Mr. Jones.

The Chair would like to commend you for your statement. I think you have been very clear and tried to be of help to our committee in its hearings. We appreciate your appearance very much.

Mr. JONES. Thank you very much, Mr. Chairman.

Mr. ROBERTS. The committee will stand adjourned until tomorrow morning at 10 a.m., in the same hearing room.

(Whereupon, at 12:20 p.m., the subcommittee recessed to reconvene at 10 a.m., Wednesday, May 15, 1963.)

ORGANIZATION OF PUBLIC HEALTH SERVICE

WEDNESDAY, MAY 15, 1963

House of Representatives,
Subcommittee on Public Health and Safety
of the Committee on Interstate and Foreign Commerce,
Washington, D.C.

The subcommittee met at 10 a.m., pursuant to recess, in the caucus room, Cannon Building, Hon. Kenneth Roberts (chairman of the subcommittee) presiding.

Mr. Roberts. The subcommittee will please be in order.

We will continue our hearings today on H.R. 2410, the purpose of which is to reorganize the Public Health Service.

Our witness today is Mr. Elmer B. Staats, who is Deputy Director of the Bureau of the Budget. We welcome you to our hearing and you may proceed with your statement.

STATEMENT OF ELMER B. STAATS, DEPUTY DIRECTOR, BUREAU OF THE BUDGET; ACCOMPANIED BY HIRST SUTTON, CHIEF, LABOR AND WELFARE DIVISION; MICHAEL S. MARCH, ASSISTANT TO CHIEF OF LABOR AND WELFARE DIVISION, LEGISLATIVE AND PROGRAM ANALYSIS; WILLIAM H. KOLBERG, CHIEF, PUBLIC HEALTH BRANCH, LABOR AND WELFARE DIVISION

Mr. Staats. Thank you, Mr. Chairman. I would like to say, before beginning my statement, that we in the Bureau of the Budget were very happy to learn about these hearings. We believe that the programs of the Public Health Service have become increasingly important both in terms of the dollars required for them in the total Federal budget, and also in terms of their obviously increasing importance to the welfare and the economy of the country.

We therefore believe that a broad review of the type undertaken by this committee is very much in order. We hope the committee will suggest ways in which executive branch review and conduct of these programs may be improved. I know we in the Bureau would particularly welcome such suggestions.

Mr. Roberts. Thank you, sir. We are happy to have you and I would like you at this time, if you would, to introduce the members of your staff for the record, please.

Mr. Staats. I have to my immediate left Mr. Hirst Sutton, who is head of our Labor and Welfare Division, to which most of the health activities of the Government are assigned, and to his left Mr. Kolberg, who is Chief of the Public Health Branch of that Division. To my right is Mr. March, who is the Assistant to the Chief of that Division.

Mr. Roberts. Thank you, sir.

Mr. STAATS. I have a fairly long statement, Mr. Chairman. Therefore, I would welcome your interrupting at any point that you wish to ask questions. I will try to read it as rapidly as possible.

Mr. ROBERTS. Thank you, sir.

Mr. STAATS. I am happy to accept your invitation to present information on the health responsibilities of the Federal departments and agencies other than the Department of Health, Education, and Welfare.

Effective and readily available health services are essential to our national welfare. The Federal contribution toward the Nation's health is a significant one.

More than a dozen departments and agencies make substantial expenditures for medical and health-related programs. In this statement I will present an overall picture on Federal health outlays, emphasizing departments and agencies other than the Department of Health, Education, and Welfare, whose representatives have testified before you during the past several weeks.

The committee's objective of evaluating the mission and programs of the Public Health Service in the context of the health responsibilities of the Federal Government, as a whole is a highly important one.

Increasing public interest in health matters, the rapidly growing complexity of the medical and scientific problems which affect the national health, and the corresponding expansion of Federal health responsibilities make it highly desirable that we all have a broad perspective on the factors and developments which affect Federal health programs and their organization.

Many Federal decisions regarding health programs are made in the context of program goals and policies which have objectives broader than that of providing health services, although certainly all such health programs contribute to the national health.

As a consequence, many agencies and many programs in the Federal budget include health and health-related activities.

As background for considering the budgetary figures for health programs in recent years, a review of the trends they represent will be useful. Data compiled by the Department of Health, Education, and Welfare and published in the Social Security Bulletin for November 1962 show the following trends for expenditures for "health and medical care" during the 11-year period 1950–61:

Federal health and medical care outlays somewhat more than doubled during this period, rising from $1.4 to $3.1 billion. In fiscal year 1950 those outlays constituted about 3.5 percent of budget expenditures and in 1961 about 3.8 percent.

State and local health outlays slightly more than doubled, rising from $1.9 to $3.9 billion. Thus, the Federal Government has been participating in a phenomenon affecting State and local governments as well.

Total public expenditures for health from Federal, State, and local sources increased from $3.3 billion in 1950 to $6.9 billion in 1961.

Federal expenditures constituted 43 percent of the total public expenditures for health in 1950 and 44 percent in 1961. The public expenditure for health, in turn, represented about one-fourth of all private and public health medical expenditures in both periods.

Total national expenditures for health and medical care from all sources increased 134 percent in current prices, from $12.4 billion in 1950 to $29 billion in 1961; as a percentage of the gross national product they rose from 4.7 to 5.7 percent.

The long-range trend of Federal expenditures for health has in the past been determined in large measure by defense needs and veterans' benefits.

For example, in fiscal 1950, the expenditurs of the Department of Defense and the Veterans' Administration for hospital and medical care and the construction of facilities for such care were almost $1.1 billion, or three-fourths of the total Federal health and medical care outlay of $1.4 billion.

By 1961 expenditures by these agencies for such purposes had risen to $1.7 billion, yet they accounted for little over one-half of the total Federal outlay of $3.1 billion for health.

This reflects the progressive emergence in recent years of expenditures by the Department of Health, Education, and Welfare as a major component in the total of Federal health expenditures.

For example, public assistance vendor medical payments, which were not made at all in 1950, had reached a total of $589 million in 1961.

Likewise, during this 11-year period medical research increased nearly elevenfold from $55 million to $586 million, largely as the result of increases in funds for the National Institutes of Health.

I would like now to turn to an analysis of Federal programs for health in the more recent fiscal years, 1962, 1963, and 1964: In response to your committee's request for information on health programs of agencies other than the Department of Health, Education, and Welfare, we have made a survey of agencies which have significant health or health-related programs.

In this survey, covering fiscal years 1962, 1963, and 1964, we have used a definition of health and health-related activities similar to that used in Senate Report 142, 87th Congress, 1st session, which was prepared by a subcommittee of the Senate Committee on Government Operations.

This definition is somewhat broader than that used by HEW in compiling the figures previously cited. It covers funds for training, waste treatment and sanitation facilities, international programs, accident prevention, Civil Service Commission health programs for Federal employees, and some research in the life sicences which is not included in the HEW series for earlier years.

Our report covers seven Cabinet departments and seven other agencies, although we know that a number of other departments and agencies have minor health or health-related expenditures.

The results of our study are included in the special analysis which is submitted with this testimony and which I should like to offer for inclusion in the record. It should be recognized that this analysis presents a broad picture for purposes of perspective and that the figures have not been carefully refined.

I should like at this time to present some of the principal findings.

The first concerns the distribution of health functions among the agencies. A principal finding is that the agencies, other than the Department of Health, Education, and Welfare, continue to be the

source of somewhat more than half of the total Federal expenditures for medical and health-related programs.

It is estimated that total Federal obligations for such programs will amount to $6.4 billion in 1964, of which which $3.1 billion will be obligated by the Department of Health, Education, and Welfare and $3.3 billion by all other agencies.

Chart I shows the funds which the principal agencies will spend for health and health-related activities, with a twofold division among the types of activity.

(The chart referred to follows:)

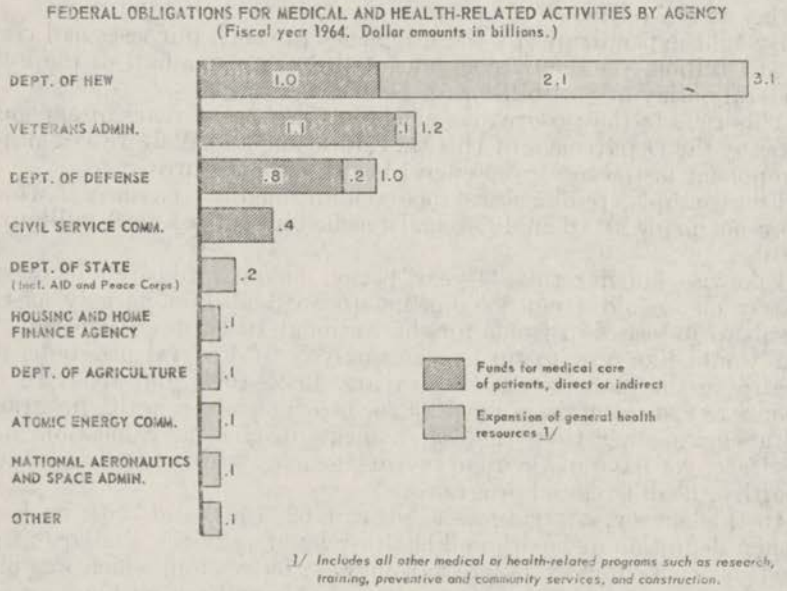

CHART I

Mr. STAATS. As was pointed out earlier, the Veterans' Administration and the Department of Defense have major health programs. Moreover, as chart I indicates, the bulk of the funds expended by these two agencies is used for the provision of hospital and health care services—most of which are handled through their own hospitals and clinics.

The Department of Health, Education, and Welfare provides substantial funds for health care services, but most of its expenditures for this purpose are channeled through grants to States and localities. The Department of Health, Education, and Welfare nevertheless operates 67 hospitals containing about 16,000 beds.

Before turning to specific agency programs, one general point revealed by table A in the special analysis submitted with this testimony should be mentioned.

Total Federal obligations for health and health-related programs of $6.4 billion in 1964 compares with corresponding outlays of $6.2 billion in 1963 and $5.1 billion in 1962.

This is an increase of $1.3 billion in 2 years. Funds for all other agencies except HEW are estimated to rise from $3 billion in 1962 to $3.3 billion in 1964—an increase of $0.3 billion.

However, from 1963 to 1964, total health funds increase by less than $0.2 billion, and the amount for all other agencies except HEW declines in the net by more than $0.1 billion.

Passing over the programs of HEW with which you are already familiar, I should like to give you a brief description of the health and health-related programs of each of the other major agencies.

Of the $1.2 billion that the Veterans' Administration will obligate for health in 1964, 88 percent will be for care of veterans and disabled ex-servicemen—mainly for hospital care, and, to a lesser extent, for outpatient services.

More than 22 million veterans are presently or potentially eligible for care in VA facilities. First priority is given to treatment for service disabilities. Nonservice-connected cases are given hospital care if facilities are available and the veteran is unable to pay for services.

About three-fourths of the obligations of nearly $1 billion in 1964 by the Department of Defense for health programs will be for hospital and medical care of its 2.7 million military personnel, their 3.9 million dependents, and care, when space is available, for 400,000 retired military personnel and their dependents.

In 1964 it is expected that the Army, Navy, and Air Force will operate 235 hospitals in the United States and abroad, with an average daily patient load of approximately 32,000.

In addition, it is estimated that about 1.4 million patient-days of care will be provided in civilian facilities for dependents of military personnel under the Dependents' Medical Care Act.

The Department of Defense will also spend about $94 million for medical research and facilities, over $20 million for training, and approximately $45 million for construction of hospitals and other facilities.

In 1964, the Civil Service Commission will disburse an estimated $422 million for medical care benefits received by active and retired Federal civilian employees.

Benefits are paid in part from employee contributions and in part from Federal contributions or appropriations. The employees' health benefits fund, which is estimated in 1964 to cover 2.3 million active employees, is expected to disburse $393 million, of which the Government will pay about one-third.

The retired employees' health benefits fund, covering 235,000 participants, is expected to make outlays of $29 million.

Mr. ROBERTS. Mr. Staats, what is the condition of that fund at the present time?

Mr. STAATS. I would like to ask Mr. March if he would be willing to respond to that question, Mr. Chairman.

Mr. MARCH. Mr. Chairman, this is essentially a revolving fund-type operation. As you know, the Federal Government has an arrangement with private insurance carriers so that we don't really build up a fund.

They set the rates at intervals of 1 or 2 years to cover the necessary expenditures.

Mr. ROBERTS. In other words, it does not work in a similar way to, say, the railroad retirement fund?

Mr. STAATS. No. It is not a funded type system. It is more or less just and accounting device through which funds flow and is a more or less short-term-type insurance operation, not one that extends for many years as you have in retirement benefits or, say, for example, as in the civil service retirement fund where we try to fund for obligations that extend 20 or 30, or even 40 years ahead.

Mr. ROBERTS. In your experience has it ever been necessary for the Government to put up money to cover a shortage in this fund at any particular time?

Mr. STAATS. No. This fund, of course, as you know, is a fairly new one and my recollection is that the law contemplated there would be a review, I believe, at the end of either 3 or 5 years. So that I would not consider, Mr. Chairman, that the experience we have had to date would necessarily be conclusive as far as the long-term future is concerned, but as of the present time, the charges seem to be reasonable and in line with the cost.

These are carried by contract, as you know, with private carriers.

Mr. ROBERTS. All right. Thank you very much.

Mr. STAATS. The $186 million to be obligated for international activities cover a broad range of health, sanitation, and nutrition programs.

This assistance is provided through annual contributions to international organizations such as the World Health Organization, the Pan American Health Organization, and the United Nations Children's Fund. It is provided also through bilateral AID projects which are mostly for control of communicable diseases and for water supply and sewerage systems.

Most of the estimated $136 million of obligations in 1964 for health and health-related programs by the Housing and Home Finance Agency will be for public facility loans to municipalities and other communities for sanitation facilities.

This agency also makes public works planning advances under the Housing Act of 1954 and college housing loans for infirmaries and health facilities.

In addition, under the Public Works Acceleration Act of 1962 grants totaling $316 million will also be made by HHFA in 1963 for health facilities; no such funds are projected for 1964. HHFA will also insure mortgages on nursing home loans representing an estimated 12,100 beds in 1964.

Mr. ROBERTS. Mr. Staats, let us go back to page 7. I have a question there. Do you have any amounts that have been obligated for international health research?

Mr. STAATS. Under the Health Research Act?

Mr. ROBERTS. Yes, sir.

Mr. STAATS. Is that what you have particular reference to?

Mr. ROBERTS. Yes, sir.

Mr. STAATS. I believe we have the information for the State Department and AID programs. The amounts obligated are $2 million in 1962, $1 million in 1963, and $2 million estimated for 1964. It has not been a very large program.

Mr. ROBERTS. Could you also give us the amount which has been spent in counterpart funds?

Mr. STAATS. Under that same act?

Mr. ROBERTS. Yes, sir, under the category of U.S. funds. I think that is the way it is designated, isn't it, Mr. Borchardt?

Mr. BORCHARDT. Yes, sir.

Mr. STAATS. That is correct.

Mr. ROBERTS. Thank you very much. Mr. Nelsen has a question.

Mr. NELSON. With respect to sanitation facilities under the Housing and Home Finance Agency, would this include sewage disposal facilities, or what does it include?

Mr. STAATS. It includes sewage disposal facilities financed under the Community Facilities Act. However, it does not include the facilities provided for under the Water Pollution Act.

Mr. NELSON. This would be connection——

Mr. STAATS. These would be in connection with, say, sewage lines for new subdivisions, or for connection of an industrial complex, or a shopping center, or something of that kind.

Mr. NELSON. Thank you.

Mr. STAATS. On page 14 of the supplementary statement, Mr. Nelson, there is a description which spells out in a little more detail what is spent under the Housing and Home Finance category.

Mr. NELSON. Thank you.

Mr. ROBERTS. One other question before we leave the international health research bill. In this bill, if I remember correctly, there was a question of delegating the President's powers to the Surgeon General. Has that power been delegated so far as you know?

Mr. STAATS. It has not.

Mr. ROBERTS. It has not?

Mr. STAATS. It has not, and the reason for that, Mr. Chairman, has been the President's belief, both in the Eisenhower administration and in this administration, that the number of such grants is probably not going to be large.

There is always a problem of coordination here with the Department of State in terms of our timing and the approach to a particular situation.

Therefore, since it has been felt that it is feasible to continue to vest these powers in the President, the President has personally approved the actions to date under that act.

Mr. ROBERTS. Thank you, sir.

Mr. STAATS. The AEC medical and health-related programs of $88 million in 1964 are almost entirely in the fields of basic and applied research on the effects and the uses of radiation.

Approximately 60 percent of these funds are for research in the biological sciences, covering such areas as the effects of radiation on plants and animals, research on molecular and cellular structure, and the study of radiation genetics.

Another 25 percent of AEC's outlays are for research in the medical sciences, including radiological environmental health and various other fields.

Mr. ROBERTS. I would like to ask one question there if I may. Are we now through the AEC making some grants to colleges and universities for construction of atomic reactors on campuses?

Mr. STAATS. Such grants are not currently being made to colleges and universities. Of course, you are familiar with the Brookhaven complex in New York where, I believe, there are some nine universities involved.

A somewhat similar arrangement has been developed at the Argonne Laboratories in the Chicago area. This has been done in at least those two cases.

Mr. ROBERTS. The reason I asked this question is the people who are charged with this responsibility at Auburn University, in my State, recently contacted me as to the possibility of some funds.

Matching funds is the way it was explained to me. I remember a few years ago that the Legislature of Alabama had this question before it, as to whether or not Auburn would participate in some type of research program in the atomic energy field. If you could get me some information on that situation, I would certainly be grateful to you.

Mr. STAATS. There are many lump-sum contracts similar to NSF grants made by AEC in basic research in physics and the nuclear sciences, as well as reimbursable cost contracts for larger programs—say over $250,000. These latter contracts may provide for facilities in these areas. My reference a minute ago had to do with the development of nuclear-oriented laboratories such as Brookhaven and Argonne, but the AEC does make basic research contracts and they also provide facilities in the areas which are of interest to the AEC.

This constitutes, obviously, a problem of coordination for use in the Budget Bureau because there is a need to be sure that those contracts are consistent with and do not duplicate grants made by the Science Foundation, which has very broad authority for the same types of grants. We have tried to divide the fields between the two agencies for budget purposes, leaving to AEC those areas which are most directly related to its mission.

Mr. ROBERTS. I believe I was informed that this particular grant would have to have the approval of the National Science Foundation.

Thank you, sir.

Mr. STAATS. National Aeronautics and Space Administration, a new agency in the field, will in 1964 obligate an estimated $76 million for a broad range of medical and health-related projects as part of its space activities.

These include aerospace medicine, human factors research, biosciences, biological satellite flight program, research grants to universities, and construction of NASA facilities.

The Department of Agriculture will obligate an estimated $105 million in 1964 for research and preventive community services which have varying degrees of medical and health-related significance.

Most of these activities have the purpose of insuring a wholesome, nutritious, and adequate food supply for our Nation.

The Agricultural Research Service, for example, is concerned with finding out how infectious diseases and harmful parasites of livestock and poultry are transmitted to men, how to control insects and diseases, and how to avoid pesticide residue problems, as well as with human nutrition research.

The poultry inspection and the meat inspection programs of the Department represent other important health-related activities.

Several other agencies covered in our survey will devote substantial amounts to health in fiscal 1964. The National Science Foundation will obligate $36 million for basic research and training in the life sciences, the Justice Department $17 million for construction of hospital facilities and health services for Federal prisoners, the Small

Business Administration $16 million for hospitals, nursing homes, and laboratories, and the Labor Department $11 million, principally for hospital and medical care of Federal workers injured in line of duty.

The Interior Department will disburse about $1 million for research on water, occupational health in mines, and the nutritional value of fishery products. It will devote about $3 million to general public health services in American Samoa and the Trust Territory of the Pacific Islands.

A number of other agencies which we did not survey in the short time available also carry on activities which directly or indirectly are health related.

A description of these activities is included in Senate Report No. 142, which I have previously mentioned. Among these activities are the narcotics activities of the Treasury Department; the health-related research of the National Bureau of Standards, the Weather Bureau, and the Bureau of the Census in the Department of Commerce; research on air pollution, malaria control, and other problems by the Tennessee Valley Authority; the health-related regulatory functions of the Federal Trade Commission; the extension of credit for health-related enterprises abroad by the Export-Import Bank; and various other health or health-related activities of the Federal Aviation Agency, the Office of Emergency Planning, Canal Zone Government, and the Smithsonian Institution.

Mr. ROBERTS. Mr. Staats, would you go back to two things? Are you reading the research on air pollution as included in other problems by the Tennessee Valley Authority?

Mr. STAATS. Yes.

Mr. ROBERTS. You are? They do some work in that field?

Mr. STAATS. They do.

Mr. ROBERTS. Would you supply for the record some of these activities or do you have them with you now?

Mr. STAATS. I don't know whether we have the breakdown on that particular item in the TVA budget.

Mr. ROBERTS. I have been particularly interested in the field and that is the first time I knew that the TVA had been doing such work.

Mr. STAATS. We will be glad to supply it. We can get a breakdown.

Mr. ROBERTS. All right. Then I would like to know about the credit for health-related enterprises abroad by the export-import bank, just what those activities are.

Mr. STAATS. Yes, sir.

(The material mentioned follows:)

AIR POLLUTION ACTIVITIES, TENNESSEE VALLEY AUTHORITY

TVA carries on a continuing program for the control of air pollution in both its electric power and chemical operations.

The principal phases of the air pollution control program are (1) prevention through inclusion of control features in plans for new facilities and major additions or modifications to old plants, (2) preoperational and postoperational monitoring of air pollution levels in the vicinity of TVA plants, (3) field surveillance and appraisal to ascertain the adequacy of control measures, and (4) research.

By using air pollution control experience at each of the major power plants in planning for succeeding plants, air pollution has been minimized despite the great increase in the size of powerplants in recent years. In TVA chemical op-

erations, a program of plant renovation and modernization now underway has as one of its objectives the reduction of atmospheric emission to negligible amounts.

Expenditures in recent years for air pollution control activities related to steam-electric generating plants are as follows:

Fiscal year:	
1962	$98,000
1963 estimated	145,000
1964 estimated	176,000

Outlays for air pollution control features built in or added to steam stations are not included in these amounts.

HEALTH-RELATED ACTIVITIES—EXPORT-IMPORT BANK

The Export-Import Bank has financed the export of American hospital equipment by making loans at varying rates of interest up to 5¾ percent to recipient nations and to U.S. exporters. Since the inception of the Bank in 1934, through April 30, 1963, equipment valued at $5,366,300 has been financed in Argentina, Chile, Costa Rica, El Salvador, Greece, Peru, Colombia and Nicaragua.

The Bank has also financed water supply and sewerage projects amounting to $60,221,350 through April 30, 1963, in Uruguay, Venezuela, Ecuador, Syria, Iran, Liberia, Colombia, Costa Rica, Peru, Trinidad, Mexico, and Paraguay.

Mr. NELSEN. Mr. Chairman, while you are on the air pollution subject, it seems to me I saw a story in one of the papers about activities in that area in the Department of the Interior.

To your knowledge, if there is some activity going on there would you check it out for us, because we are interested in air pollution.

We have bills before our committee that deal with air pollution and we are quite anxious to find out what has been done, and where, and what the results have been.

Mr. STAATS. The only item that I could think of in Interior would be in connection with the Bureau of Mines.

Mr. NELSEN. Yes; that is what I think it was.

Mr. STAATS. Conditions affecting miner's health in the mines, the problem of silicosis and of lack of oxygen, and other conditions involved in mining operations. I am not aware of anything else, but we can doublecheck that point.

(The information mentioned follows:)

AIR POLLUTION ACTIVITIES—DEPARTMENT OF THE INTERIOR

The Bureau of Mines participates in the Federal air pollution effort through a research program aimed at developing means for the economic source control of pollutants originating from the production and use of minerals, particularly the mineral fuels. The Bureau is investigating the composition of motor-vehicle exhaust, reductions into which it enters in the open atmosphere, and means for minimizing discharge of those exhaust components most responsible for troublesome air pollution. Other investigations include development of economic means for removing sulfur oxides from powerplant stack gases and for controlling pollution from burning coal-refuse piles, and selected mineral-industry process improvements to reduce discharge of pollutants. A great deal of the air pollution control research conducted by the Bureau of Mines is for other agencies, chiefly the Public Health Service. In 1963, for example, of the total program of approximately $600,000 over 80 percent of the funds were transferred to the Bureau of Mines from other agencies.

Mr. ROBERTS. Thank you.

Mr. STAATS. Mr. Chairman, we have also in our analysis developed a discussion around the types of health programs carried on by Federal agencies.

Up to this point we have been talking about what the principal agencies are doing, but we thought it also might be useful to you to

have an analysis of types of activities covering the same total dollar figures.

Analysis of the $6.4 billion of health and health-related funds for 1964 by the six categories used in chart II casts further light on the character and organizational distribution of the Federal programs in the health field. Some of the highlights are as follows:

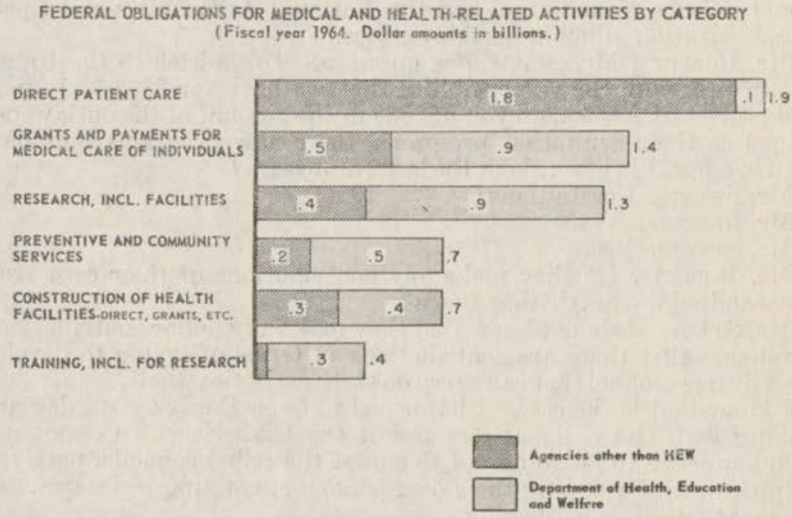

CHART II

Hospital and medical care in Federal facilities is the largest category of Federal health outlays, amounting to $1.9 billion in 1964.

More than 31 million people—eliminating duplications in the groups below—are eligible or are potentially eligible for hospital and medical care in Federal facilities or at Federal expense.

These include more than 22 million veterans, 3.1 million active and retired uniformed personnel and 3.9 million dependents of such personnel, 2.5 million active and 235,000 retired Federal civilian employees, 120,000 merchant seamen, 380,000 Indians and natives of Alaska, and an estimated 136,000 narcotic addicts, Federal prisoners, patients with leprosy, and residents of the Panama Canal Zone.

The Federal Government in 1964 will directly operate about 486 hospitals containing 175,000 beds, or approximately 10 percent of all hospital beds in the United States. As already pointed out, the bulk of this direct-patient-care mission is in the Veterans' Administration and the Department of Defense.

Federal grants and payments to assist in the health care of individuals will total an estimated $1.5 billion in 1964, approximately eight times as much as in 1958.

Much of this increase reflects the expansion of the HEW public assistance and medical assistance to the aged programs and the Civil Service Commission medical insurance program for Federal civilian personnel.

Several million people are in groups which receive medical care financed in part through Federal grants or contributions.

Health research also represents a major and rapidly growing segment of Federal funds, totaling in 1964 almost $1.3 billion if outlays for facilities are included.

The Federal Government now underwrites nearly two-thirds of the health research in the country. While HEW provides about three-fourths of the total Federal funds for health research and facilities, the Department of Defense, the Atomic Energy Commission, National Science Foundation, and the National Aeronautics and Space Administration all make sizable outlays.

Mr. ROBERTS. Mr. Staats, one question. To go back to the Indian health program, the responsibility that we have for 380,000 Indians and natives of Alaska, do you include in the amount of the outlay such things as their sanitation programs, their new programs that have been in effect, I believe, about the last 2 or 3 years?

Mr. STAATS. For Indians?

Mr. ROBERTS. Yes.

Mr. STAATS. Yes.

Mr. ROBERTS. Do they make any contributions of their own from the standpoint of matching funds?

Mr. STAATS. I do not know that they make any dollar contributions. I am sure that there are contributions in terms of trying to develop their own personnel that can carry on these activities wholly.

I know that is the case. I happened to be in Denver yesterday and talking with the regional director of the Civil Service Commission who happened to be going out to one of the tribal councils, partly to help them in developing their own personnel training programs, so I am sure that this is happening.

I do not have any quantitative figures on that, but I know this is the case.

(The following data was supplied in reference to the above:)

Upon further checking, I am advised that Indian tribes do make some financial contributions toward the cost of sanitation projects as well as contributing labor in the construction of the projects. During the current fiscal year, these financial contributions are estimated to be approximately $420,000. In the past the value of the total contribution (including labor) has approximated 40 percent of the project cost.

Mr. ROBERTS. Do you know how many States are affected by that program under the Denver office at the present time?

Mr. STAATS. I would not have that. It would probably be in the order of probably a dozen.

Mr. ROBERTS. Could you supply it for us?

Mr. STAATS. We can supply it for you.

(The material mentioned follows:)

NUMBER OF STATES IN THE DHEW DENVER REGION

Currently the Denver regional office has responsibility for the HEW activities in five States. These are the States of Colorado, Utah, Wyoming, Montana, and Idaho. At present there are Indian sanitation projects in the following four States: Idaho, Montana, Utah, and Wyoming.

Mr. ROBERTS. There is one other question. I wanted to ask you about the bills that we had before us last year and again this year with regard to medical care for fishermen and seamen. We were under the impression that your Bureau was conducting a study on persons

in title II, "Medical Care by the Federal Government." Do you know what happened to that study?

Mr. STAATS. Yes. Yes, we have recently reported on legislation which would extend care to self-employed merchant seamen.

That bill, as you know, would have extended these benefits to the self-employed who were ruled noneligible in 1954 by the General Council of HEW.

Mr. ROBERTS. These would be principally the owner-operators, would they not?

Mr. STAATS. They would be owner-operator situations, that is correct.

Mr. ROBERTS. But still engaged in fishing, either in navigation or in helping to handle the intake?

Mr. STAATS. That is correct. We have two points in mind in our review of this program. One is the question of entitlement. We felt that this was an area which needed review in terms of the long background here, going back to 1798.

Beginning, I believe, in 1884, this program was self-financing through a tonnage tax levied on all vessels entering into a U.S. port.

Then, subsequently, the tonnage tax was not earmarked. It went into the general fund. That tonnage tax, estimated at $5 million annually, is still levied but is no longer earmarked for the hospitals. The hospitals are being financed out of general appropriations, with direct costs of care for seamen amounting to an estimated $25 million annually.

The question in part is the extent to which there should be a user charge. In other words, to what extent should there be a self-financing arrangement of one kind or another, either levied against the shippers, or a combination of the tonnage tax and individuals paying a part of the cost for this service?

As you can see, it is a substantial amount of money that is involved here at the present time. A merchant seaman is defined to include many people who we do not feel were intended in the purposes of the original act.

For example, an individual operating on the Great Lakes, operating a tour boat is entitled to free medical care. An individual who operates for a municipality, say, a garbage scow, dumping garbage out in the middle of the lake, is covered and given free medical care.

These are the kinds of activities and questions on coverage that we felt needed reexamination. The other question, and a very separate question, is the question of who should provide this medical care? To what extent should it be handled through the Public Health Service hospitals directly, and to what extent should it be provided in other Federal hospitals?

In many instances now this care is not easily available to a merchant seaman. In many cases he may have to travel more than 200 or 300 miles, and he has to do this at his own expense in order to have medical care available to him.

We felt that there should be a review of the extent to which such care could be provided in other Federal hospitals. The intent is still the same but the President in his message on health last year asked for a study on how this care could be made more easily accessible to the merchant seamen.

This matter is under review at the moment and discussions are underway between us, the Veterans' Administration, and the HEW.

The reason why the Veterans' Administration is involved is that they have the largest and most widely distributed hospital system available for the purpose.

Mr. ROBERTS. Up until the ruling by the Solicitor to the effect that if the owner-operators were not covered this care had been extended, I believe, since about, say, 1804.

Mr. STAATS. It started originally in 1798 and, I believe, the hospital system itself was set up in 1894. It is a very old program.

Mr. ROBERTS. I was interested. Not so long ago there was a statement that had been provided me by Mr. Spal, who recently passed away, one of our very valuable staff members, to the effect that President Adams had advocated this care and it was one of the first basic factors in the jurisdiction of this Committee on Interstate and Foreign Commerce.

It was really the thing, I think, that started us in the field of health. It was very interesting to me, this being one of the oldest committees of Congress, that this is the one of the things he gave us, health jurisdiction.

All right, sir.

Mr. STAATS. Funds for health training, including grants and direct Federal outlays, also represent a crucial and growing area of expenditures, totaling nearly $360 million in 1964.

While HEW has the preponderant share, the Department of State—including AID and the Peace Corps—the Department of Agriculture, and the Department of Defense spend significant amounts for training.

Finally, the Federal Government in 1964 will devote nearly $700 million for construction of health facilities, excluding those for research purposes. Roughly half of this will be spent by agencies other than those of the Department of Health, Education, and Welfare.

In summary, chart II indicates that the VA and the Department of Defense have the major portion of the direct federally operated, patient-care activities among the Federal agencies.

In contrast, HEW looms large in all the other five categories of expenditure. The Department's proportion is particularly large in the training, research, and preventive and community service health programs.

The trend in obligations by type of program for the 3 years 1962–64 is shown in table B in the special analysis, which shows the total figures for each category and separately for HEW and for all other agencies.

For HEW all categories except patient-care services are increasing at a substantial rate. For other agencies as a group some categories are increasing while others are declining.

Table C classifies the obligations for 1964 for each agency by category. Data for all 3 years for each of the principal agencies are also included in the special analysis.

I would like to turn, Mr. Chairman, to the discussion of organization and coordination of Federal health activities.

It is evident that the mission related character of the health programs operated by the various Federal agencies strongly influence the organization of health activities in the executive branch.

For many of the Federal agencies the health or health-related programs are only a means of carrying out another governmental function.

The Armed Forces must have healthy personnel; and under recent legislation the civil agencies of the Federal Government help their employees to obtain prepaid health care.

As part of its responsibilities to veterans, the VA provides hospital and health care services. The international agencies carry on health aid programs to achieve their economic development or military assistance objectives.

In contrast, it is largely in HEW, notably in the Public Health Service, that health is viewed as a primary mission. In the Public Health Service, the input of resources is devoted largely to basic health resource development—through research, training of personnel in shortage categories, and construction of community health facilities—or to the strengthening of broad preventive and community public health capabilities.

A large part of these HEW funds is disbursed through grants-in-aid to States and localities, unlike those in most of the other agencies. HEW also makes large amounts of grants to universities and to individuals for research purposes.

Although the health and health-related activities within the executive branch are numerous and diverse, our survey indicates that there is a remarkable amount of interchange of information and coordination among the various agencies, both through day-to-day working arrangements and through more formal devices such as contractual arrangements and interagency committees.

To cite some examples: The Department of Defense and its constituent units are represented on 20 boards, committees, and similar organizations functioning in the health field on which HEW is also represented.

The Department of Agriculture is included in at least eight committees or interagency groups in which HEW participates. Veterans' Administration personnel are members of 27 NIH national advisory councils and study sections and VA is also represented on a number of interagency committees.

AEC is represented with HEW on such significant groups as the Federal Council for Science and Technology, the Federal Radiation Council, and on the National Committee on Radiation Protection.

Extensive interagency relationships have been established between the Agency for International Development and HEW.

These include memberships on interagency committees, bilateral contractual arrangements for technical consultation, support and training services, and various other joint project agreements.

Some 76 Public Health Service people have been loaned to AID. Day-to-day consultations between the two agencies run the gamut from the policy to the operating levels.

Several agencies in the Executive Office of the President play a major role in the interdepartmental coordination of health activities within the executive branch.

The Bureau of the Budget assists the President in carrying out his responsibilities for overall management of the executive branch and

also helps through its legislative reference process in the development and coordination of his legislative program.

Through the budget process, the Bureau of the Budget plays a significant role in the allocation of resources and the determination of priorities among competing demands.

Budgeting is essentially an orderly way of making choices. The shaping of the President's budget and of the fiscal and economic policies which underlie it involve extensive consultation for many months among the executive agencies.

In the last few years we have endeavored to improve the effectiveness of the Federal budget process as an instrument of long-range planning and programing. The actual weighing of agency budget requests is accomplished through procedures encompassing long-range plans and budget projections prepared well in advance of the development of detailed agency proposals, full-dress agency budget submissions, hearings, and Presidential determinations on agency budgets.

In this process agency proposals for health programs are considered in relation to each other and to the funds requested for other activities of the Government. This budget review also encompasses the fiscal impact of proposals in the President's legislative program.

The Office of Science and Technology is another significant instrument in the coordination of health research programs. Dr. Wiesner will, of course, discuss its work in his presentation.

Finally, it should be noted that in recent months the President has appointed a Special Assistant for Mental Retardation who is concerned at the Executive Office level with health activities insofar as they affect that field.

It is evident from the data which I have presented that the health activities of the Federal Government are in a phase of rapid development. Many new programs have been enacted in recent years.

A number of extremely significant legislative proposals in the health field are now before the Congress, including several important ones assigned your committee.

One of the most significant changing areas in the health field is in the area of science. As Federal funds for medical research have been multiplied, it is only natural that we should be concerned as to whether the capacity to do high-quality research is keeping pace and whether this investment in research will continue to yield high results.

The question of priorities in research, and as between research and other programs, is one of the most troublesome problems in the Federal budget.

Because of the very nature of research and because of the difficulty in either predicting or measuring returns from research, budgeting for these activities is extremely difficult and must rely in considerable part on the judgment of the executive and the legislative branches as to the possible long-term gains to be achieved.

Other difficult scientific problems also face us in the health area. A stronger scientific base for the food and drug regulatory and the environmental health activities of the Government is indicated by the increasing recognition of problems in the drug, food additives,

radiological health, air pollution, and pesticides areas, to name a few topics of current concern.

Another concern relates to the development of more effective techniques for communicating the vast output of new knowledge, both within the research community and from the scientific community to medical practice.

How large is the existing gap between new information which is already available from medical science and its application in the current practice of medicine as it is carried out by the thousands of doctors in our country?

The rapidly increasing costs of hospital and medical care, and of drugs, also pose major problems of medical costs and economics, which underlie the urgency of Federal financial assistance for medical care.

In addition, rapid growth in our population and the increasing proportion of aged citizens make their effect felt, for example, in the existing shortages of nursing homes.

The rapid growth of Federal funds for medical research has produced a close relationship between the Federal Government and the universities. As this process goes on, there arise many crucial questions of Federal Government-university relations, all centering around the key question of whether the Federal Government and the universities can exercise adequate stewardship of the funds which are provided in a manner which will maintain the academic freedom of the university community.

We need to reassess the whole process in the Government for awarding and for administering research grants and to develop appropriate criteria and principles of Government-wide application.

Another problem is that of overcoming the great shortages of skilled personnel in the health specialties. Training programs must obviously be related to manpower needs and this in turn gives rise to many basic questions, such as whether categorical approaches or more general approaches should be utilized to stimulate and support the training of necessary skilled personnel.

It is necessary in these circumstances to develop now organizational arrangements to meet emerging needs. At the Executive Office level and at the interagency level, the establishment of the Office of Science and Technology and the Strengthening of the Federal Radiation council in recent months represent real progress.

Likewise, the enactment of Public Law 87–838, which permitted the establishment at the National Institutes of Health of the new Institute of Child Health and Human Development and the Institute of General Medical Sciences, represented a significant step.

Clearly, in this rapidly changing area we need the flexibility to organize properly so the agencies can meet new problems as they arise without the restriction of previous patterns of organization which are no longer suitable in the light of new knowledge and new requirements.

The provision of authority included in H.R. 2410 to permit the Surgeon General to reorganize the Public Health Service in keeping

with the emerging requirements to emphasize both environmental health and community health activities would be an important step.

It would recognize the increasing importance of these areas and would thus assist in attracting outstanding scientific and administrative talent into the Public Health Service.

Improved organization is necessary if the Nation is to meet successfully the health challenges of a growing America.

Mr. STAATS. Mr. Chairman, we have attached to this statement, which I will not read, a statement called the "Special Analysis of Federal Medical and Health-Related Programs," which is a tabulation of funds for fiscal years 1962, 1963, and 1964 and a description of the programs administered by the principal agencies which I have briefly touched upon here in this statement this morning.

Mr. ROBERTS. Without objection, you may include that in the record.

(The statement referred to follows:)

EXECUTIVE OFFICE OF THE PRESIDENT, BUREAU OF THE BUDGET, WASHINGTON, D.C.

SPECIAL ANALYSIS OF FEDERAL MEDICAL AND HEALTH-RELATED PROGRAMS

(Tabulations of funds for the fiscal years 1962, 1963, and 1964 and descriptions of programs administered by the principal agencies with medical or health-related activities)

FOREWORD

In order to present an overview of the many medical and health-related activities carred on by the Federal Government, there follow three tables which summarize Federal obligations for these programs. There also is attached a summary statement describing the health activities, including their costs for the fiscal years 1962, 1963, and 1964, for each of the seven departments and seven agencies having major responsibility for Federal health activities. These tables and statements are intended to provide a general description of agency activities in the health area and are not intended as definitive statements of program mission and goals.

The following agencies are covered in the tables and the descriptive statements:

Department of Agriculture
Atomic Energy Commission
Civil Service Commission
Department of Defense
Department of Health, Education, and Welfare
Housing and Home Finance Agency
Department of the Interior
Department of Justice
Department of Labor
National Aeronautics and Space Administration
National Science Foundation
Small Business Administration
Department of State
Veterans Administration

For a more extensive analysis of these activities as they existed several years ago, attention is called to Senate Report 142 of the 87th Congress, 1st session. This earlier report was prepared by the Subcommittee on Reorganization and International Organization of the Senate Committee on Government Operations.

TABLE A.—*Federal obligations for medical and health-related activities by agency*

[Fiscal years—In millions of dollars]

Agency	1962	1963 estimate	1964 estimate
Department of Health, Education, and Welfare:			
Public Health Service:			
National Institutes of Health	678	892	1,015
Other	610	948	897
Welfare Administration	664	790	939
All other	151	181	237
Total, HEW	(2,102)	(2,811)	(3,088)
Veterans' Administration	1,096	1,189	1,229
Department of Defense:			
Army	347	354	351
Navy	182	191	202
Air Force	387	376	389
Other	24	27	23
Total, DOD	(940)	(947)	(964)
Civil Service Commission	361	373	422
Department of State	204	179	186
Housing and Home Finance Agency	112	438	136
Department of Agriculture	99	107	105
Atomic Energy Commission	69	82	88
National Aeronautics and Space Administration	13	39	76
National Science Foundation	27	31	36
Department of Justice	3	4	17
Small Business Administration	13	14	16
Department of Labor	10	11	11
Department of the Interior	3	3	4
Total	5,052	6,228	6,377

NOTE.—Detail may not add to totals due to rounding.

Source: The budget of the U.S. Government, fiscal year ending June 30, 1964, as modified by subsequent supplemental and legislative recommendations.

TABLE B.—*Federal obligations for medical and health-related activities by category*

[Fiscal years—In millions of dollars]

Major category	All agencies			Department of Health, Education, and Welfare			All other agencies		
	1962	1963 estimate	1964 estimate	1962	1963 estimate	1964 estimate	1962	1963 estimate	1964 estimate
Hospital and medical care in Federal facilities:									
(a) Patient care services	1,751	1,804	1,844	111	115	119	1,640	1,689	1,725
(b) Other, including general overhead	77	73	80	2	2	2	75	71	78
Federal grants and payments for hospital and health care in non-Federal facilities	1,115	1,256	1,455	649	779	917	466	477	538
Medical research, including research facilities:									
(a) Conduct of research	772	969	1,133	564	703	812	208	266	321
(b) Research facilities	59	99	131	41	74	96	18	25	35
Training, including for research	228	290	359	184	243	322	44	47	37
Preventive and community services	556	603	695	288	364	457	268	239	238
Construction of hospital and health facilities, except research:									
(a) Direct Federal	112	160	167	11	20	19	101	140	148
(b) Federal grants, etc.	382	973	513	253	509	342	129	464	171
Total	5,052	6,228	6,377	2,102	2,811	3,088	2,950	3,417	3,289

NOTE.—Detail may not add to total due to rounding.

Source: The budget of the U.S. Government, fiscal year ending June 30, 1964, as modified by subsequent supplemental and legislative recommendations.

TABLE C.—*Federal obligations for medical and health-related activities by agency and category*

[Fiscal year 1964—In millions of dollars]

Agency	Hospital and medical care in Federal facilities		Grants and payments for hospital and health care in non-Federal facilities	Medical research, including research facilities		Training, including for research	Preventive and community services	Construction of health facilities except for research		Total
	Patient care	Other, including general overhead		Conduct of research	Research facilities			Direct Federal	Federal grants, etc.	
Department of Health, Education, and Welfare:										
Public Health Service:										
National Institutes of Health				702	76	218	18			1,015
Other	87	2	17	86	16	68	271	9	342	897
Welfare Administration			901	1			38			939
All other	32	1		22	4	36	130	11		237
Total, Department of Health, Education, and Welfare	(119)	(2)	(917)	(812)	(96)	(322)	(457)	(19)	(342)	(3,088)
Veterans' Administration	1,069	13	15	32	8	2		89		1,229
Department of Defense:										
Army	210	30	26	64	4	8		9		351
Navy	126	11	39	10		7		9		202
Air Force	306	22	26	5		5		25		389
Other	7	2		9	3		1	2		23
Total, Department of Defense	(649)	(64)	(91)	(87)	(7)	(20)	(1)	(45)		(964)
Civil Service Commission			422							422
Department of State	2			2		9	155		19	186
Housing and Home Finance Agency									136	136
Department of Agriculture				25			80		1	105
Atomic Energy Commission				85	3	1				88
National Aeronautics and Space Administration				71	5					76
National Science Foundation				19	12	5				36
Department of Justice	3							14		17
Small Business Administration									16	16
Department of Labor	2		8			2				11
Department of Interior	1		3	1						4
Total	1,844	80	1,455	1,133	131	359	695	167	513	6,377

NOTE.—Detail may not add to total due to rounding.

Source: The budget of the U.S. Government, fiscal year ending June 30, 1964, as amended by subsequent supplemental and legislative recommendations.

Department of Agriculture

The Department of Agriculture in pursuit of its responsibility to "acquire and diffuse among the people * * * useful information on subjects connected with agriculture in the most general and comprehensive sense of the word," carries out three major types of activity which have a direct effect on human health: scientific research, inspection, control and eradication programs, and educational services.

The scientific research activities of the Department are carried out in 10 divisions of the Agricultural Research Service, the Agricultural Marketing Service and the Economic Research Service. These diverse activities are aimed at the following purposes: (1) learning how the infectious diseases and parasites of domestic animals are transmitted to man and developing methods for diagnosis, prevention, or control—some 90 domestic livestock diseases are transmissible to man; (2) the toxicological effects of agricultural chemicals in animal and human food chains; (3) improvement of plants that yield steroid chemicals for making cortisone and related drugs—drugs which are preventing and ameliorating the effects of old-age diseases; (4) understanding the biology, ecology, and prevalence of insects affecting man and animals and their role as vectors of disease; (5) establishing the physiological availability of nutrients in foods—a departmental activity since 1893; (6) studying the metabolic responses of humans to different dietary combinations; (7) surveying the diets of population groups and determining their nutritive value—the fourth nationwide survey will begin this year; (8) maintaining a culture collection for identification and screening of micro-organisms for the production of antibiotics and vitamins—the development of penicillin came from Department research in the micro-organisms field; (9) developing dairy plant methods for removing strontium 90 from milk; (10) statistical analyses of health care expenditures by farm families and special field studies on rural health—in cooperation with State experiment stations.

Last year the Department's Meat Inspection Division of the Agricultural Research Service examined the production of 1,511 establishments located in 623 cities and towns. The inspection of poultry moving in interstate commerce is compulsory under the act of August 28, 1957. Other activities include (1) eradication of diseases such a brucellosis and tuberculosis—transmissible to man; (2) quarantine services to prevent introduction of animal diseases from foreign countries which may affect man; and (3) the regulation of pesticides—over 5,000 new products were registered last year and more than 1,800 official samples of economic poisons were analyzed and tested.

The Cooperative Extension Service of the Department and the land-grant universities through its more than 14,000 agents located in almost every county of the Nation assists in meeting educational needs, including the needs of youth through the 4–H program. This program is supported jointly by Federal, State, and local governments and interested groups. Through these agents, technical information is made available on health hazards of pesticides, food preservation, meal planning and preparation, home sanitation, and other health problems.

These activities of the Department are coordinated with HEW through eight major interagency committees including the Federal Pest Control Review Board, Interdepartmental Committee on Community Air Pollution, and the Interagency Committee on Nutrition and Education; joint projects such as prevention of radioactive contamination of milk and research to identify, collect and isolate cancer-retarding plant materials; and cooperation on enforcement efforts especially in the registration of agricultural pesticides.

Funds for medical and health-related activities

[Fiscal years—In millions of dollars]

Major category and program	Obligations		
	1962	1963 estimate	1964 estimate
Medical research, including research facilities:			
Conduct of research	22	23	25
Research facilities	2	3	----------
Preventive and community services	75	80	80
Construction of hospital and health facilities, except research:			
Federal grants, etc.	----------	1	1
Total for agency	99	107	105

ATOMIC ENERGY COMMISSION

Medical and health-related activities of the Atomic Energy Commission arise mainly in connection with its research program and its protective activities. By far the largest part of the research program is in the Division of Biology and Medicine; smaller health-related activities are carried out in the reactor development program.

Aside from small amounts paid to overcome the annual deficit at the AEC-owned Los Alamos community hospital and for radiological and health physics fellowships, AEC's programs are entirely composed of basic and applied research on the effects and usage of radiation. Approximately 60 percent of this research is in the biological sciences, 25 percent in the medical sciences, with the balance in applied fields such as agriculture and radiation sanitary engineering.

In the biological sciences, AEC conducts research on the effects of radiation on plants and animals with interest ranging from total behavior to the specific behavior of certain systems and organs. In addition, AEC conducts fundamental research at the molecular and cellular level and on the study of radiation genetics.

AEC's program in the medical sciences is principally in the areas of somatic effects of radiation, combating the detrimental effects of radiation, and health physics. AEC also conducts cancer research and radiological environmental health, coordinating its activity with that of PHS, and generally providing the basic research backup for the national program in this area.

In carrying out these activities, HEW and AEC cooperate through (1) the Federal Radiation Council, and (2) the National Committee on Radiation Protection, a private organization which includes HEW and AEC as sponsoring institutions. Further, there are bilateral contracts and joint projects between the agencies, such as an AEC-National Cancer Institute cancer research effort on cocarcinogenesis conducted at AEC's Oak Ridge National Laboratory. Finally, there has been established a close professional relationship between AEC and PHS scientists at the senior staff level as well as at the scientific working level.

Funds for medical and health-related activities

[Fiscal years—In millions of dollars]

Major category and program	Obligations		
	1962	1963 estimate	1964 estimate
Medical research, including research facilities:			
Conduct of research	65	76	85
Research facilities	3	5	3
Training, including for research	1	1	1
Total for agency	69	82	88

CIVIL SERVICE COMMISSION

As the personnel agency for the Federal Government, the Civil Service Commission has a concern for the health of civilian Federal employees.

As part of its general responsibilities in the recruitment of civilian employees and the administration of the personnel system, the Civil Service Commission establishes and reviews physical standards for civilian jobs in the Government, sets professional standards for doctors and other health personnel to be employed in civilian positions, and supervises and adjudicates claims for retirement on account of disability.

In addition, the CSC administers two large health insurance programs—one for active employees and one for retired employees. Under the Federal Employees' Health Benefit Act of 1959, the Commission qualifies insurance carriers to participate in the program. The individual employee is then given the opportunity to select among the insurance carriers for an insurance plan and level of services designed to meet his particular need. The Government will contribute a portion of the cost of such plan and payroll deductions are made from employees' salaries for the remainder of the cost. The health benefits plans provide, under various options, hospital, medical, surgical, obstetrical, and other supplemental benefits. At present, there are four basic insurance plans in which

about 1.9 million employees are participating. This represents about 75 percent of total Federal employment.

The second insurance program is designed for retired employees who were not eligible for enrollment under the act covering active employees. Retirees may enroll in a uniform governmentwide health benefits plan or may retain or purchase non-Government health insurance plans. In either case, the Government and the retiree share on a specified basis the cost of either option. The benefits are generally similar to those provided under the employees' plan. On June 30, 1962, there were 244,600 participants in this program and 235,000 are expected to be participating on June 30, 1963. The decrease is expected primarily because of death of annuitants.

The Government's contributions to Federal employees and annuitants health benefit plans shall not exceed 50 percent of such cost according to law. Recent experience has been that the Government contribution on an overall basis averages about 37.5 percent of the insurance cost and the participants contribute about 62.5 percent of the cost. The figures below cover funds from both sources.

Funds for medical and health-related activities

[Fiscal years—In millions of dollars]

Major category and program	Obligations		
	1962	1963 estimate	1964 estimate
Federal grants and payments for hospital and health care in non-Federal facilities	361	373	422
Total for agency	361	373	422

DEPARTMENT OF DEFENSE

The primary mission of the Department of Defense health program is the provision of medical care and services to military personnel and their dependents. The responsibility for these services rests with each of the three major military services.

It is estimated that in 1964 the Department of Defense will be responsible for the complete medical and dental care of approximately 2.7 million active duty military personnel as well as a more limited amount of care for about 3.9 million dependents and, on a space available basis, for 411,000 retired personnel. This care will be provided in 25 Army, 87 Navy, and 123 Air Force hospitals and in other Federal and civilian institutions. It is estimated that the 235 military hospitals will have an average daily patient load of 32,000 and that outpatient visits in Defense medical and dental facilities will average about 212,000 daily.

The Dependents' Medical Care Act also authorizes medical care at Government expense by private physicians in community hospitals for wives, children, and dependent husbands of personnel serving on active duty in the military and other uniformed services of the Federal Government. It is estimated that in 1964 the dependents' medicare program will provide for 1,356,030 patient days in community facilities. In addition, military personnel may utilize community hospitals for emergency services where military or other Government facilities are not available.

Largely in support of its medical care program, the DOD supports health research and training programs. The research efforts relate to (1) preventive medicine, (2) unique military health problems, and (3) improved patient treatment and care.

Likewise, the training effort relates largely to insuring an adequate supply of health skills in support of the medical care program.

In addition, there are certain health activities of the DOD which do not directly relate to patient care. These activities are in the area of preventive medicine and environmental health.

In carrying out these responsibilities, the DOD and HEW cooperate by: (1) cross-servicing of hospitalization and patient services on a reimbursable basis, including, for example, the Army's administration of the medicare program for dependents of PHS uniformed personnel; (2) membership on more than 20

interagency committees, boards, and panels; (3) DOD participation on 28 study sections of NIH in such areas as surgery, dental study, biochemistry, general medicine, pathology, pharmacology, and visual serivces; (4) joint sponsorship of activities such as the medical education for national defense (MEND) program and joint studies of areas of common interest such as the NIH-Navy study of respiratory diseases at Great Lakes Naval Training Center and Camp Lejeune; and (5) cooperating in many other diverse areas of common interest in medical and dental techniques, biometrics, epidemiology, pest control, pathology, medical supplies, and medical training materials and facilities.

Funds for medical and health-related activities

[Fiscal years—in millions of dollars]

Major category and program	Obligations		
	1962	1963 estimate	1964 estimate
Hospital and medical care in Federal facilities:			
Patient care services	665	654	649
Other, including general overhead	63	58	64
Federal grants and payments for hospital and health care in non-Federal facilities	81	79	91
Medical research, including research facilities:			
Conduct of research	64	81	87
Research facilities	1	2	7
Training, including for research	20	19	20
Preventive and community services	10	9	1
Construction of hospital and health facilities, except research:			
Direct Federal	35	44	45
Total for agency	940	947	964

DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE

The Department of Health, Education, and Welfare, through the Public Health Service, Food and Drug Administration, Welfare Administration, Vocational Rehabilitation Administration, St. Elizabeths Hospital, and Freedmen's Hospital, has the major responsibility in the Federal Government for safeguarding and improving the health of the people of this country. The health functions of the Department fall into three major categories: Health research; health and related consumer protection; and health and medical services.

The major health research activities of the Department and, for that matter, of the Government are primarily carried out through the National Institutes of Health. However, other parts of the Public Health Service, the Food and Drug Administration, Vocational Rehabilitation Administration, and St. Elizabeths Hospital carry out basic and applied health-related research in support of their operating responsibilities.

The National Institutes of Health, through nine Institutes and one Division, supports nearly two-thirds of national health research. The program operates primarily through grants to institutions and to individuals for support of research in the medical and health-related sciences and training of individuals to increase the research manpower in the medical sciences.

The grants and related fellowships are awarded by the Institutes on the basis of merit as determined by study sections and advisory councils composed of non-Government scientists.

The Institutes conduct research mostly on the Bethesda campus, largely within the mission of each of the categorical Institutes. This research is conducted on cancer, heart disease, mental illness, arthritis and metabolic diseases, etc.

The environmental and community health programs of the Bureau of State Services, like NIH, utilize grant programs to support research. However, unlike NIH, a larger proportion of their research effort is conducted directly by the Government and a large share of the research is applied research.

The Communicable Disease Center at Atlanta, Ga., serves as the focal point for community health research; the Robert A. Taft Sanitary Engineering Center at present serves this function for environmental health. The characteristic of the research in this area is to protect man from the health hazards of his community and his environment.

The Food and Drug Administration, Vocational Rehabilitation Administration, and St. Elizabeths Hospital also have health-related research activities. Again, most of it is in support of their operating missions.

The health and related consumer protection activities of the Department are carried out by the Food and Drug Administration and environmental health programs of the Public Health Service.

These programs have the mission of protecting man from injuries by his environment. The Food and Drug Administration enforces laws designed to protect the consumer against misbranded and adulterated foods, drugs, cosmetics, and therapeutic devices. PHS has similar responsibility to protect man against the health hazards resulting from water, air, radiation, occupation, and milk and food. However, enforcement authority to prevent hazards presently exists only in the water area. The PHS programs are designed to prevent and control environmental hazards through support of research training grants, and technical assistance to State and local programs in this field.

Various HEW programs help provide health service to many thousands of beneficiaries. Some of these services are provided directly to merchant seamen, Indians and Alaskan natives, patients in St. Elizabeths Hospital, and, most recently, to Cuban refugees. However, grants-in-aid to the States is the principal mechanism used by HEW to help provide health services. Federal public assistance grants, including the recently enacted program of medical assistance for the aged, provide funds to the States to support health service for special beneficiaries designated by law. Typically, these Federal assistance grants support payments by the States to vendors of medical service—doctors, hospitals, nursing homes—though, to some small degree, the welfare recipient may receive a direct allowance in his monthly assistance payment which can cover purchase of minor medical drugs and supplies. Similarly, under the vocational rehabilitation program, grants are made to the States to support medical or health services provided to individuals undergoing rehabilitation under the State program.

Other grant programs, administered by HEW, such as TB and VD grants or grants for maternal and child health services and Hill-Burton hospital construction grants, help the States to provide resources, manpower, and facilities to carry out vital health services for its citizens. Finally, the Department also finances extensive training, demonstration, and technical services which supplement these State grants.

For administering the numerous health programs, HEW has established an extensive mechanism to coordinate its activities with other Federal agencies and outside groups. The statements of the other agencies give an indication of the numerous interagency committees which help to coordinate the activities of the various Federal health programs. In addition, extensive use is made by HEW of outside advisory committees to draw on a wide diversity of judgments and backgrounds in establishing program missions and goals and coordinating programs with those outside the Federal Government. The magnitude of this coordinating mechanism can be exemplified by the Public Health Service where it is estimated that, of about 2,000 consultants participating as members of advisory groups, about 1,700 were non-Federal employees.

Funds for medical and health-related activities

[Fiscal years—In millions of dollars]

Major category and program	Obligations		
	1962	1963 estimate	1964 estimate
Hospital and medical care in Federal facilities:			
Patient care services	111	115	119
Other, including general overhead	2	2	2
Federal grants and payments for hospital and health care in non-Federal facilities	649	779	917
Medical research, including research facilities:			
Conduct of research	564	703	812
Research facilities	41	74	97
Training, including for research	184	243	322
Preventive and community services	288	365	457
Construction of hospital and health facilities, except research:			
Direct Federal	11	20	19
Federal grants, etc	253	510	342
Total for agency	2,102	2,811	3,088

HOUSING AND HOME FINANCE AGENCY

The HHFA has a number of loan and loan guarantee programs which have a direct effect on the construction of certain health-related facilities. These are loans for public works planning, college housing, and public facilities and a loan guarantee program for nursing homes.

The Housing Act of 1954, section 702, authorizes the Federal Government to provide advances to State and local public agencies in order to encourage them to prepare and maintain a current and adequate reserve of planned public works as well as to promote economy and efficiency in planning and building public works. These advances are repayable without interest when construction is started. Among the eligible public works which are customarily assisted under this program are sanitation and water facilities. Advances for 336 projects were made in the fiscal year 1962 for a total amount of $5.8 million. Hospitals and similar public health facilities, including clinics, nursing homes and laboratories are also assisted. In the fiscal year 1962, 13 advances were made for this purpose for a total amount of $0.4 million.

The college housing loan program is intended to assist institutions of higher education in providing housing and related facilities for students and faculty where such assistance is not otherwise available on equally favorable terms. Among the "related facilities" which are assisted have been health centers and infirmaries. In the fiscal year 1962, three loans, for a total amount of $4.1 million, were approved for these facilities. In addition, these loans are made to hospitals to provide housing facilities for student nurses and interns. In the fiscal year 1962, 20 loans for a total of $12.2 million were approved for this type of health-related housing.

Public facility loans are made to municipalities and other political instrumentalities of States to finance basic public works for which there is an urgent need. Communities with a population of less than 50,000 persons (150,000 in area redevelopment areas) are eligible. Water treatment and distribution systems and sewer collection and treatment systems are among the most common types of projects which have been given such loans. In the fiscal year 1962, 199 loans were made for water, sewer, or combination purposes for a total amount of $89.6 million. In addition, one loan was made for a hospital in the amount of $0.4 million.

The Federal Housing Administration is authorized to insure up to 90 percent of the amount of mortgages on nursing homes. Administratively, the agency has established a minimum of 20 beds for eligibility and has also established minimum standards of basic safety and health requirements equal or greater than the standards established by the States for licensing. In 1962, this program aided in the provision of 4,324 additional beds. It is estimated that this will rise to 12,100 in 1964.

Finally, it is expected that the Community Facilities Administration will be allocated $494 million in 1963 from the accelerated public works program. It is estimated that 64 percent, or $316 million, of these funds will be used for the construction of nearly 2,000 new municipal water and sewer systems. With local financial participation, this will mean construction of systems costing over $600 million.

In cooperating on these activities, HHFA and HEW have joint membership on three important interagency committees dealing with physical fitness, aging, and migratory labor. In addition, these agencies have set up two special task forces to deal with the social welfare aspects of public housing and residential housing for the aged. It is also the practice of HHFA to refer all applications for loans involving health and sanitary facilities to the Public Health Service regional offices for comment.

Funds for medical and health-related activities

[Fiscal years—In millions of dollars]

Major category and program	Obligations		
	1962	1963 estimate	1964 estimate
Construction of hospital and health facilities except research: Federal grants, etc.	112	438	136
Total for agency	112	438	136

DEPARTMENT OF THE INTERIOR

Health-related activities of the Department of the Interior are primarily related to health and safety factors in mines. However, activities in the Geological Survey, Bureau of Sport Fisheries and Wildlife, Bureau of Commercial Fisheries, and the Office of Territories are health related.

The Bureau of Mines health research program is concerned primarily with workers in the mineral industries. The program consists of (1) research on dust and approval and testing of drill dust collectors, (2) respirator approval testing and research, (3) environmental surveys in metal mines, and (4) health and safety inspections in metal and nonmetallic mines.

The Geological Survey, as a byproduct of projects that investigate the quality of the Nation's surface and ground-water resources, compiles and analyzes data on the occurrence and distribution of elements in water that are, or may be, health related. Other projects investigate the behavior of pollutants, including radioactive wastes, which are released into the soil-moisture environment of natural water systems, compile radiometric data, and study the variations of plants and soil composition under changing environments for the purpose of correlating these factors with the incidence of certain human diseases or other health problems and to determine the effects on other biological systems.

The Bureau of Commerical Fisheries conducts a research program to determine the possible uses, including health uses, of selected fish oils and to determine the nutritional value of certain fishery products. In addition, the Bureau reimburses the Public Health Service for the cost of medical and dental services furnished the residents of the Pribilof Islands. Grants are made to American Samoa and the Trust Territory of the Pacific Islands for the operation of the local government. Part of these funds is used for general public health purposes and the operation of hospitals and dispensaries.

Health-related activities of the Bureau of Sport Fisheries and Wildlife are limited to the indirect benefits resulting from suppression of rabies among wild animals and reduction of rodent filth in grain intended for human consumption.

The major committees in the health area to which both Interior and HEW belong include: Interdepartmental Committee on Water Resources, the Committee on Water Research of the Federal Council for Science and Technology, and the Technology Advisory Committee for the Uranium Mines Study.

Funds for medical and health-related activities

[Fiscal years—In millions of dollars]

Major category and program	Obligations		
	1962	1963 estimate	1964 estimate
Federal grants and payments for hospital and health care in non-Federal facilities	2	2	3
Medical research, including research facilities: Conduct of research	1	1	1
Total for agency	3	3	4

DEPARTMENT OF JUSTICE

The Bureau of Prisons provides an extensive health system for the medical and mental treatment of approximately 24,000 Federal prisoners. This service is operated and staffed by Public Health Service personnel with assistance from Bureau of Prisons staff and from inmates.

Facilities range from the Medical Center for Federal Prisoners at Springfield, Mo., through accredited hospitals at 14 other prison institutions to very limited services, operated by medical and technical assistants, at the remaining institutions. In-house capacity is augmented, where necessary, by use of private medical resources on a contract basis. Funds for construction of a new psychiatric prison hospital, to be located at Butner, N.C., are included in the 1964 budget.

Anticipated patient load for 1964 is estimated to be 421,000 patient-days and over 1 million outpatient treatments.

The physical and mental health activities in the Federal prison system are a major part of Prisons' efforts to rehabilitate its inmates. Special efforts are required to correct deficiencies in the physical condition of incoming prisoners (e.g., dental deterioration) and in mental rehabilitation.

Close working relationships exist between the Bureau of Prisons and the Department of Health, Education, and Welfare through the use of PHS medical and technical staffs for Prisons' hospital system and the use of PHS facilities where more advanced or complex treatment is required. Inmates at Federal prisons participate, on a voluntary basis, in various HEW medical research products. The Bureau of Prisons is also a member of the Interagency Committee on Narcotics.

Funds for medical and health-related activities

[Fiscal years—In millions of dollars]

Major category and program	Obligations		
	1962	1963 estimate	1964 estimate
Hospital and medical care in Federal facilities: Patient care services	3	3	3
Construction of hospital and health facilities, except research: Direct Federal		1	14
Total for agency	3	4	17

DEPARTMENT OF LABOR

Activities of the Department of Labor which may be considered health related are concerned primarily with accidents to workers employed by the Government and in various industries.

The Federal Employees' Compensation Act authorizes medical and hospital expenses to be paid for Federal employees injured or contracting disease in the performance of their duty. During fiscal year 1962 a total of 126,000 payments were made on behalf of approximately 100,000 employees. It is anticipated that the 1964 experience will be about the same.

Under the terms of the Longshoremen's and Harbor Workers' Compensation Act, the Department of Labor directs the vocational rehabilitation of permanently disabled longshoremen. This is done in cooperation with, and mostly through, the facilities of the States' vocational rehabilitation system.

Funds for medical and health-related activities

[Fiscal years—In millions of dollars]

Major category and program	Obligations		
	1962	1963 estimate	1964 estimate
Hospital and medical care in Federal facilities: Patient care services	1	1	2
Federal grants and payments for hospital and health care in non-Federal facilities	7	8	8
Preventive and community services	2	2	2
Total for agency	10	11	11

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

National Aeronautics and Space Administration medical and health-related projects are all in the research area related to space activities. Specifically, they are concerned with aerospace medicine, human factors research, biosciences, and the biological satellite flight program.

The objectives of the first two activities are: (1) To obtain a better understanding of man's capabilities and limitations and to determine his utilization

in advanced aerospace systems, (2) to determine design requirements for equipment and subsystems which will guarantee an environment adequate for maintaining the high operating efficiency of crews during programed and emergency phases of advanced aerospace missions, (3) to determine overall human requirements and integrate them into the design of advanced aeronautical, astronautical, and ground support systems, and (4) to provide operational medical support to space flight missions and to conduct development and testing of systems and components to insure the effective performance and safety of the astronauts in flight and on the ground.

The bioscience program is being developed to provide this country with biological knowledge that can be gained only in the environment of space, and with the basic biological knowledge pertinent to space exploration and operations. Research is being conducted and planned on matters such as the detection and study of extraterrestrial life and its impact on evolutionary theories, and the effects of the space environments on the behavior and functioning of living organisms.

The objectives of the biosatellite flight project are to investigate the biological effects of decreased gravity and weightlessness, with additional studies on the effects of high energy heavy particle cosmic radiation, and the effects on biological rhythms of removal from the earth's rotation.

NASA conducts some research in its own facilities but also contracts with industry, finances research by other Government agencies, and awards research grants to universities in support of medical and health-related research.

NASA has assigned an employee to follow NIH research activity and to study its applicability to that of the Administration. This has produced close working relationships between the two agencies. NASA and NIH have also embarked on a joint project entitled "Computer development for health-related research."

Funds for medical and health-related activities

[Fiscal years—In millions of dollars]

Major category and program	Obligations		
	1962	1963 estimate	1964 estimate
Medical research, including research facilities:			
Conduct of research	13	38	71
Research facilities		1	5
Total for agency	13	39	76

NATIONAL SCIENCE FOUNDATION

The National Science Foundation, as part of its statutory responsibility to initiate and support basic research in all fields of science through grants primarily to colleges and universities, finances a significant volume of research in the life sciences, amounting to $38 million in the 1964 budget. That portion of the Foundation's activity in the life sciences, which is considered to be particularly germane to the medical and health-related fields, will amount to an estimated $31 million in 1964. These expenditures support basic investigations in such scientific disciplines as molecular biology, genetics, immunochemistry, and metabolic biology.

Proposed project applications must pass a review, involving the use of panels of consultants who are experts in the field in which grants are requested. The NSF grant programs are administered with an awareness of the activities of other agencies in the support of research, so as to avoid duplication of effort in the support of specific research proposals and to assist in achieving balance in the support of basic sciences. This is particularly true of NSF's relations with NIH where the two agencies have cross-representation on each other's grant reviewing bodies and exchange information on grant applications.

In addition to supporting the conduct of research and facilities related to health, the Foundation also assists in the support of science education, including fellowships. A portion of the funds for these purposes involve the support of life sciences.

Funds for medical and health-related activities

[Fiscal years—In millions of dollars]

Major category and program	Obligations		
	1962	1963 estimate	1964 estimate
Medical research, including research facilities:			
Conduct of research	15	17	19
Research facilities	7	8	12
Training, including for research	5	5	5
Total for agency	27	31	36

SMALL BUSINESS ADMINISTRATION

The business loan program of the Small Business Administration is intended to help small businesses obtain adequate financing on reasonable terms. Privately owned hospitals, convalescent and nursing homes, and medical and dental laboratories which are operated for profit are eligible for these loans which can be used for expansion, improvement, and general operations. Eligibility is restricted to—

(*a*) Hospitals with a capacity of less than 100 beds at the time of application;

(*b*) Convalescent or nursing homes with annual dollar volume of receipts of not more than $1 million; and

(*c*) Medical or dental laboratories operating in connection with an eligible proprietary hospital or, if independent, with an annual dollar volume of receipts of not more than $1 million.

In addition, private physicians may also qualify for these loans in connection with their practice of medicine. In fiscal year 1962, loans were made to 56 physicians and surgeons, 36 dentist and dental surgeons, 13 osteopathic physicians and chiropractors, 14 medical or dental laboratories, 14 hospitals, 70 sanatoriums and convalescent rest homes, and 14 other health service businesses, for a total of $12.9 million.

These loans may not be made for an amount exceeding $350,000 or for a term longer than 10 years.

The SBA is a member of the Subcommittee on Nursing Homes of the President's Council on Aging. This Subcommittee is chaired by HEW.

Funds for medical and health-related activities

[Fiscal years—In millions of dollars]

Major category and program	Obligations		
	1962	1963 estimate	1964 estimate
Construction of hospital and health facilities, except research:			
Federal grants, etc.	13	14	16
Total for agency	13	14	16

DEPARTMENT OF STATE

The health-related activities of the Department of State, including the Agency for International Development and the Peace Corps, are part of the international activities of these agencies. These activities are carried on through (1) bilateral programs arranged directly between the United States and the governments of 41 countries participating in foreign assistance and (2) various international organizations and other multilateral arrangements in which the United States is a participant.

International organizations with health programs, such as the World Health Organization and the Pan American Health Organization, benefit from U.S. support in the form of assessed annual contributions financed by the State Department and voluntary contributions financed by AID. These organizations carry

on a variety of health, sanitation, and nutrition programs, ranging from a limited medical research activity carried on by the WHO to a large malaria eradication program conducted under the auspices of WHO, PAHO, and UNICEF.

Department of State assistance to escapees from Communist countries includes the provision of necessary medical care. These programs are carried out through contracts with voluntary agencies. In certain instances, such as the flow of refugees to Hong Kong, it has been necessary to construct clinics and other health facilities to provide the essential medical care.

The expanding educational and cultural exchange program of the Department of State provides some funds for training in medical and health activities. Involved in the program are Americans who study or teach abroad as well as nationals of other countries who come to the United States for health-related teaching or studies. This activity is small but important, accounting for about 3 percent of annual outlays of the educational exchange programs.

AID, in its principal mission of assisting economic and social progress of underdeveloped countries, has a number of programs designed to improve the health-related resources of these countries. These activities range from assistance in the development and construction of medical schools and the training of health workers to the establishment of potable water supplies. Among the health programs of AID, strong emphasis also has been placed on the control of communicable diseases.

The Peace Corps now has 5,000 corpsmen assigned to 45 countries. Some of them are providing direct medical and paramedical care in the countries to which they are assigned while others are providing technical assistance concerning advanced methods of preventive medicine, sanitation, and nutrition. In addition, funds are provided for medical treatment of corpsmen.

State, AID, and the Peace Corps have established an extensive number of working relationships with HEW to coordinate activities of mutual interest. There are at least eight interagency committees on which one of these agencies has membership together with HEW. There are in existence a number of agreements for the utilization, usually on a reimbursable basis, of HEW scientific and technical personnel by State, AID, and the Peace Corps. An example of recent activity exists in the upper Volta measles study conducted in Africa. On this successful project, although there was no formal agreement between the agencies, NIH furnished the technical personnel and the vaccine and AID furnished the necessary vehicles, jet injectors, and additional supplies required. Furthermore, it has been agreed that State will provide foreign policy guidance, advice, and clearance on all foreign research grants and activities.

Funds for medical and health-related activities

[Fiscal years—In millions of dollar]

Major category and program	Obligations		
	1962	1963 estimate	1964 estimate
Hospital and medical care in Federal facilities: Patient-care services	1	1	2
Medical research, including research facilities: Conduct of research	1	1	2
Training, including for research	17	20	9
Preventive and community services	182	147	155
Construction of hospital and health facilities, except research: Federal grants, etc.	4	10	19
Total for agency	204	179	186

VETERANS' ADMINISTRATION

The Veterans' Administration is charged with the responsibility of providing hospital, domiciliary, and medical services to all eligible veterans of the U.S. Armed Forces. This responsibility is administered by the Department of Medicine and Surgery, one of the three principal operating units of the VA.

All the 22 million living war veterans are potentially eligible for hospital or medical services under VA auspices. The primary Federal responsibility under the veterans' hospital and medical care program is to service disabled

numbering an estimated 3.5 million veterans. Wartime veterans may receive inpatient care and treatment in VA facilities for non-service-connected ailments only if beds are available and if the veteran is unable to defray the expenses of necessary hospital or domiciliary care. Medical services may be furnished on an outpatient basis for service-connected disabilities and for non-service-connected disabilities only to veterans who have been determined to need hospital care and whose admission to a hospital has been scheduled, or who require posthospital treatment to complete hospital care.

In 1964 the VA will render treatment to eligible beneficiaries at 169 hospitals, 20 domiciliary homes, 93 outpatient clinics, 16 subclinic offices. In those cases where VA facilities are not available, services will be provided through contractual arrangements with other hospitals. This complex of facilities represents the largest hospital system in terms of number of beds in the country. It is estimated that in 1964 this system will operate directly an average of 121,486 beds in hospitals and 15,496 beds in domiciliary homes. Thus inpatient care will be provided for an average of 111,640 patients per day directly in VA-operated hospitals and 2,819 patients per day in contract hospitals. About two-thirds of the beds in VA hospitals are occupied by non-service-connected cases. Domiciliary care will be provided for an average of 15,496 patients per day in VA homes and 9,100 patients per day in State homes. Outpatient visits for 1964 will be an estimated 3,728,000 for both VA clinics and private doctors. In addition, it is estimated that 36,000 dental examinations and 28,000 treatment cases will be completed.

Under current eligibility classifications, the VA will continue to provide services for an estimated daily average of 139,000 beneficiaries. Three factors have a bearing on the demand for hospital and domiciliary care, assuming no change in present eligibility requirements: the veteran population which is declining, the age of the veteran which is increasing, and improvements in medical practice which are taking place. For the foreseeable future, no marked change in the total number of beneficiaries cared for is anticipated because the decrease in the number of veterans and improvements in the practice of medicine are expected to offset the increasing incidence of hospitalization due to age.

The VA also conducts a research program in support of its patient service function.

In carrying out these activities, the VA and HEW cooperate through (1) membership on the President's Council on Aging and three other interagency committees; (2) joint contract hospitalization; (3) VA supply services on certain items for PHS hospitals; (4) reimbursement arrangements on NIH chemotherapy program and PHS medical stockpile programs; (5) VA membership on certain NIH study sections and NIH participation on VA research review committees; and (6) VA membership on a special task force on mental health.

Funds for medical and health-related activities

[Fiscal years—In millions of dollars]

Major category and program	Obligations		
	1962	1963 estimate	1964 estimate
Hospital and medical care in Federal facilities:			
Patient care services	971	1,030	1,069
Other, including general overhead	11	12	13
Federal grants and payments for hospital and health care in non-Federal facilities	15	15	15
Medical research, including research facilities:			
Conduct of research	27	29	32
Research facilities	4	6	8
Training, including for research	2	2	2
Construction of hospital and health facilities, except research:			
Direct Federal	66	95	89
Total for agency	1,096	1,189	1,229

ALL OTHER

Selected health functions are also carried out through a number of other agencies. These include the Department of the Treasury, the Department of

Commerce, Federal Aviation Agency, the Office of Emergency Planning, Tennessee Valley Authority, Federal Trade Commission, and the Canal Zone Government.

In general the health-related activities of these agencies come as a byproduct of their other responsibilities. Nevertheless, their contributions are important to our overall effort to insure the well-being of our citizens.

Activities carried out by the agencies range in scope and size depending on their primary missions. Important in an overall appraisal is the Science Information Exchange operated by the Smithsonian Institution on behalf of several agencies of the Federal Government. This exchange serves as a clearinghouse of current information about grant and contract recipients for research in medicine, biology, psychology, and other disciplines, the objectives of this research, and the location of the research project. This exchange helps Government agencies and individual researchers to avoid unintentional duplications of effort and to coordinate their research.

The Office of Emergency Planning has broad responsibility for coordinating plans and programs for health activities of various Federal agencies for civil defense and defense mobilization.

The remainder of the agencies focus on health activities only as they are incidental to their other responsibilities.

Mr. STAATS. I hope, Mr. Chairman, in this approach that we have been able to emphasize that the problems of program and organization in the health field extends beyond HEW. The large amount of money that is being spent requires study by both the President and the Congress. It must be examined in its totality rather than in terms of the program and the budget of the Department of Health, Education, and Welfare alone.

Mr. ROBERTS. The Chair would like to state that this has been one of the best presentations we have had. I think you have done a wonderful service to our committee and to the country in this presentation.

It gives us for the first time a very fine instrument with which to locate these funds and what they are being used for, and I certainly think that the gentleman from Minnesota would agree with me.

Mr. NELSEN. Mr. Chairman, I would like to interrupt. The chairman and I just commented here in conversation that this was the most conclusive study that we have ever had presented to our committee and it gives us information that we have really been searching for and would require a great deal of time for us to dig up, and I want to congratulate you on the fine job that has been done in this respect.

Mr. STAATS. I appreciate your statement, Mr. Chairman, and we are happy that we have been able to supply this information.

Mr. NELSEN. Mr. Chairman, may I interrupt? I have to go back to my office. Yesterday, I asked the question of Mr. Jones relative to the number of employees under civil service and those that were in appointive positions, and I would like to have the comparison made from 1960 to date.

My purpose, I think, is obvious. That is that this Department is a very technical one and I just want to be sure that we are not making too many political appointees in a Department so important to the health and welfare of the people.

I would like to have that comparison that goes from 1960 to date, the number under the classified service and the number that are politically appointed.

We understand that the top-level people must have some freedom and I agree to that, but I would like to see a comparison, Mr. Chairman.

Mr. STAATS. If I may ask, for purposes of clarification,would you include in the classified service those in the Commissioned Public Health Corps?

Mr. NELSEN. Yes, and also the class C. When I was down in REA and we had others under the classified service and, I, as I recall, had one appointment and that was my deputy.

We took all the rest from the ranks and I wasn't disappointed in them. They were very, very good.

Mr. ROBERTS. Thank you, Mr. Nelsen.

Mr. Staats, for the record, it is a rare privilege for a congressional committee to have a representative of the Bureau of the Budget testify. We are gratified that the Bureau felt that our study of the growth of the U.S. Government in the field of health was important enough to warrant an appearance by representatives of your Bureau to help us with our study.

The statement which you have made, as I said before, underlines the important role from an economic point of view alone of the health programs carried on by our Federal Government.

Since most of us are not too familiar with the operations of your agency, I wonder whether you would mind explaining in some detail the various functions which the Bureau exercises with regard to the programs carried on by the Public Health Service and the Food and Drug Administration.

I have in mind particularly the functions with respect to appropriations requests and with regard to legislation, but perhaps there are other functions which you might care to elaborate on.

Mr. STAATS. Yes, Mr. Chairman.

The Bureau of the Budget as presently organized dates really to 1939. At that time it was moved from the Treasury Department to the President's Executive Office.

The four functions which have been defined by statute and by Presidential directive are these:

The review of budget estimates—to advise the President with respect to the amounts to be included in his annual budget which is submitted to Congress in January; and related to that, after the appropriations are made, to apportion the funds in accordance with the laws of Congress, and to review quarterly the requirements of the agencies to be sure that the funds are well spent and do not exceed the amounts appropriated by Congress.

Included here also is the Bureau's responsibility for improvement of Federal budgeting, accounting, and other phases of financial management.

The second function which has become increasingly important over the years is the review of legislative proposals originating in the executive branch.

This has a historical basis, in part going back to the time when the Presidents felt a need for advice in coordinating the views of agencies on matters which involved fiscal legislation.

That function subsequently was enlarged to include the gathering of comments from the agencies on enrolled bills coming before the President for action. In more recent years—beginning with President Roosevelt, and extending through the administrations of President Truman, President Eisenhower, and now President Kennedy—the Bureau of the Budget has played an important role in the technical review and analysis of legislative proposals either when they

originate in the executive branch or when they are referred by committees of the Congress to the Bureau for comment.

I should say at this point that the staff concerned with the annual budget review and the apportionment of funds is basically the same staff that is utilized to review legislative proposals and to prepare comment for the use of the committees.

These two activities are particularly relevant to the discussion here today. There are two others, however, which I think should be mentioned because they do from time to time have a direct bearing.

One of these functions is the improvement of organization and management of the executive branch. This includes the preparation of reorganization proposals.

It includes also the study of opportunities for improved manpower utilization and increased productivity, the introduction of new, modern techniques of management—such as electronic data processing and operations research—and the improvement of pay and compensation systems.

These activities of the Bureau of the Budget are Government-wide in character, but from time to time do bear directly on the health field.

Then, finally, and fourthly, the Bureau has the responsibility by statute of reviewing all of the statistical and data collection programs of the Federal Government.

This particular function was assigned to avoid duplication in the questionnaires which Federal agencies ask private individuals to answer.

It subsequently developed to include a Government-wide statistical review; that is, the preparation of a program for improvement of statistics, and the collection, analysis, and processing of data. This activity also from time to time touches upon the public health field.

Mr. ROBERTS. I believe you say that the same experts who work on the appropriations requests also work on requests for legislation, so that has been answered. Now, as to the appropriation requests that come to you from NIH. Are they reviewed on an institute-by-institute basis, or some other manner?

Mr. STAATS. I would like to comment briefly on that, Mr. Chairman, and then turn to my colleagues here because it seems to me this is a very key question in terms of the discharge of our responsibilities.

The Bureau of the Budget has a somewhat limited staff. I think these gentlemen here today would say that is an understatement.

We do not have a large staff. We have to rely to a very great degree upon the competence of the staff of the agency, in this case particularly the program staff and the budget staff of the Department of Health, Education, and Welfare.

This is no more true here than it is in any other agency. This is the way it has to work. It is the way it should work, so that we do not attempt to substitute our, you might say, technical judgment for the judgment of the agency as to the value of a particular proposal. We would not do this even if we felt we had the competence to do so.

What we do do, however, is try to be sure that there is an adequate basis for the agency's justification, that it is well founded, that is well thought through, and it has been examined carefully by the agency head.

Many hours are spent in discussion of these matters with the agency's top personnel, including the Secretary. We want to be sure that the agency head has given it careful consideration.

We try to take budget justifications into account. We seek, however, to go behind that, to be sure that the growth in the programs is needed, that implications of the programs in terms of personnel requirements have been thought through, and whether they are feasible, or whether they will simply be drawing personnel from one area and substituting it in another area.

We try to give some consideration to the available facilities, whether for example, the universities have the capacity to absorb proposed programs.

These considerations we bring out, in our discussions and in the nature of our questions; and then if we have differences of judgment with the agency head, these go to the President for his decision.

I would like to make two other general points with respect to our role. One is that in recent years, going back now about 4 years, we have made an effort to review scientific research programs on a Government-wide rather than on an agency basis.

Let me give you a few illustrations. In the field of oceanography, for example, to take one outside the area of our discussion here today, I recall that there are about 14 agencies of Government that have an interest in oceanography or are engaged in oceanographic work.

We work with Dr. Wiesner, the Director of the Office of Science and Technology, in setting up a Government-wide review of the agencies which are carrying on research in that area and how they are working together in order to be sure that there is not duplication, to be sure that the most promising areas receive the priority in the budget.

We have done this now in about six different areas. In this context we have also pulled together data on expenditures of various agencies for medical and related research. We feel that this has been an extremely valuable development and we want to improve and refine the process.

A third point I would like to make is this: That only in the President's office can the President relate the priorities in one field of Government as against another.

You cannot expect any one agency to make that judgment. It is proper that each agency should want to carry out its program to the fullest practical extent, but all of these add up to a lot more money than the President may feel it is possible to spend consistently with his overall fiscal and economic policy. Therefore, he may have to make a judgment that the amount of money asked for cannot be provided in his budget request.

A judgment must be made whether it is more important to go ahead in the health field this year as against the space field, or agriculture or defense, or any other activity. These are the three general difficulties in our review in the Bureau of the Budget.

Coming back to the question as it applies particularly to the NIH, we make an effort to review its programs both by institutes and by category or program components of research, training, and so on.

We do not use one approach to the exclusion of the other, but I would like to ask Mr. Sutton and Mr. Kolberg here if they would not like to elaborate on what I have said.

Mr. SUTTON. I can supplement what Mr. Staats has said. In the Labor Welfare Division of the Bureau there is one examiner who spends substantially but not all of his time on the National Institutes of Health budget which is now approaching a billion dollars.

We do not give a great amount of attention to the amounts that go into each institute. In other words, we look to the professional judgment of the Public Health Service and in turn to the many advisers that it utilizes in its study sections and advisory councils to advise them on the emphasis that should be given to various diseases, such as how much emphasis should be given to cancer research. Instead, we look more at the general questions of Federal Government and university relations, the overall support being given to research projects vis-a-vis more general grants to an institution to develop a program, for example, to an institution that has not had medical research before.

We look to new programs that are coming along, particularly new programs to support facilities, to support manpower.

These are the areas where our major emphasis is given. And, finally, we look, too, at the relationship between the programs that are carried on at the NIH and the programs carried on in these other agencies that are also operating in the field of medical research and the life sciences—programs, for example, of the National Science Foundation in the area of the life sciences and the programs of NIH.

They are dealing with the same universities. These requests need to be coordinated in an agency such as the Bureau where this coordination can be best effected.

Mr. ROBERTS. Mr. Sutton, you mentioned the relationships of the institutes and the universities in the grant field.

Now, while I do not accept as valid per se the criticism that has been made, yet I do think that it is a question that we have to look at very carefully. That is where we have people in the scientific community who also are serving on advisory councils and who are officially connected with universities and colleges who are receiving some type of research grant from NIH.

Do you have any suggestion as to how we might improve that situation?

Mr. SUTTON. I have no suggestion at the moment. The Bureau of the Budget is launching a study of its own to look particularly at the comparative practices of various Federal agencies and of some outside foundations in the administration and review of research grant programs.

I think we have a lot to learn.

NIH problems have been, of course, magnified perhaps. They have been publicized by the efforts and studies, and very good studies, I think, made by the House Government Operations Committee, but we must all look upon NIH as an agency that has had great growing pains and I think is dealing with many of its problems in a very successful way.

Some of these problems are still under study. We see that there is a role for the Bureau of the Budget to look at NIH problems, particularly as they relate to those of other agencies.

We are just in the process of launching a comparative study of grant administration among Federal agencies. We hope that a good deal

will come out of this that will benefit NIH and other Federal programs.

Mr. STAATS. We should emphasize that this study Mr. Sutton refers to will not relate solely to medical research. This will involve all of the research grant programs in many Federal agencies.

Mr. ROBERTS. Now, is any judgment being made in evaluating appropriation requests with regard to the relative amounts that are being requested for research as distinguished from health services, health manpower training, and health facilities?

Mr. STAATS. I would like to comment again just briefly on that and then ask the others to comment additionally if they wish to.

As pointed out in our statement, Mr. Chairman, many of the health-related activities involve the basic mission of the agency itself, such as Department of Defense or the Veterans' Administration, Civil Service Commission, and so on, and in those cases our effort would be to look at that as a part of that agency's program, whether or not there needs to be growth or possible reductions can be achieved in relation to, say the number of recipients of care, the number of men in the armed services, the possibility of achieving economies through the consolidation of hospitals. Considerations of this character would relate to the health-related activities.

Therefore, it seems to me rather difficult to compare the needs for medical research, per se, as against some of these health related activities that I have just mentioned.

Let us take the Veterans' Administration. In that case some of the research carried on in the VA hospitals, and I suppose this would be true with most of the research in the VA hospitals, is carried on not primarily or solely for the purpose of providing new knowledge in the medical field but particularly for training and enrichment of the personnel who are providing medical treatment in those hospitals to make them better doctors.

So that, you have a kind of a situation which would not be true in the NIH, for example.

So that, it is very difficult for me to see how you can compare, if you take the budget as a whole, the medical research with the medical care programs.

I think you have to treat these somewhat differently. I think the medical research area has been, as I indicated in my statement, the most difficult area that we have had to deal with, and our judgment or the judgment of the President on this has not always been observed by the Congress, as you know.

I believe, since 1953 the Congress has added something like $700 million to the President's budgets for NIH. I believe the budget has been increased every year during this period.

Mr. ROBERTS. I think except this one.

Mr. STAATS. Well, the action has not been completed yet but in the House there was a slight reduction this year, as you know.

Mr. ROBERTS. Of course, I will not assume any responsibility for what will happen in the Senate, but I think, as far as the House action is concerned, there is a good chance it will be sustained at this time.

Mr. STAATS. I bring this up to emphasis that this is an area where judgments in quantitative terms are hard to make. But we do need to have a lot more information than I think we have had with respect

to the effect on available manpower, to what it is doing to the educational institutions, and to our ability to absorb as rapidly as we have the large increments of dollars for research that have gone into these programs in the last several years.

Mr. ROBERTS. I would certainly agree with that opinion that the Congress has been, in my opinion, at fault in giving NIH more money than they asked for and we have to assume some of the responsibility for some of the criticism that has been leveled at the manner in which some of the grants have been made, or some of the other criticism.

Mr. SUTTON. Mr. Chairman, could I supplement with one remark here?

Mr. ROBERTS. Certainly.

Mr. SUTTON. About the medical research program of the Veterans' Administration, because I think it should be made clear that we recognize fully that the veterans' hospitals have a clinical resource that is very useful in the conduct of medical research, particularly in diseases dealing with persons of advancing age. This is something, I think, that should be recognized which the VA well recognizes—that there is more to be gained than merely the attraction of good medical personnel through the conduct of medical research programs in the Veterans' Administration.

There is a sort of dual objective in the Veterans' Administration program.

With regard to the very difficult question that you raise, we are always seeking the same elusive information that you are seeking: Where should the priorities rest; what should the balance be between manpower, facilities, research, and services?

We in the Bureau, because we have limited staff facilities, are grateful that at NIH and at the National Science Foundation, for example, there are some very excellent research facilities to do research in this very area of priorities and needs and balance between programs. These serve well. We need more of this kind of study to help the Congress and the executive branch make the sort of judgments that have become very, very difficult.

Thank you.

Mr. ROBERTS. Dr. Shannon, in his testimony, submitted to the committee a chart which attempts to break down expenditures of NIH by functions and program components.

I believe you have a copy of this chart that was designated as chart 3.

Mr. STAATS. Yes; we have a copy of that.

Mr. ROBERTS. That was attached to Dr. Shannon's statement.

Now, my question is whether the Bureau in its annual review of appropriation requests would feel that this approach constitutes a helpful supplement to the institute-by-institute approach?

Mr. STAATS. I believe it is very helpful. I believe that if you look on the left-hand side of that column, the figure for regular research projects is $408 million, by far the largest single item.

The next item in terms of dollars is training grants, $158 million.

We try to look at it in both terms, Mr. Chairman.

Would you wish to add to that Mr. Kolberg?

Mr. KOLBERG. Mr. Chairman, as is obvious by the size of the regular research projects, this is our first concern. As I think you are prob-

ably also aware, that has a large built-in factor of continuations and supplementals so that, in looking at it for any succeeding year, something over 90 percent of a particular figure is essentially a built-in factor since NIH is making these grants on a 3- to 5-year basis.

Our concerns, then, in that area, are primarily on the dollar figures which the agency would wish to devote to new research projects, comparing this with the factors that Mr. Staats has already talked about; what are likely to be the demands, are there capable researchers available to take on this level of new projects over and above the level that was achieved the year before, and then the judgmental factor as to the marginal return and how far we are to go in that area.

I have just one or two other comments.

Biologic standards, for instance, happens to appear first on the left-hand side of the NIH chart.

That activity has a specific appropriation and is an activity that pretty much stands on its own; we attempt to review that one by itself year in and year out.

We also try to shift our program review emphasis to meet emerging problems. This year, for instance, the mental health activities and the activities of the Institute of Mental Health received special attention because of the President's special message and special program for mental health and mental retardation, and in succeeding years perhaps other parts of the National Institutes would receive some special attention. But as the appropriations have grown, approaching the billion dollar level, with one staff member to concentrate in the area, we have had to more and more take the summary approach that you find on the right-hand column of the chart and try to deal in large pieces of this very large and growing activity.

Mr. ROBERTS. Thank you, sir.

Do you have any other suggestion as to how the Congress can be placed in a better position to evaluate these programs other than on the project by project basis which, of course, is impossible?

Mr. STAATS. I would like to say one or two things on that and there may be others here one could add.

As part of the study which Mr. Sutton referred to a while ago, we want to give particular attention to the impact of various programs on the universities because we do not think that you can separate out one research program from all of the other programs that the Federal Government carries on that may be affecting a single institution.

Institutions are, all of them, interested in strengthening their programs, they are interested in finding a way to cooperate with the Government, but in many cases this has resulted in a large number of different programs, different approaches dealing with the same university which has caused very serious problems for that institution.

So that, one factor, it seems to me, that we need to give greater consideration to, is to what all of this adds up to as to the effect on our institutions of higher learning. That is a matter of emphasis.

I would think, additionally, that we would agree that, as to the categories of the kind in the right-hand column here which are more by functions or components, such as research training programs, extramural research, collaborative studies, and so on, that we would feel that this is a more useful approach in evaluating what the agencies are doing.

Those are just two remarks.

I believe Mr. March has something he wanted to add.

Mr. MARCH. Mr. Chairman, as you look at this rather broad panorama and the difficulty of drawing firmly the priorities that the Congress and the executive branch ought to keep an eye on, a couple of thoughts occur to me concerning gaps in what we are presently doing. I think this is true for the Government as a whole.

When you get right down to it, we are rather at a very beginning stage in the business of measuring the return from various public activities.

Among the most difficult, of course, is research, but fundamentally, if we are ever to be very scientific in where we put the resources of the country, shall we say, among fields of research or as between research or, say, the practice of medicine, the choice of a dollar for research or a dollar for rendering medical care, we will have to strengthen the fundamental knowledge that goes toward evaluating the returns in the large.

From the point of view of economic return, looking over this field of health and the same is true of education, we have very little fundamental information and very little fundamental research going on in the Government and outside in the universities on these larger questions of where to put the resources.

Another area which is almost at a similar stage of underdevelopment in terms of fundamental across-the-board knowledge, in my observation from working in the Budget Bureau, is in this area of manpower.

Now, in the health area more than perhaps in any area of the programs that we touch upon, the bottleneck is the lack of trained or skilled manpower.

The manpower that you need for health tends to compete with, tends to come pretty much from the same sources as the manpower needed for scientific research and technological development across the board in the economy. This is particularly true in the research area. Yet, while we have some estimates about the supply of doctors and the shortage of doctors and researchers and NIH does try to make its projections, we have not in the Government as a whole really developed this process of balancing the supply and demand so that you can place these needs for skilled manpower in the broader setting of the total manpower picture and what the universities can produce. So, consequently, often we are counting on each other's manpower in expanding the programs. Perhaps in this latter area the program that the Labor Department was charged with, under the Manpower Development and Training Act, of developing a broad manpower picture, will prove eventually to be very helpful.

It seems to me anyway that if the Congress and if the executive branch are to zero in on these fundamental problems that you are asking about—how much do you put in medical research—we have to at least get answers in these two categories.

I should like also to just mention quickly another third category of possible need for research which we are very cognizant of in the Budget Bureau. That is the area of intergovernmental financial relationships.

This is very pertinent in the health field, particularly in the care area; how much of the responsibility and how much financial capacity

do the several layers of government have; where should the responsibility rest; how much should the Federal Government provide in grants versus relying on the States and localities to finance health activities which, let us say, it is agreed, should be in the public areas as opposed to the private area.

Mr. ROBERTS. In other words, if I understand what you are saying, it is that we need to know more about the skilled manpower so that we can work out more information as to where the research should be done, where it should go?

Mr. MARCH. Yes, sir.

Mr. ROBERTS. We are short on the people who could give us the answers?

Mr. MARCH. And consider, for example, if you have a total stock of manpower, and skilled manpower is really limited, whether you want to place the allocation toward the research side and does this undermine your capacity to render the care on the service-rendering side of the picture?

Mr. ROBERTS. Is it that we are just not turning out these people or is it that the ones who are being turned out are being scooped up by private industry in better paying positions than government is able to afford?

Mr. MARCH. I think my first point was essentially that, as a country, we have not really carefully, on a broad scale basis in the manpower area, appraised our needs in a long range way so that we evaluate our needs on the one hand and the potential supply on the other hand, so that you have a clear picture of what the gap is.

We tend to operate in little areas, in fragments of the manpower picture. We do not really ever pull it together. So we do not know fully where we are going in terms of information. This is the first lac.

The second thing is that, while we make valiant efforts to try to allocate the resources, say, as far as the Federal budget is concerned, this process is still far from perfect. So that you may add to your imbalances and so I think that that basically, then, we have to improve the advance information we need to plan ahead and guide where we want to go and then consider also the second stage of where you put the money from the standpoint of both the availability of people to do the job and the intrinsic return that you have. In the medical area it is very hard to tell in the large whether $100 million extra spent for medical research is going to do more good than, say, $100 million for health for children, you see, or health for the aged, or some other category.

Mr. STAATS. Mr. Chairman, I would like to add here, too, to what Mr. March has said to emphasize that as a part of the analysis of manpower we might well come to the conclusion that we ought to be spending more money, we ought to be doing more to encourage training of people over the long period in certain fields.

The significance of the long-term planning efforts which I mentioned in my formal statement is that the leadtime on this is a very, very great one, as you know, so that the manpower analysis is one which has the value that Mr. March referred to but also has important implications for what the Government may be able to do to train manpower in certain fields where there is a national need.

Mr. ROBERTS. Thank you very much.

Now, to get back to some of the programs that this committee is charged with authorizing, could you give us any figures as to how much will be added annually by the mental retardation bills? That is assuming that they are passed in this session of the Congress.

Mr. MARCH. Mr. Chairman, while we have those projections, I do not think we brought them with us.

Could we supply them for the record?

Mr. ROBERTS. It is all right. Supply them for the record.

We had a rather difficult time in the hearings in getting these figures clarified and I think if we had them from the budget, it would be of a lot of help.

Mr. STAATS. We have those figures.

(The information referred to follows:)

COMMUNITY MENTAL HEALTH CENTERS ACT OF 1963

Estimate of additional costs, 1964–68

[Dollar amounts in thousands]

Item	1964	1965	1966	1967	1968
Appropriation requirements:					
Grants for—					
Construction of community mental health centers	----------	$35,000	$50,000	$65,000	$80,000
Initial staffing of facilities	----------	----------	10,000	33,000	59,000
Direct program expenses	----------	130	310	665	910
Total	----------	35,130	60,310	98,665	139,910
Expenditures:					
Grants for—					
Construction of community mental health centers	----------	3,500	12,000	34,000	53,000
Initial staffing of facilities	----------	----------	8,000	30,000	54,000
Direct program expenses	----------	115	280	615	850
Total	----------	3,615	20,280	64,615	107,850
Man-years of employment	----------	10	27	53	76

MENTAL RETARDATION FACILITIES PROGRAM

Estimate of additional costs, 1964–68

[Dollar amounts in thousands]

Item	1964	1965	1966	1967	1968
Appropriation requirements:					
Grants for construction of—					
Centers for research	$6,000	$8,000	$6,000	$6,000	$4,000
Facilities:					
Grants to States	----------	10,000	12,500	15,000	30,000
Project grants for universities	----------	5,000	7,500	10,000	10,000
Direct program expenses	50	150	250	360	460
Total	6,050	23,150	26,250	31,360	44,460
Expenditures:					
Grants for construction of—					
Centers for research	300	1,900	5,300	7,000	6,300
Facilities:					
Grants to States	----------	1,000	3,250	9,000	14,250
Project grants to universities	----------	500	2,250	5,000	8,250
Direct program expenses	40	130	220	330	420
Total	340	3,530	11,025	21,330	29,220
Man-years of employment	4	15	25	35	45

Mr. ROBERTS. Mr. Harris, the chairman of the full committee, raised a question at the beginning of the hearings as to whether it would not be advisable to place dollar ceilings and time limits on the authorizations for the appropriations for NIH just as the Congress has placed these limitations on other programs administered by the Public Health Service.

Do you have any comments on the effects which such limitations have and can you suggest any realistic ceilings in this respect?

Mr. STAATS. This thought has been suggested by various people.

We feel that the time and dollar limitations which have been placed on the construction programs of the Public Health Service have been very useful. It has served the purpose of causing a review and reappraisal of those programs periodically.

We have been less certain about the value of such a limitation in connection with the basic research programs of NIH; that is the grants made by NIH.

We do think that there would be merit in a periodic appraisal through hearings and through the development of reports from the agency to be sure that in this important area that periodically, say every 3 years or whatever the time period might be feasible, that there would be a careful reappraisal of the legislation which underlies the program as well as the direction of the program itself.

This kind of reappraisal, we think, could be very useful.

Mr. SUTTON. I think that is the general position that the Bureau has taken in many reports on legislative proposals. We suggest, often, dollar limitations on construction programs but we think that, in the operating area or in the research area, the intangibles with respect to the universities, for example, are so great that there needs to be greater flexibility than the legislative process can always permit. Evaluation and review, particularly of new programs that have recently been authorized, though, is exceedingly valuable and I think we would particularly endorse the review on the 3- to 5-year basis of the newer programs. The committee should assure that the programs are carrying out the objectives that were originally intended.

Mr. ROBERTS. I have been wondering, particularly in programs that are authorized by this subcommittee, if at the beginning of each new Congress it would not be well to let the departments know perhaps a month or so ahead that we would like to have a kind of a review, not detailed but at least get a good look at what has transpired in a 2-year period prior to the beginning of a new session.

I think that could very well be done without too much trouble and without too much expense.

I think it would give us a lot of information, too, that we need in looking at administration bills and at various proposals that come before our subcommittee.

Finally, I have a question which relates to another subject in which the parent committee is interested, and that is the ratings of radio and TV programs.

Since your Bureau is heavily involved in statistics, do you use any sampling techniques for securing your data?

Mr. STAATS. We do not directly collect data, as you know, Mr. Chairman. It would be an unusual case where the Bureau of the Budget would directly go to the public for data itself. This would

be obtained through the appropriate program agency. Sampling is a well established procedure. It is used in our census. It is used in many other governmental programs.

The Bureau of the Budget has had for many years an individual who has been expert in the field of sampling working with the agencies in terms of how best to devise procedures, the appropriate kind of sample, and so on. Properly used, sampling can be equally as accurate and can be much more economical than a complete survey.

Mr. ROBERTS. Who is this individual?

Mr. STAATS. He would be in our Office of Statistical Standards, which deals with one of the four functions I mentioned earlier.

Now, in the field of public opinion polls, this has been a highly controversial area, as you know. This is one which I do not know that we have ever taken a position on, as such, but I believe that our view would be that again, if properly developed, a sampling procedure in this area is perfectly appropriate.

Mr. ROBERTS. Who is the individual whom you have in mind?

Mr. STAATS. Mr. Raymond T. Bowman is the head of our Office of Statistical Standards. Mr. Raymond Nassimbene is the individual. I would be glad to have him discuss this matter informally with any of your staff.

Mr. ROBERTS. I will have the staff get in touch with him.

Thank you again, gentlemen, for a very wonderful presentation.

I just regret that we did not have more members of the subcommittee present to appreciate it, but I think it has been very beneficial certainly to us and will add considerably to the record of the hearings we have had.

Mr. STAATS. Thank you, Mr. Chairman.

Mr. ROBERTS. Thank you, all you gentlemen, for participating.

The subcommittee will be in recess subject to the call of the Chair.

(Whereupon, at 12 noon, the subcommittee recessed, subject to the call of the Chair.)

ORGANIZATION OF PUBLIC HEALTH SERVICE

MONDAY, JUNE 10, 1963

House of Representatives,
Subcommittee on Public Health and Safety
of the Committee on Interstate and Foreign Commerce,
Washington, D.C.

The subcommittee met at 10 a.m., pursuant to recess, in room 1334, Longworth Building, Hon. Paul G. Rogers of Florida presiding.

Mr. Rogers of Florida. The Subcommittee on Public Health and Safety will come to order, please.

We are very pleased to have as our witness today Dr. Jerome Wiesner, Director of the Office of Science and Technology and special assistant to the President.

Dr. Wiesner, we are delighted to have you and are very anxious to hear your testimony.

STATEMENT OF DR. JEROME B. WIESNER, DIRECTOR, OFFICE OF SCIENCE AND TECHNOLOGY, AND SPECIAL ASSISTANT TO THE PRESIDENT

Dr. Wiesner. Thank you very much.

There is little disagreement on the high priority which we, as a nation, accord to the goal of a healthy citizenry. There have been, and will continue to be, differences of opinion on how that goal can best be achieved.

I am very pleased to accept the committee's invitation to discuss with you the role which the Office of Science and Technology can play in aiding and coordinating the Government's participation in health research and training.

I would like to tell you a little bit about the Office since it is quite new.

The Office of Science and Technology was established June 8, 1962, by Reorganization plan No. 2 of 1962. Its primary purpose is to provide the President with permanent staff resources capable of advising and assisting him on matters of national policy affected by or pertaining to science and technology.

More particularly, the Director of the Office of Science and Technology advises and assists the President as the President may request with respect to—

1. Major policies, plans, and programs of science and technology of the various agencies of the Federal Government, giving appropriate emphasis to the relationship of science and technology to national security and foreign policy, and measures for furthering science and technology in the Nation.

2. Assessment of selected scientific and technical developments and programs in relation to their impact on national policies.

3. Review, integration, and coordination of major Federal activities in science and technology, giving due consideration to the effects of such activities on non-Federal resources and institutions.

4. Assuring that good and close relations exist with the Nation's scientific and engineering communities so as to further in every appropriate way their participation in strengthening science and technology in the United States and the free world.

5. Such other matters consonant with law as may be assigned by the President to the office.

The Director of the Office of Science and Technology is appointed by the President with the advice and consent of the Senate. He is assisted by a small full-time, high-caliber professional staff. The services of some 300 expert consultants in the fields of science and engineering are called upon to provide judgments and evaluations as required. Of these, 87 are life scientists.

The operation of the Office involve making studies and rendering advice on a wide variety of matters involving science and technology that require attention at the level of the Exectiuve Office of the President. In this work the Director draws on the capabilities of the President's Science Advisory Committee, the Federal Council for Science and Technology, the Federal departments and agencies engaged in research and development, and scientists and engineers outside of Government, particularly the National Academy of Sciences.

Considering its broad scope of interest and the small size of its staff, the effectiveness of the Office depends on being selective in undertaking studies and in rendering evaluations and judgments. Thus major responsibility for initiation and development of programs as well as their implementation remains with the operating agencies.

Within the broad area of the life sciences, consultant panels to my office have considered many Federal problems related to health. Their investigations have necessarily cut across organizational structures within the Government, but they have been primarily directed to the scientific and technical issues rather than those related to organization and operation.

Some of these studies have involved research areas in which two or more agencies have an interest. In these cases, this Office has been concerned not only with the quality of the research programs themselves, but also with coordination between the agencies involved, and application of the knowledge used.

In each case, advisory panels working with the staff in my office, and with full cooperation of the agencies, have made extensive efforts to understand the broad implications of the current research programs, and therefore needs and opportunities as well as the immediate problems which precipitated the study. Many of these studies have highlighted the need for interagency coordination to avoid duplication or gaps in those research problems which involve more than one agency. To further this end, and to assure the highest quality research in programs involving a single agency as well, I have encouraged the agencies with substantial scientific programs to appoint assistant secretaries for science and technology. These positions have already been created in the Departments of Commerce, Defense, and Interior, and I have been extremely pleased with the results which these appointments have facilitated.

In other studies the reports have provided, for the first time, a compilation of the results available from completed research, and have thus served as a vehicle for the distribution of scientific information. For example, our study of the technical aspects of drug abuse, which provided the substantive background for the White House Conference on Narcotics and Drug Abuse, compiled information previously available only from separate sources. Additionally, it revealed that much of the information commonly taken for granted was either incorrect or could not be substantiated. In other cases, such as the studies of behavioral sciences and of the application of new technologies to life sciences research, an effort was made to delineate the opportunities in growing and rapidly changing scientific fields related to health.

The difficulties of initiating extensive research programs in a previously undeveloped area are exemplified by the current efforts of the Public Health Service to establish a center for the study of environmental pollutants. Toxicology has received little support in past years, and consequently the number of trained scientists available to the field is limited. An officer of Science and Technology Panel tried to determine the best way to meet the immediate needs for toxicological evaluation and at the same time establish a broad base of research competence and training to meet the inevitable pollution problems of the future. Their recommendations for a center in Washington to house administrative support and certain research activities and for strong, university-based centers not only for research and education, but also to help in the solution of local environmental health problems, have provided guidelines for administration policy.

In furtherance of health through environmental control, my office has also concerned itself with possible hazards from radioactive fallout and from pesticide use. In the case of fallout protection, we attempted to gain further insight into the nature of the radiation hazards associated with testing, through work with the Federal Radiation Council and the Committee on Biological Effects of Atomic Radiation of the National Academy of Sciences. The Federal Radiation Council publication on health implications of fallout summarized available information. In addition to providing judgments of the possible biologic effects of fallout, it was necessary to insure the integration of a national monitoring network. This was accomplished by coordination of the resources of the Departments of Health, Education, and Welfare and Defense with those of the Atomic Energy Commission and the Weather Bureau.

The other study related to environmental health—the report on the use of pesticides—was just completed and released 3 weeks ago. The recommendations made by our distinguished advisory Panel should provide a framework for the design of both an effective Federal control program which will remain flexible enough to adapt to new pesticide types and formulations, and a significantly improved research capability to assess the hazards of currently used methods and devise better ones for the future.

During the past 2 years, I have had repeated briefings on the program activities of the several Institutes which make up the National Institutes of Health. Additionally, the Cancer Institute has presented a detailed briefing to the President's Science Advisory Committee. In cooperation with the Bureau of the Budget, we have re-

reviewed the National Institutes of Health budgetary requests each year.

I understand that you are concerned, as are other people, about the size of the National Institutes of Health activity. It has been surprising to me to learn that, although the total budget of the Institutes appears to be very large, health problems are so diverse that the amount which can be devoted to research on any one is quite small. I have appended a National Institutes of Health budget breakdown which illustrates this point, and which also gives the committee a picture of the spectrum of efforts in which the Institutes are currently involved. In view of their importance to the health of our population, I have fully supported the administration's budget requests for the Institutes.

It will also be of interest to your subcommittee to know that the President has approved a major study of the research programs of the National Institutes of Health. My office will initiate the study this summer. From this, we hope to gain a clearer insight into the nature of the biological and medical research needs of our Nation and to be in a much better position to to make judgments of the adequacy with which the National Institutes of Health programs fulfill our needs.

In conclusion, several thoughts seem pertinent. First, like activities we see in other fields, health problems will never disappear; they will simply change. As the currently important threats such as heart disease and cancer are conquered, other causes of illness and death will take their place. Thus, there is no prospect that efforts to deal with health problems can ever end. Second, it seems clear that health problems generated by alterations in man's environment will become steadily more acute. Third, as the rate of change in all of man's affairs increases, the strain thrown upon the capacity of people and institutes to adapt will increase. One consequence is that problems of social adjustment and of various kinds of personality disorders will probably become more extensive.

There is one other surprising fact that examination has indicated. Quantitatively, the amounts spent for medical research in this country have not increased relative to overall increases in funding of research and development. This we have seen in our recent review of the budget. Dr. Shannon has pointed out to the subcommittee that medical research has traditionally occupied between 5 and 8 percent of the total research and development expenditures. Mr. Staats has noted that, although Federal expenditures constituted 44 percent of public funds expended for health, they amounted to only 11 percent of the total national expenditures for health. However, these relatively small research expenditures which I talked about previously provided nearly two-thirds of health research in this country.

It is thus of paramount importance that the Federal Government, carrying the greater burden of responsibility for health research, insure that these funds produce maximal results—both in terms of the solution of specific health problems, and in terms of increasing the numbers and quality investigators available to work in this area.

Thank you, sir.

Mr. ROGERS of Florida. Thank you, Dr. Wiesner.

I see you have attached to your statement certain charts.

Dr. WIESNER. Yes. You might be interested in looking at them now or later.

As I say, the thing that impressed me when I became involved with the National Institutes of Health budgets was their size. I, like yourself and every other group which first looks at these programs, thought they were enormous until I began to examine individual components.

As you know, probably, I have spent the last 15 or 20 years deeply involved in research and development, primarily related to military and atomic energy matters. I have seen research and development budget breakdowns of this kind through the years for aircraft or radar or atomic weapons. I am used to seeing items of $200 or $300 or $400 million for very critical hardware; such as, a missile or an aircraft, and even a total of $10 or $20 or $30 million for a vital vacuum tube area is not at all unusual. So when you find a sum of money much smaller than that for research of a critical component in the human body, you get a different perspective than when you see the total summed up a single item.

I was so impressed with this fact, and with the wide range of things that they do, that I thought it was worth calling this particular perspective on the National Institutes of Health budget to your attention. While I don't want to try to defend the individual items, whether they are appropriate or too big or too small, I thought this view of it would be helpful to your group.

Mr. ROGERS of Florida. Yes.

Thank you, sir.

Without objection, it will be included in the record along with your statement.

(The information referred to follows:)

National Cancer Institute, regular research projects and intramural research, by category, fiscal year 1963

	In thousands
Regular research project category:	
Cancer causation	$9,827
Tumor growth	7,469
Host-tumor relationship	2,436
Epidemiology	990
Therapy	15,469
Basic research and all other including grants covering multiple fields	11,656
Program chemotherapy grants	4,362
Review and approval	1,423
Reserves	2,000
Total	55,632
Intramural research category:	
Program direction and contractual services	2,629
Dermatology	86
Metabolism	294
Viral oncology	566
Biochemistry	570
Biology	525
Chemical pharmacology	520
Endocrinology	402
Medicine	616
Pathology	947
Physiology	491
Radiation	266
Surgery	274
Subtotal	8,186
NIH management fund	7,983
Total	16,169

National Institute of Neurological Diseases and Blindness, regular research projects and intramural research, by category, fiscal year 1963

	In thousands
Regular research project category:	
Neurological disorders of childhood	$11,536
Neurological disorders of aging	2,282
Cerebrovascular disorders	2,387
Epilepsy and paroxysmal disorders	2,700
Schlerosing disorders	2,230
Neuromuscular disorders	2,825
Infectious neurological disorders	231
Intracranial pressures	1,499
Disorders of vision	7,623
Disorders of hearing and equilibrium	3,682
Disorders of speech and other CNS disorders	1,022
Other sensory disorders	1,273
Other neurological disorders	5,223
Noncategorical	759
Review and approval	1,225
Reserves	915
Total	47,412
Intramural research category:	
Program management	136
Medical neurology	283
Surgical neurology	569
Ophthalmology	368
Electroencephal	101
Neuroanatomical scs	331
Neurophysiology	177
Biophysics	173
Neurochemistry	292
Molecular biology	154
Neuropathology	57
General	183
Board of Scientific Counselors	2
Publications and reports	170
Subtotal	2,996
NIH management fund	3,720
Total	6,716

National Institute of Mental Health regular research projects and intramural research, by category, fiscal year 1963

	In thousands
Regular research project category:	
Biology of mental illness	$20,016
(Psychopharmacology)	(11,925)
Developmental disorders	7,507
Sociology and epidemiology of mental disorders	5,004
Diagnosis and treatment of the mentally ill	17,514
(Mental health project grants)	(12,636)
Review and approval	1,575
Reserves	-------
Total	51,615

National Institute of Mental Health regular research projects and intramural research, by category, fiscal year 1963—Continued

	In thousands
Intramural research category:	
Scientific coordination	$569
Biological research	978
Child and adult research	687
Psychological research	910
Socioenvironmental studies	388
Narcotic addiction research	581
Neuropharmacological and clinical studies	1,374
Information activities	155
Allocation to President's Panel on Narcotic Addiction	12
Allocation to St. Elizabeths Hospital	115
Subtotal	5,769
NIH management fund	4,321
Total	10,090

National Heart Institute regular research projects and intramural research, by category, fiscal year 1963

	In thousands
Regular research project category:	
Arteriosclerosis	$20,661
Cerebrovascular diseases	1,715
Hypertension	5,967
Congenital heart disease	4,476
Rheumatic fever and heart disease	2,461
Heart failure	5,296
Cardiovascular aspects of aging	1,492
Blood diseases: Coagulation defects	6,041
Cardiopulmonary diseases	18,946
Other areas	7,534
Review and approval	1,728
Reserves	9,000
Total	85,317
Intramural research category:	
Director of Intramural Research	109
Cardiology	378
Cardiovascular physiology	187
Cellular physiology	194
Chemical pharmacology	485
Chemistry of natural products	160
Clinical biochemistry	324
Clinical endocrinology	236
Enzymology	238
Experimental therapeutics	180
Electrolyte transport	361
Metabolic studies	309
Surgery	385
Technical development	206
General research	786
Gerontology	875
Surgical suite	------
Office of Science and Technology, White House	20
Heart information	292
Subtotal	5,725
NIH management fund	4,663
Total	10,388

National Institute of General Medical Sciences, regular research projects, by category, fiscal year 1963

Regular research project category:	*In thousands*
Developmental biology	$18,789
Chemistry of life processes	17,512
Clinical sciences	16,871
Review and approval	1,783
Reserves	0
Total	54,955

National Institute of Allergy and Infectious Diseases, regular research projects and intramural research, by category, fiscal year 1963

Regular research project category:	
Allergy and immunology:	*In thousands*
Allergen standardization	$1,183
All others	4,924
Cystic fibrosis	95
Staphylococcal infections	2,176
Tropical medicine	10,688
Tuberculosis, leprosy, and related areas	2,042
Vaccine (all types)	2,538
Viral respiratory diseases:	
Influenza	878
Adenoviruses	535
All other	706
Enteroviral infections	897
Other virology	3,340
Urinary tract infections	420
Others	4,684
Review and approval	778
Reserves	0
Total	35,884

Intramural research category:	
Office of Scientific Director	320
Infectious diseases	1,749
Biology of viruses	601
Bacterial diseases	122
Parasite chemotherapy	590
Parasitic diseases	410
Germfree animal res	182
Tropical virology	541
Immunology	282
Clinical investigations	651
Diseases of animals transmissible to man	1,400
Subtotal	6,848
NIH management fund	3,619
Total	10,467

National Institute of Arthritis and Metabolic Diseases, regular research projects and intramural research, by category, fiscal year 1963

	In thousands
Regular research project category:	
Arthritis	$6,000
Dermatology	750
Diabetes	4,410
Endocrinology	12,500
Gastroenterology	8,750
Hematology	1,950
Metabolism	16,000
Nutrition	4,500
Orthopedics	2,500
Pediatrics	200
Others	6,970
Review and approval	1,185
Reserves	1,750
Total	67,465
Intramural research category:	
Nutrition and endocrinology	628
Biochemistry and metabolism	604
Chemistry	884
Experimental pathology	555
Biochemical pharmacology	401
Physical biology	1,131
Molecular biology	714
Clinical investigations	1,244
Office of Associate Director	124
Office of Director (scientific reports)	77
Contracts and agreements (formerly grants items)	108
Subtotal	6,470
NIH management fund	4,158
Total	10,628

National Institute of Dental Research, regular research projects and intramural research, by category, fiscal year 1963

	In thousands
Regular research project category:	
Periodontal disease	$814
Caries	1,029
Congenital anomalies (cleft palate)	1,697
Calcification, bone, and enamel	1,436
Growth and development	469
Saliva and salivary glands	462
Others	2,286
Review and approval	304
Reserves	884
Total	9,381
Intramural research category:	
Associate Director	83
Research services	132
Microbiology	368
Biochemistry	400
Histology and pathology	249
Epidemiology and biometry	130
Clinical investigations	799
Subtotal	2,161
NIH management fund	815
Total	2,976

National Institutes of Health, regular research projects and intramural research, by Institute, fiscal year 1963

[In thousands of dollars]

Institute	Regular research projects	Intramural research
General Medical Sciences	54,955	0
Cancer	55,632	16,169
Mental Health	51,615	10,090
Heart	85,317	10,388
Dental Research	9,381	2,976
Arthritis and Metabolic Diseases	67,465	10,628
Allergy and Infectious Diseases	35,884	10,467
Neurological Diseases and Blindness	47,412	6,716
Total	407,661	67,434

Distribution of NIH program components, fiscal year 1963

Program	*Dollars in millions*
Total	$903
Control, demonstration, and regulation	18
Biologic standards	4
Mental health control and professional and technical assistance	14
Research facilities construction	50
Research training program	201
Training grants	158
Regular fellowships	22
Research career program	19
Foreign fellowships	1
Intramural training	1
Extramural research	502
Regular research projects	408
Clinical research centers	48
Primate centers	6
Special resource centers	6
General research support	30
International centers for medical research and training	4
Intramural research	67
Cancer	16
Mental health	10
Heart	10
Dental	3
Arthritis and metabolic diseases	11
Allergy and infectious diseases	10
Neurological diseases and blindness	7
Collaborative studies	60
Cancer chemotherapy	27
Virus activities	6
Cancer diagnostic activities	3
Psychopharmacology	2
Nutrition studies	1
Perinatal research	2
Vaccine development	2
Reference reagents	3
Other	14
Program direction	5

Mr. ROGERS of Florida. We are very much gratified by your statement outlining the responsibilities of your office in giving help.

I do want to express to you the thanks of our committee of accepting the invitation to testify because I know how busy your schedule is and how difficult it is to arrange a date.

Now, it is not every day that our committee has an opportunity to hear from an eminent scientist. In your case, you combine the sciences and the experiments; therefore, your testimony is particularly welcome, and I am sure it will be most helpful to us.

Our committee faces a big problem in this legislation and I am most interested in learning that your office has scheduled a major study of the research problems of the National Institutes of Health.

I do not want to anticipate in any way this study, but I am wondering whether you agree that in connection with the research programs of the National Institutes of Health we here in the Congress are faced with a difficult problem.

The problem as I see it, is how we, as laymen, can evaluate the achievements and programs. What should our policies be in regard to these programs?

As a result of some of the criticisms which have been leveled against the administration of these programs, the National Institutes of Health has issued a new grant manual which requires a stricter accounting on the part of the grantees. Now, since the manual was issued, of course, we have received quite a number of communications criticizing the manual as limiting unduly the freedom of the research on the ideas.

There is also criticism of the requirement that the researcher whose salary is paid 100 percent by the National Institutes of Health may not teach because his time should be devoted 100 percent to the research for which he is paid by the National Institutes of Health.

On the other hand, there has been some criticism that the same scientists who have urged over the years increased appropriations for research in particular areas then served as members of the advisory councils of the National Institutes of Health in passing on the research grants, and finally these same scientists ended up with substantial grants for conducting the research in these areas.

My question is: Do you feel that this kind of procedure is likely to inspire confidence on the part of the American people in the integrity of the research grant programs?

What can you in the scientific community contribute toward reestablishing confidence in the administration of this program which must be reestablished or else we will very likely face annually the kind of situation which we here in the Congress experienced in the case of the foreign aid appropriations where a few of us had not any confidence in it, that the appropriations are being handled with any degree of competence and integrity.

Now, I realize this question has many ramifications and that you probably will not be able to go into all of them. However, I wonder whether you will be willing to take a stab at answering the question, and you are free to add to your answer in writing any material that you desire.

In any event, I would like to express the hope that your study will go into this question in depth so that we may have the benefit of your study on this important matter.

Dr. WIESNER. I will try, and if I omit an answer to certain aspects of that question, it is because I have forgotten and please call it to my attention when I finish.

Mr. ROGERS of Florida. All right.

Dr. WIESNER. First of all, I would like to say that the scientific community itself, and certainly my office, has very considerable confidence in the administration of the National Institutes of Health.

Now, I don't want to anticipate our study, for there may prove to be areas where one should be critical and maybe different forms of administrative arrangements will be necessary. But ordinarily when programs are poorly administered, or are inadequate, or there is slackness in the management, the word gets around pretty fast in the scientific community. There have been programs, and there may even be some today, in which the scientists themselves are very critical of the administration of the program. This is not true of the National Institutes of Health. The Institutes are held in very high esteem by most of the scientific community. There has been, as you indicate, some criticism of their recent activities by the scientific community, and I will come to that aspect of it later.

In regard to your first question—How can you in the Congress convince yourselves that the programs are sound, that the expenditures of these large sums of money are justified?—it seems likely that there should be continued growth in a number of areas of health which are not now adequately funded. For example, Congress saw fit to extend considerably the research activities in mental retardation and mental health and in the field of Asian flu in which there is little research and it is very likely that we will want to do additional work.

However, your mention of the environmental pollutants problem which was so dramatically brought to your attention in our pesticides report, highlights the fact that the country supports very little toxological research. So there are, in spite of this vast NIH program, still a variety of important areas about which the Nation should be concerned that are yet to be tackled.

In any event, the problem here is not at all unlike the problem the Congress has with any other field of science. An exception is the field of atomic energy, in which case the problem is the responsibility of the Joint Atomic Energy Committee and through the years it has come to know a great deal about the research program in that field. Conceivably, a committee could devote itself solely to health problems of the Nation and through the years get to know the research programs in this area. It would take a continuing and major effort to do this with a field as broad as health research. Very few congressional committees have so limited a responsibility that they can afford the time that would be required to become substantially expert in these fields.

Now, in defense research, atomic energy research, space research and basic sciences supported by the Science Foundation, the Congress has exactly the same problem: How can you tell that the money is being properly used?

I will go a step further. The executive branch of the Government has the same problem. Before I certify to the President that the National Institutes of Health program or some other research program is

sound, how can I obtain a sufficient amount of information to be able to really say this with some conviction?

In many areas in the field of defense, where we have spent years in the President's Science Advisory Committee building a background, we are really in the same fortunate position that I said the Joint Atomic Energy Committee is. In addition, my office has very substantial capabilities in many fields of science. In other fields, we have been building up such capabilities. In particular, concerning the health program, in the last 2 or 3 years there have been people on the staff studying these activities. We now have a pretty good understanding in our office for the general activities of the National Institutes of Health but I could not certify with any degree of confidence that a specific program area, unless it had been looked at by chance, was well balanced.

After we finish the study which the President has directed, we will be in a position to make much better judgments and we will be in a position to advise not only the President but the Congress.

One of the more important aspects of the creation of the Office of Science and Technology, which was essentially just making permanent the staff that has been built up around the special assistant to the President for science and technology, was that in providing a statutory organization it became possible for the Director and other members of the staff to testify before the Congress. This past year has been the first year that a person in my position has been able to do that. As we acquire understanding and information, we will make that available to you and this should be helpful.

Mr. BROTZMAN. Will the gentleman yield?

Mr. ROGERS of Florida. Yes.

Mr. BROTZMAN. What, specifically, did the President direct you to ascertain?

Dr. WIENER. Well, we are going to make a review of the areas of research in the National Institutes of Health program, to try to get a feeling for the details of as many of the individual research activities as possible.

We probably won't go into intensive detail on all of them. That would take too long. We are going to try to devise, working with the National Institutes of Health staff, a sampling procedure so that we can end up with a judgment about the quality of the research activities, both within the Government and the research that is supported outside. In addition, we hope to make a judgment about the balance of research between the fields; that is, whether our individual problems are being tackled on a scale that is commensurate with their importance.

Mr. BROTZMAN. Who has the feeling for the details now in this area?

Dr. WIESNER. You mean independent of the committee?

Mr. BROTZMAN. Yes.

Dr. WIESNER. Well, the National Institutes of Health are in the Department of Health, Education, and Welfare.

First of all, the Surgeon General of the Public Health Service and the Secretary of Health, Education, and Welfare within the Department have a responsibility, and within the Executive Office my Office has had a responsibility for advising the President on the value and merits of these programs.

You see, the Office of Science and Technology is new and we are just now developing procedures and means for making such judgments. This is our first major effort in the health field.

Mr. BROTZMAN. The National Institutes of Health are under your——

Dr. WIESNER. The National Institutes of Health are under the Secretary of Health, Education, and Welfare. I have no operating responsibility for them. You see, I am a member of the President's staff, but with responsibility for giving him advice and assistance in all fields of science and research. Medical affairs constitute one of the fields that we are continually concerned with.

Mr. BROTZMAN. See if I can get this in my mind.

I don't mean to detract from the colloquy of your testimony, but do I understand that on behalf of the Chief Executive you are to look this whole program over and see if it has direction; you are trying to get a feeling for detail is your exact purpose?

Dr. WIESNER. Mr. Congressman, before you came in, I gave a brief description of the purposes of setting up my office.

One of the important motivations for its inception was the fact that as the research and development programs of the Government have grown from $100 million 10 or 15 years ago to $14 or so billion today, they have changed from an area that really did not require very serious Chief Executive attention to one of his most serious problems. About a third of the expendable budget which is not fixed costs of doing Government business is expended in the research and development field; and while they have great confidence in all the agencies, the Presidents have found they have a need for somebody who is essentially on their own team who can give independent technical judgments and help make independent allocations. Obviously, any good secretary or any good director of an officer is a proponent of his program; if he does not believe in it, he should not be there. The President needs somebody who can provide him some independent balance, and my Office has been set up to do that in all the fields of science.

We are talking today about one very important one; the field of health research.

Mr. BROTZMAN. What is your relation to the Federal Council for Science and Technology?

Dr. WIESNER. I am the Chairman of the Federal Council.

You see, the Federal Council for Science and Technology consists of the principal highest ranking scientific officer in each of the eight or nine agencies that have most of the Federal research and development.

For example, Chairman Seaborg of the Atomic Energy Commission sits on the Federal Council; Dr. Harold Brown who is Director of Defense Research and Engineering sits on the Federal Council, as well as a number of other such people.

We like to call the Federal Council a sort of subcabinet for science although it is not formally designated that. We deal with interagency problems of science and technology, interagency coordination.

Mr. BROTZMAN. Thank you.

Mr. ROGERS of Florida. How often does your Council meet?

Dr. WIESNER. It depends on the problems that we deal with. It is supposed to meet once a month; it generally meets twice a month.

Generally, the subgroups of the Council meet more frequently. They have a number of panels that deal in special research areas; for example, a panel on natural resources.

Mr. ROGERS of Florida. In your office, you coordinate the work?

Dr. WIESNER. That is right.

I have a staff that provides the secretary for the Federal Council but the panel members come from the participating agencies. Generally, the panel chairmen are from one or the other of the operating agencies.

Mr. SCHENCK. I am very much interested in Dr. Wiesner's testimony.

I don't believe it has been established here just what is the basis for your degree as a doctor.

Dr. WIESNER. I am an electrical engineer, actually, and have studied a great deal of radio physics.

Mr. SCHENCK. So, as an electrical engineer and radio-physicist and so forth, you are directing the scientific setup?

Dr. WIESNER. That is right. I would not want to maintain that I am personally qualified to judge these programs but I have a staff of people who are professionals in various fields. There are two men on my staff that have medical backgrounds.

The President's Science Advisory Committee has a Life Sciences Panel which will conduct the study of the National Institutes of Health. Members of that panel are in the medical field with biological research experience and backgrounds.

The President's Science Advisory Committee, itself, has several life scientists on it so that we have a medical competence on the panel.

Mr. SCHENCK. Now, Dr. Wiesner, I notice in the second paragraph of your statement you say that the Office of Science and Technology was established June 8, 1962, by Reorganization Plan No. 2.

Was that reorganization plan approved by the Congress?

Dr. WIESNER. Yes. It was.

Mr. SCHENCK. I just didn't recall.

Dr. WIESNER. In fact, we are very pleased with the reception it received in the Congress.

Mr. SCHENCK. So, you operate independently as a member of the White House staff?

Dr. WIESNER. Yes. I actually have two roles now. I operate as the President's Special Assistant for Science and Technology, and then I direct the Office of Science and Technology in broad surveillance and responsibility for both the President and the Congress.

Mr. SCHENCK. It would seem that this pretty well crosses the congressional responsibilities, too, to determine the value of these several programs.

Now, what is the total budget of your office?

Dr. WIESNER. $750,000 this year, and we have asked for something slightly over a million dollars for next year.

Mr. SCHENCK. Roughly a million dollars.

How many people do you have?

Dr. WIESNER. We have 16, I believe, full-time professional staff, plus secretarial help. We depend, of course, very heavily on the assistance we get from the agencies and from the very large scientific consultant group that we draw on for specialized problems.

Mr. SCHENCK. The scientific consultant group, are they a separate contract obligation?

Dr. WIESNER. We pay them by the day as consultants. Some people, of course, don't accept payment. We pay only their expenses.

Mr. SCHENCK. How much is that?

Mr. WIESNER. Well, it is part of the same budget. The total office budget which includes the payment to travel of the staff, pay for the consultants and travel of the consultants is about $750,000.

Mr. SCHENCK. So, actually, your office assembles the information you receive from the various agencies of the Government and then attempts to make a judgment on their competency, efficiency, et cetera; is that correct?

Dr. WIESNER. Yes; in certain areas.

Mr. SCHENCK. Recently, I read that there was too much research being done and actually not enough personnel left to treat the people with illnesses.

Would you go along with that idea?

Dr. WIESNER. That is a hard question to answer because it is a matter of judgment.

I am aware of the fact that there is a shortage of doctors in the country. Whether or not we ascribe it to the fact that we are doing too much research or whether we ascribe it to the fact that medical training is extremely difficult and costly, I must note that there are also an increasing number of other attractive professions, of which research is one.

I don't know, but certainly there is no question but that there is a serious problem with regard to attracting adequate numbers of people into medical practice.

Mr. SCHENCK. Actually treating people?

Dr. WIESNER. That is right.

Dr. SCHENCK. This committee and the House approved the bill to increase certain allocations for medical facilities and that was one of the questions which has not yet been answered to my own personal satisfaction, whether or not too many physicians are being lured into research or teaching and not actually available to treat patients.

Dr. WIESNER. We tried to explore that question last winter, as a matter of fact. The President's Science Advisory Committee had a panel that explored many problems in the field of scientific manpower because there are critical problems not only in the field of medicine but in other fields as well. We spent several days assessing the figures which exist on this whole scientific manpower field. The data are so poor you can prove almost anything you set out to prove.

There is no question, however, that more people are being attracted into medical research than were before. We tried to establish the quality of the people who are being attracted into medicine; we have talked with some of the people and I don't believe you can make a very firm judgment on the matter.

We did become convinced that if one wanted to make medical practice an attractive career, competitive not only with medical and biological research but also with physical sciences research and engineering which the country is supporting, one had to provide the same kind of opportunities for education that are now provided in these other fields.

This is why we have all been so heartened by H.R. 12. The field of medicine today is a hard field in which to get support for the necessary long education; harder than in the other sciences.

Mr. SCHENCK. Yet, in the field of education recently, a New York Times report was that between 65,000 and 100,000 spaces are available for freshmen in colleges that are not filled, and your comment that the figures would enable you to prove most anything is quite interesting.

Now, you and your staff have been working on the problem as presented by the greatly increased use of pesticides. There has been a great deal of comment in the papers and magazines and other media on that question. It seems to me that these problems cut across several governmental agency levels, Federal, State, and local.

Do you care to mention some of the different agencies and the summaries and their respective responsibility?

Dr. WIESNER. Yes. I didn't come prepared to discuss this particular problem, so I may leave some out.

The principal agencies are the Department of Agriculture and the Department of Health, Education, and Welfare, but then in addition the Department of Interior with its responsibility for fish and wildlife is also concerned within the Government.

These are the three major agencies that are involved. There are many others that have some interest in the problem.

Mr. SCHENCK. I noticed in the paper recently that the distinguished Senator and former Secretary of Health, Education, and Welfare was critical of the fact that the Department of Agriculture was not making its information on pesticides, et cetera, properly available to the public.

Is that true or not?

Dr. WIESNER. It is my impression that that was a misunderstanding, but maybe I can have my memory supplemented.

As I recall the issue was that someone in the Agriculture Department refused to give a newspaperman the names of the chemicals which were being registered under protest, but I don't believe that these were held private. This was information that was generally available, and I believe it was a misunderstanding in the Department and a misunderstanding with the ex-Senator rather than a statutory agency procedure.

Mr. SCHENCK. Now, as an excuse for the continuation of your Office of Science and Technology which you say here can play in aiding and coordinating the Government's participation in health research and training, are you supposed to coordinate the efforts of these agencies or can a single agency do the job?

Dr. WIESNER. Sir, that is a matter that is being studied at the moment and I probably should not make a statement about it because there are several conflicting proposals having to do with different arrangements between agencies each of which has certain responsibilities.

We expect that within the not too distant future we will be able to make a recommendation to the President which he can send to the Congress if it is necessary that we have additional legislation to control the problem.

I think it would be premature for me to give you any judgments on it at this time.

Mr. SCHENCK. Your Office, then, is attempting to determine whether or not responsibility for pesticides and insecticides and fungicides and that sort of thing can be concentrated in one agency?

Dr. WIESNER. No. First of all, we are working with the Bureau of the Budget which has the responsibility for making organizational recommendations to the President and they are taking the lead. We are among the various groups that are participating in the discussions.

Whether or not there is a decision to make a recommendation that a single agency do it or some interagency mechanism be set up is still a matter that is being discussed.

Mr. SCHENCK. In the meantime, costs of the administration and those things go up without any real actual benefit to the public; isn't that true?

Dr. WIESNER. Let me say that, first of all, I don't believe costs of administration are going up faster than the costs of doing the research.

Secondly, I do think the programs are very much larger than they used to be; they are growing very fast.

As I said earlier, when we had the national research budget of only $100 million spent by all of the Government agencies for research and development, the problem of administration was very different than today when it is $15 or $16 billion a year.

I think you should expect that when your research expenditures go up, the cost of administering the program should not go up faster than a certain percentage relative to the cost, but you cannot expect to administer a $15 billion program with the same mechanism and with the same expenditures used to administer a $100 million program. Certainly, industry could not operate with the same top level administration if it grew a hundred times and I believe that one should not expect the Federal Government to run its programs effectively without evolving an administrative mechanism adapted to the changing activities.

Mr. SCHENCK. I think that is a fair statement.

At the same time, private enterprise does not continue to have round-table discussions and reports from special advisory panels outside their immediate and directly responsible personnel as to how this or that can be done more efficiently in a particular area, does it?

Dr. WIESNER. Oh, I think it does—at least the food industry does. One of the important things that the good industry does is to survey its operations and try to find out how to make them more effective.

I know in many instances that industry is looking at its own activities of administration to improve them.

Mr. SCHENCK. Manpower utilization?

Dr. WIESNER. Pardon?

Mr. SCHENCK. General Motors, I believe, is one of the largest corporations in the world. Now what percentage of its budget, if any, is used for the purpose of studying the efficiency and efficacy of the operations of its own regular staff people and to evaluate proposals for the information and guidance of its president.

Dr. WIESNER. I have no idea. I could find out, if you like.

Mr. SCHENCK. Actually, I would like to know.

Mr. ROGERS of Florida. Thank you.

Mr. Brotzman?

Mr. BROTZMAN. Thank you, Mr. Chairman.

Doctor, you have been in this job, I would assume, since June 1962 or possibly later than that?

Dr. WIESNER. Actually, I have been on the White House staff since January 20, 1961, because I came in with the President. I was made special assistant to the President for science and technology and this involved dealing with very specialized problems rather than being concerned with the whole broad field of science and technology.

I have been in this job as Director of the Office since, I believe, the 8th of July, which was when we obtained an Office budget to begin operating.

Mr. BROTZMAN. Now, in your statement, you say that you made extensive effort to understand the broad implications of the current research program. That is a broad statement. This is a broad question.

What are the broad implications of the current research program?

Dr. WIESNER. Are you restricting this to health?

Mr. BROTZMAN. Using it in the same connotation that you used it in your statement. That is what I am trying to get at.

Dr. WIESNER. Well, we are concerned with a number of the problems. One of the things that has been much on my mind since I took this job is one that I know is much on your mind too; that is how much research and development is healthy for the country? Are the programs growing too fast? Is this investment in research and development a good, healthy investment? Should we try to slow it down?

Research and development constitute the fastest growing industry in the country. The manpower in research and development doubles about once a decade. This has been going on, incidentally, for about 40 years. It is not a new phenomenon. The population is only doubling once every 40 years. Is this growth good?

Are balances among the fields proper? Are we ignoring certain fields because we are too interested in health or too interested in defense? Are we trying to understand the impact research and development have on scientific education needs?

Are we going to have enough technical people for the next decade or two?

These are the questions that were implied by that statement.

Mr. BROTZMAN. I see.

Now, implicit in that, I assume is the fact that you try to ascertain if there are needless and costly duplications?

Dr. WIESNER. Yes, although here again it is a question of terms. We link together, in the terms research and development, a variety of activities. Can I take the time to elaborate on this?

Mr. ROGERS of Florida. Yes; go right ahead.

Dr. WIESNER. I don't want to use up too much of your time.

These activities include, on one side, the university professor and his graduate students who are exploring the atom or the cell or the universe to try to learn something and who are motivated by a desire just to get additional understanding of the universe and ourselves. Research and development ranges all the way from such academic activities to building ballistic missiles or building a booster to put a man on the moon.

Now, the largest part of the Government's costs are in these latter development activities. In between basic research—research for new

knowledge—and the development of a specific piece of hardware such as an airplane, missile, radar, and so on, is the field of applied research.

When a new scientific discovery comes along and it appears to have a practical application, you study it to see whether it can do something useful that nature permits and society wants it to do.

You may learn how to make higher temperature material as part of your basic research and then somebody asks the question, "now can I make a better jet engine?" This will be applied research. If the answer is yes, then you may go into a development program.

Now, basic research tends to have different characteristics than applied research and development. Basic research may have direct importance as, for example in cancer, understanding the functions of how a cell operates, how cells divide; what the basic materials of a cell are will give us some understanding of life processes. In basic research you may have many people doing similar things—graduate students in many places, professors in many places—interested in what you might superficially call exactly the same problem.

This should be encouraged because in any given field the likelihood that an interesting piece of sicentific knowledge will be discovered is just proportional to the number of good people who are working in the field; you cannot predict which man is going to have the inspiration or who is going to be the genius.

Mr. BROTZMAN. Could I interrupt you?

You are mentioning people doing this in institutions and for the Government.

Now, I would assume that this research and development is also going on under the aegis of privately owned companies; is this not correct?

Dr. WIESNER. Very nearly all basic research—that is, searching for new knowledge—is done in the universities. Though there is some done in Government laboratories and there is some in the better and bigger industries, but, by and large, brandnew knowledge is primarily the creation of professors and their students in the universities.

Mr. SCHENCK. Would the gentleman yield at that point for a question?

Mr. BROTZMAN. Yes.

Mr. SCHENCK. It has been my understanding that the basic reason for the existence of universities or colleges is to instruct and educate students who want to go to that university or college.

Now, has your office made any judgment as to the amount of time the colleges are spending on educating their students as compared to conducting this research an a wide variety of questions? Are they just becoming research laboratories that are fostered and supported by grants of one kind or another, or are they institutions of learning?

Dr. WIESNER. Well, we have looked at that in detail for it is an area of real concern.

First of all you must appreciate that most research done in the universities is done as a part of the teaching activity. If you want to train a man to be a research worker, if you want to make a scientist—physical scientist, atomic physicist, computer expert, a biological scientist—he can only be trained in research by doing research.

It is not always appreciated that the graduate teaching in the universities that leads to the doctor's degree is primarily teaching in the

laboratory or teaching a student by example. The best, really the only way we know how effectively to train a man to do research is by doing research, and the most effective research team is a bright young fellow who is going to work very hard with a knowledgeable professor, working together as a team. Almost all new knowledge that is developed in science is generated this way.

As we have pressed the universities to turn out more and more scientists, they have found it necessary to do more and more research. So, the research that is done as part of the academic program and the teaching cannot be separated. This is not necessary for undergraduate teaching but it is vital graduate teaching in science. In my opinion, it is desirable in undergraduate teaching, as well.

In any event, this particular activity of searching for new knowledge is a field in which great numbers of people can work on very closely related problems. If the research people are good, in other words, if they are competent people, one does not have a concern about the duplication unless it is taking people and money from another important area.

But you should at least be concerned with the balance among programs. For example, recently, a new machine called the laser has been devised. It is a device for producing light which appears to have very important industrial and defense applications and everybody in industry and many people in the universities are bulging with ideas of what they can do with this.

We need to explore whether those ideas are practical or not and this takes research activity, too. This we call applied research. I think there is no excuse for having large numbers of people trying to develop exactly the same device. It is probably advisable to have some duplication, but not nearly as much as in basic research.

This is important because applied research is usually much more costly than basic research. When you have shown some basic scientific information can be used to do something useful that we want for society, either for military or medical reasons, it then has to be developed.

The development activities are primarily industrial although there are some Government laboratories and a few university laboratories involved. Here is the place where we can get into the most costly kind of duplication. To develop a rocket or to develop an aircraft or develop a new radar is extremely expensive. It is in this activity where we should be extremely careful to avoid duplication unless there is an urgency that requires it. It is also an area where we should not decide to do something unless we are convinced the piece of hardware we get when finished is important and does something a lot better than a piece of equipment we already have.

So, when you talk about a duplication in research and development, you have to have in mind this full spectrum of activities. In the basic research field, duplication is useful; it is important; and it should be governed by only how much money you think you can spend in the field.

In the development of expensive pieces of equipment, we ought to be awfully hard boiled about permitting duplication.

Mr. BROTZMAN. Now, going from the rather general question to something specific: You mentioned in your statement that you filed a report relative to the technical aspects of drug abuse.

Now, what did your agency do and what did you find out?

Dr. WIESNER. Well, Dr. Bing was the staff man with that problem.

What we did was to assemble as a subpanel of our Life Sciences Panel, a group of experts——

Mr. BROTZMAN. Just a minute.

I have a hard time keeping up with all the different panels.

You are talking about the Life Science Panel?

Dr. WIESNER. The President's Science Advisory Committee has a Life Sciences Panel.

Mr. BROTZMAN. Under the President's Advisory Committee?

Dr. WIESNER. Yes.

Mr. BROTZMAN. And this is the life science panel?

Dr. WIESNER. Yes; which is a group of medical and biological experts that assist me with problems in life sciences.

Mr. BROTZMAN. Are you the chairman of that committee?

Dr. WIESNER. I am the chairman of the President's Science Advisory Committee but not the panel.

Mr. BROTZMAN. That is like a subcommittee?

Dr. WIESNER. Yes.

Mr. BROTZMAN. You said you are the head of the Federal Council of Science and Technology; right?

Dr. WIESNER. Yes.

Mr. BROTZMAN. All right.

So, the life science panel of the President's Science Advisory Committee was assigned the task in the area of studying the technical aspects of drug addiction?

Dr. WIESNER. Yes; and Dr. Bing was the full-time member of my staff, along with some other people we had to assist us, who provided full-time staff work for the panel. The panel was assembled from people who had various interests in drug addiction, people who had been working on physiological and pharmacological problems of drug addiction, people who were working on the relationship between the medical problems and the social problems, psychologists who were interested in rehabilitation, et cetera.

It was a broadly representative group and they spent 3 months in very intensive activity. Dr. Bing and some of the other members visited most of the research facilities. Dr. Bing, himself, went to many of the particular institutions, for example, the one in Kentucky.

Mr. BROTZMAN. You mean Lexington?

Dr. WIESNER. Yes. They looked at what the present problems were, what the scope of the problem was, what was known medically about it, what was known about rehabilitation, what the people from the Justice Department said the legal problems in the various States were.

They filed a report making certain recommendations with regard to medical activities and research activities that we needed. They made recommendations with regard to rehabilitation procedures and they made recommendations with regard to legal procedures having to do with regulation.

Then this report served as a basis for the White House Conference which the President called in the fall on drug abuse and many of the recommendations of the panel were the subject of panel meetings in that large conference.

This was rather a specialized activity because of the special problems with which the President was confronted in the drug addiction area.

Mr. BROTZMAN. Now, you pulled all this information together and filed a report?

Dr. WIESNER. Yes.

Mr. BROTZMAN. Now, it would seem that one thing you would be looking for, in addition to just getting the facts, would be ways to effect savings from the taxpayers' standpoint.

Did you find there is a great deal of duplication on this one specific problem, which I have to agree is a critical problem?

Dr. WIESNER. As a matter of fact, we found there was a woeful lack of anything going on in the field, and that there were a lot of myths and misunderstandings about the effects of drugs.

One of the interesting things that the panel found, and we reported this not only to the group but to Health, Education, and Welfare, was that there are other areas of drug abuse which we don't commonly call drug addiction but which may be much more serious; barbiturates, for example.

What do we do about coordination? The Department of Health, Education, and Welfare, which has principal concern for the research and responsibility for medical care in these areas participated in the study and followed up much of what we are doing. Since the President's Conference there have been a series of attempts both within the Government and outside to rationalize the research activities and increase recognition of the importance of rehabilitation procedures.

The Justice Department, in particular, has taken the lead in trying to bring the facts we found to the attention of the people.

Mr. BROTZMAN. Now, sticking to this specific area, I thought that physiologically it was pretty well established what the physical manifestations were that caused drug addiction. Is this not correct? I thought it had been for some time.

Dr. WIESNER. You are talking in a field which I can only talk from hearsay.

I have heard discussions on it but I am not an expert.

It is my recollection of these panel discussions that many of the drug addicts are not physically dependent upon the drug they are using. We know what the symptoms of drug addiction are but the fundamental biochemical effects of drugs on nerves, for example, or on call drug addiction but which may be much more serious; bartiturates, muscle fiber and other parts of the human body are just not understood, in common with many of the other problems that you encounter.

In the pesticide report, for example, the strongest single recommendation we make is the importance of trying to understand the effects of these chemicals on the human body.

These are all problems, of course, which you find spread through the research activities of the National Institutes of Health. For example, in the Neurological Institute, one of the extremely important problems is to find out how the nerve fiber behaves, what the chemical activities are that take place, what the impulse is on the fiber and what the effects of the different chemicals, including drugs, are on the operation of the nerves and transmission of its signals.

Mr. BROTZMAN. I don't want to get into medical testimony, but I have read this so many times; it is my understanding that in your nervous system you have some particles called Nissl's granules.

Dr. WIESNER. Say that again.

Mr. BROTZMAN. N-i-s-s-l-'-s granules, and, as you take a narcotic, it has the effect of covering these up or deadening them, and your body produces many more of the granules so that it continually takes more of the narcotic to derive the same sensation.

Dr. WIESNER. Maybe what we should do is submit a copy of our report. I am just not in a position to discuss this.

Mr. BROTZMAN. I am a layman, too, but you are working in this area and I want to know.

I am wondering if this whole thing medically is incorrect, or have you found something else in this area that we should know about?

Mr. ROGERS of Florida. If you would like Dr. Bing to answer, he may, if you will identify him for the record.

Dr. WIESNER. Let me say just this: We can prepare a statement, if you like.

First of all, there are many kinds of drugs and their effects are in different parts of the human system; most of them, I presume, on the nervous system. The biochemistry of the nervous system is complicated and not understood. This happens to be an area I know something about, because in my laboratory at MIT, where I was before I came here, one area of research was a very large activity in neuropathology, trying to understand the behavior of the nervous system.

I think it is fair to say no one understands the biochemistry of the nerve; it is extremely complicated.

Mr. ROGERS of Florida. What is the doctor's name?

Dr. WIESNER. Dr. Bing.

Mr. ROGERS of Florida. What are his qualifications?

Dr. WIESNER. He is a medical doctor who has been interested in both practice and research, and he is a fulltime member of my staff. He assists me on these problems. He was the staff member of my group that worked full time in narcotics.

I feel very safe in saying that each of the drugs will have a somewhat different effect, and I don't believe that you will find that any single effect is taking place and that this is the thing that is responsible for withdrawal symptoms.

As I said at the very beginning, there are a tremendous number of myths and misconceptions and misunderstandings in this field.

Mr. BROTZMAN. This is what I want to ask you next: What are some of these myths and misconceptions that we have been laboring under?

Dr. WIESNER. Well, they have to do, for example, with the general belief that people who take certain drugs are extremely dangerous when, in effect, many of the drugs, make people quite inept and quite docile, and that the crimes that are committed by the people who are drug addicts are usually petty crimes that they engage in to get the money that they need to buy narcotics. This is one of the most common misconceptions.

Mr. BROTZMAN. How about cannabis sativa?

Dr. WIESNER. I don't understand.

Dr. BING. I am Dr. Bing of Dr. Wiesner's staff.

When you say that, I think you are speaking of marihuana.

Mr. BROTZMAN. Yes.

Dr. BING. People who use this drug commonly take it by smoking it in tobacco or something else. Now, these people are generally not involved in crimes of violence as opposed to those, for example, using cocaine, who may have real delusions and hallucinations, and who become very frightened.

Mr. BROTZMAN. This is completely at odds with my experience with those who smoke cannabis. We found many crimes of violence in our jurisdiction from those under the influence of this particular—well, under the influence of marihuana. Isn't this the case?

You say that people are not prone to crimes of violence; yet, if the person is addicted and can't get a narcotic, he will do virtually anything to get it and that includes getting a gun and holding up a business house or an individual, if necessary; is that not correct?

Dr. BING. Yes. I think we have to distinguish between crimes which may be a direct result of the drug, itself, as perhaps in the case of cocaine, and other crimes which are committed as you suggest to get money for the drug.

I should point out, however, that marihuana is not a drug which produces physical dependence.

Mr. BROTZMAN. I understand you don't have the physiological changes that you do from heavy drugs.

Now, the end result, not to belabor the point, is that whether a person is under the addiction of a drug or if he is merely getting a gun to get the drug, the end result, as far as society is concerned, is the same; they are both related to the drug, so we have to look at it from that viewpoint, I believe.

Dr. WIESNER. I would suggest we file a copy of our narcotics report with our testimony.

Mr. BROTZMAN. I don't mean to get into too much detail in this regard, but you mentioned this report in your statement and I am trying to pull something specific out of your statement so that I can understand it.

Dr. WIESNER. We will send you a copy of the report.

I believe there are proceedings of the President's Conference on Narcotics and Drug Abuse.

Mr. BROTZMAN. To make myself very clear, I want to know what you did in this specific area, what your agency did and what the effect of it was in this overall problem.

I am just picking one out because that is the only way I can test it.

Dr. WIESNER. I would like to repeat, as I did, that this particular problem is a special one; narcotics addiction is not a problem that my office is concerned with in a continuing way.

The President felt that he should call a conference on narcotic addiction because it was a national problem of some importance. To prepare for that conference, we took on the responsibility of conducting this study and producting the document we are talking about. We have not retained the responsibility for implementation of the recommendations of that study and I have not followed it, so I don't think I should testify on it.

I could take some other areas where I do have a continuing responsibility and we could talk about those.

Mr. BROTZMAN. Let me ask one more question about this one point because obviously there is research going on in this area.

Dr. WIESNER. That is right.

Mr. BROTZMAN. Now, you say this is not under your jurisdiction; is that what your last testimony was?

Dr. WIESNER. No. The research is, but the problems of narcotic addiction are not. The President's Conference on Drug Abuse ranged broadly over problems of narcotics addiction and research was one small problem along with the legal aspects and the rehabilitation problems.

Mr. ROGERS of Florida. May I interject to say that I think probably, Doctor, it might be helpful that the function of your office is really a coordinating agency for the President.

Dr. WIESNER. That is right.

Mr. ROGERS of Florida. Not going into responsibilities of research in themselves. I think that is the point you are trying to get out, looking at the overall program for the President and pointing up the problems?

Dr. WIESNER. We may follow a specific area of research if we think it is very critical. For example, we do follow space activities with great interest.

The point I am trying to make in regard to the narcotics study was that it was not something we normally would have done. It was done in that way because of the importance of having good preparation for the President's Conference.

Mr. BROTZMAN. May I take one more comment?

I happen to think this is a very important area of endeavor. I also happen to believe that the problem requires integration and coordination.

I noticed on page 2 of your statement, paragraph 3, it seems one of your duties is "to review, integrate and coordinate." I suggest there might be some coordination to make it more effective.

Dr. WIESNER. The President has established an Advisory Commission on Narcotic and Drug Abuse to provide the coordination you are talking about, but this is a result of the study which we did and the White House Conference which we had in the fall. You are right. There should be and apparently there is such a coordination.

Mr. BROTZMAN. I think you were making a distinction a moment ago when I interrupted you about a subject that falls within your realm more specifically, and something such as the narcotics report which you said, was a kind of a one-shot program or at least you had this implication.

Now, talk just for a minute about the overall general programs that you are working under.

Dr. WIESNER. For an example, take the field of water resources. We are attempting to maintain continuous surveillance of the research activities in the field, and we have established a Federal Council Panel on Water Resources.

We have brought into my office a staff man who will have full-time responsibility not only for bringing together, as we are now doing, all the research activities and having inter-agency meetings to try to decide who will pick up new responsibilities, but also it is going to be his job to get familiar enough with the details of the research in this

field to have his own judgment as to the quality of it so that, unlike the narcotics study, which was a one-time activity, we will maintain a continuing effort to coordinate, understand, and plan water research activities in the Government.

Mr. BROTZMAN. This is a matter of great interest to me coming from Colorado.

Dr. WIESNER. Yes; I imagine it would be.

Mr. BROTZMAN. How many difference Federal agencies are presently making studies of water?

Dr. WIESNER. Well, including the different aspects of it, I would not be surprised if there are at least a dozen or more, although a few very large agencies like Interior, Defense, Health, Education, and Welfare, are the biggest.

I am sure that Commerce has some specialized activities and I suspect that if you look around you would find things that we would not classify as water resources research in several other agencies.

Mr. BROTZMAN. Are you going to try to pull all of these together?

Dr. WIESNER. Well, we did last year, in preparation for the fall budget hearings. We assembled it all and, in fact, we issued a rather substantial report in the early spring for the Congress on water resources research in the Federal Government. In preparation of the budget we had a number of sections in which we tried to understand the objectives of each of the agencies to fit them together.

Now, if you recall, I said these were new operations and just precisely how effective they are going to be in some of these areas, I would not like to predict. In some I think we will be able to make major contributions; in other fields, by their very nature and the present distribution of responsibilities, it may not be necessary to do very much to coordinate them.

Mr. BROTZMAN. What is being done in desalinization?

Dr. WIESNER. That is largely the responsibility of one agency, the Department of the Interior, and there is a very extensive program there of building plants, supporting basic research and attempting to find cheaper ways of taking salt out of water. As you know, the problem is not one of being able to take minerals out of water; the problem is finding an economically feasible process.

We have all the activities of the Department of the Interior's office in the desalinization of water. In addition to that, we have an interagency group of the Department of the Interior, Atomic Energy Commission, and my office making paper studies to see if we should go more deeply into the development of an atomic energy plant for this purpose. These organizations are studying the problem and if it looks feasible when we finish the paper studies, we will probably recommend that we carry out experimentation in the field.

Mr. BROTZMAN. Do you work with the assistant director?

You asked to have each of these different departments, as I understand it, appoint an assistant director of science and research.

Dr. WIESNER. Several of the departments have; not all the departments. Some departments don't have enough research and development to need it.

But in the Department of the Interior, the Department of Commerce, and the Defense Department, we have such people. I believe that such a person is needed in the Department of Health, Educa-

tion, and Welfare, although there is not one at the moment to coordinate their internal activities and to make a more effective liaison with our office.

Mr. ROGERS of Florida. Doctor, I would like to go into this business of overall coordination.

For instance, you mention fallout protection where you had coordinated the agencies here. I believe three agencies you mentioned, trying to bring in the proper judgments as to the level of fallout, I presume, the hazards there and also the possible biochemical effects of fallout, bringing in integration for the national monitoring network.

This work, now, is this a continuing responsibility of your office?

Dr. WIESNER. This is a complicated problem.

Several aspects represent continuing work; others not. The responsibility for making recommendations to the President on the problem of fallout is vested in the Federal Radiation Council and that Council has members from the Department of Health, Education, and Welfare, the Department of Agriculture, Department of the Interior, the Defense Department, Atomic Energy Commission, Department of Labor, I believe, and then the Director of the Budget ex officio.

That is the group which makes the recommendations to the President and is supported by the medical staffs and physical science staffs from the Department of Health, Education, and Welfare and the Atomic Energy Commission.

Mr. ROGERS of Florida. Let me ask you: Have you established the level which is hazardous? Has this level been established?

Dr. WIESNER. No. There is no such thing, sir, as a level of hazard.

Mr. ROGERS of Florida. There is not?

Dr. WIESNER. There are degrees of danger which go from zero to unity, depending upon the intensity of the radiation.

Mr. ROGERS of Florida. I think in the public mind——

Dr. WIESNER. In the public mind there is a feeling that there should be a number and here again is an area where it is hard to make judgments because of the scarcity of information.

In all of these problems, like the pesticide problem and the radiation problem, you are not concerned with the doses of a chemical or radiation that are going to make obvious effects. What you are concerned about are very small and long-term exposures.

In the case of the pesticides, we are interested, for example, in whether a 50-year exposure of DDT has any significant effects.

In the case of radiation, we know from research already done and from studies of natural radiation how to put bounds on the effects of radiation. We can say it is not larger than a given quantity but it could be a thousand times or more smaller.

The data are so bad that in trying to deal with these problems we are finally forced to go back to the medical people and say, "Tell us the ranges in which you think it is perfectly all right to expose people and the range above which we should be concerned."

In the case of fallout, the data still seem to indicate that fallout, even at the levels at which we are operating, is very far below the levels in which you would have to regard it as a health hazard. On the other hand, if you look at it from a quite different perspective, the levels of fallout are certain to cause some effects. The numbers of

people affected are undoubtedly small but, nonetheless, one has to admit that there is going to be 1 person in a million or 1 person in 10 million or 1 in a number which you cannot tell who may contract leukemia or cancer or some other difficulty as a result of the testing.

So, it ends up being a judgment again.

Mr. ROGERS of Florida. I realize that.

Dr. WIESNER. The only thing the medical people have been willing to say so far with any surety is that the levels of fallout today are far below those which we should be concerned with. When we ask, Should we be concerned whether they go up 10 times or 100 times or a thousand times? they all shrug their shoulders, and so far have not been willing to commit themselves.

Mr. ROGERS of Florida. Just 1 minute.

This is the point that I thought you were coordinating on, for instance, to make these judgments.

Dr. WIESNER. No. The Federal Radiation Council, which the Secretary of Health, Education, and Welfare——

Mr. ROGERS of Florida. He and not you?

Dr. WIESNER. Yes. I work with him and he is making a very determined effort to provide better standards.

I am just describing his difficulty with the scientists.

Mr. ROGERS of Florida. I can realize the difficulty, but that is what I thought.

Dr. WIESNER. Let me go on.

Mr. ROGERS of Florida. Pointing up the problems that have to be met.

Dr. WIESNER. I would like to finish answering your question.

There is this ongoing activity which he is in charge of and I participate in but, in addition to that, there is a budget process. At one stage last year, there was a request for supplemental money from Health, Education, and Welfare, I believe, for additional monitoring equipment for fallout. Well, we knew that the Atomic Energy Commission and the Defense Department and HEW already carried out monitoring activities, and by coordinating them we were able to greatly reduce the total amount of new money that was needed.

Mr. ROGERS of Florida. Thank you.

Let me get back now quickly to two or three questions about NIH.

I believe you say that NIH supports grants of about two-thirds of the Nation's biometric research activities. Now, if these grants are used to support, say, across-the-board activities rather than specific objectives, then I presume we are faced with a different problem as it comes to evaluating the effectiveness or the shortcomings of such proposals.

Would this be true?

Dr. WIESNER. I don't believe so, if you accept the principle of the desirability of basic research support, because then one has to judge it in terms of whether or not it is good research.

Mr. ROGERS of Florida. How much of the budget is devoted to the basic research?

Dr. WIESNER. By their definition, about 40 percent of the NIH budget goes for basic research in the sense that it is trying to find underlying knowledge.

You take page 19 of your statement. You see they have an extramural research, $502 million, but you see they do include research in here.

Mr. ROGERS of Florida. So, the extramural research is what you call basic research.

Dr. WIESNER. It is certainly not what you are talking about when you talk about the across-the-board support. Most of this is in categorical areas. I will supply that.

Mr. ROGERS of Florida. Will you supply that? I think it would be good to have a judgment if you can make such a judgment. Perhaps you will not be able to until you make the study. It is helpful, I think, to the committee to know when they feel they are making an effort.

Dr. WIESNER. I probably should withhold any real judgment until we finish the study.

Mr. ROGERS of Florida. Yes.

Dr. WIESNER. I might embarrass both you and myself.

Mr. ROGERS of Florida. Yes; because, of course, I would think intramural research could just as well be basic as well as extramural.

Dr. WIESNER. A very large share of this is basic research, but I was trying to distinguish between research in a categorical area and what you were talking about as across-the-board research which I presume would mean support of chemistry which might very well be done by the National Science Foundation or some other group.

Mr. ROGERS of Florida. And, also, I would be very anxious, and I think the committee would be anxious, to know, and I presume this would have to wait your study, too, but one that you might go into is the amount of intramural research as compared to extramural.

Dr. WIESNER. That is given in this breakdown.

Mr. ROGERS of Florida. I was not thinking of the budget, as to whether we should increase intramural or extramural and the relationship there.

Also, I was interested in your statement where you said that you felt research is a very integral part of teaching.

Now, how does this gibe with the policy that has just been announced by NIH that 100 percent must be devoted to research if they are to get 100 percent fund?

Dr. WIESNER. I would like to say something about that because I think there might be some misunderstanding there.

I don't think the NIH is saying that the faculty should not supervise research students as part of the teaching but I believe what they are trying to do is draw the line at the stage between graduate research teaching and meeting formal classes at regular times. I would think that if an institution needs to have support for its regular teaching, and many of them do, this support should be requested independently and should be justified as teaching, not justified as research. I believe this is their objective. I would certainly agree with it.

Mr. ROGERS of Florida. Now, one last question: Do you think NIH's scientific staff is in a position to evaluate the effectiveness of its program or should we go to outside scientists to bring in some evaluation on these programs?

Dr. WIESNER. Well, the NIH group is very good. I think it makes use of some independent judgments for the same reasons that we are going to use some outside people.

Mr. ROGERS of Florida. Then, I think it would be helpful to the committee if you could give us a breakdown of your own staff operation.

Dr. WIESNER. Sure.

Mr. ROGERS of Florida. Just for the committee's interest and the qualifications of the people you have working for you.

Dr. WIESNER. To make it complete, I probably should give you a little bit of additional consultant structure.

Mr. ROGERS of Florida. Yes; I think that would be helpful.

Thank you, Doctor.

The chairman, Mr. Roberts, is here and would like to ask some questions.

Mr. ROBERTS. I am sorry to be late, Doctor. I have been in Alabama for the last 2 or 3 weeks.

Dr. WIESNER. I offered to come back later, sir, but they thought we had better start.

Mr. ROBERTS. I am sure Mr. Rogers did as good a job as I could do.

I just want to welcome you to the committee and tell you that we appreciate very much your giving us this time.

One or two brief questions, if I may.

I was interested particularly in the part of your statement on page 7 pointing out that the President has approved to make a study of the research programs in the NIH.

I wonder if you could tell us why that study is being made. You say it is a major study. Is the President somewhat oncerned about the ciriticisms that have been leveled at NIH or is that a routine matter or what is your feeling about it?

Dr. WIESNER. Well, I suspect there are several factors.

The NIH budget is a large segment of the research and development budget, particularly if you exclude the military.

We have examined other agency programs in very considerable detail in the past but not this one, and have increasingly recognized, because of the very nature and size and the impact of it on other research activities, that we should do it.

I am sure that the questioning of the scope and size of the programs has also contributed to the decision to go ahead with the investigation and study the program, but it is quite likely that we would have undertaken such an activity, in any event, at some time, possibly not quite as extensively as we will do it at this time.

Mr. ROBERTS. Now, one other place in your statement, Doctor, you mentioned the matter of narcotics in such a way that leads me to believe that you speak of our study of the technical aspects of drug abuse which provides the substantive background for the White House Conference on Narcotics, and drug use and filed information previously available from separate sources.

Now, recently, in part of these hearings, the Commissioner of Food and Drug, Mr. Larrick, indicated that he felt there should be some additional control of the situation, particularly in the field of drugs, and I wondered what would be your opinion of that statement by the Commissioner.

Dr. WIESNER. Well, first of all, we went into the drug question earlier, sir, before you arrived.

I will send each of you copies of our narcotics report. I had not realized the extent of the committee's interest in this problem or I would have come with additional testimony in this area.

As I explained to your colleagues, this report was undertaken as a special task in preparation for the President's White House Conference on Narcotic Drug Abuse which met in the fall. As a result, there is a Presidential Advisory Commission that will deal with drug abuse problems faced by the Government and will attempt to provide better integration among the agencies involved.

We hope that also there will be more extensive research activities in the Federal Government. One of the findings of the panel that did the study for us was that there are many medical chemicals, barbiturates, and others, which are used very commonly and are both habitforming and in many ways destructive. They are not commonly recognized to be such, and we do believe that something more extensive needs to be done about this.

Mr. ROBERTS. I am sorry, too, that I didn't hear the questions with reference to the matter of pesticides. I am familiar with the report that was made public recently and I would like for you to give me some comments on your feeling or your opinion as to the need for some study or perhaps some legislation in the pesticide field.

Dr. WIESNER. Well, there are needs for almost everything in the pesticide field.

First of all, as I said earlier, we believe there is need for more effective control. Whether or not this requires additional legislation or whether it can be done by administrative action is to be determined. This is being discussed at this very time in the Executive Office.

Secondly, we believe there is need for a great deal of additional study, to determine the effects on wildlife of the chemicals we are using, and particularly to try to develop more specific agents and techniques that go after a single insect rather than be broadly lethal or dangerous to all kinds of life. There are many possibilities here, but it is an area that needs much more intensive activity.

We also need to know a great deal more about how these chemicals move in our environment. They are found far out at sea and found in many places where we didn't expect to find them.

The panel felt that this was an area where, because of unbelievable effectiveness of pesticides, their use growing astronomically, and the short time since we became acutely aware of them, there are undoubtedly additional side effects that we need to understand, too.

As is usually the case in this kind of a problem, the understanding of the negative aspects lags the understanding of the useful applications aspect of the problem. We have a great deal of work to do here.

Mr. ROBERTS. Have you formed any opinion as to specific practices that you think are bad for the purpose of welfare, and I am speaking particularly of the use of wholesale spraying and use of plans and that sort of thing.

Dr. WIESNER. The panel believed that these wholesale spraying activities ought to be undertaken with a great deal more deliberateness and, when we do them, they should have as a parallel for the spraying activity a much more thorough study of the consequences in the area.

Also, they felt that there were certain targets of spraying which were really not as significant as the proponents of the spraying pro-

grams felt they were, so that they might be more modest in program operations.

Additionally, the objectives of eradication as contrasted with control require so much more chemical that one ought to be very thoughtful about starting out on an eradication program as contrasted with a control program.

The panel made these general observations about area spraying and they recommended that the Federal Government establish much more severe criteria before judging these programs; that Federal Government programs become models of good conduct for the rest of the Government and the rest of the country. Federal programs are only a small part of the total mass spraying effort, but if we could learn how to do these things properly, we could set a good example to the other people to follow suit.

Mr. ROBERTS. Do you feel that there is a need for some type of research center that would be representative of the agriculture interest, the chemical interest, the activities of food and drug and the public generally?

Do you think that kind of an organization is the type which should be set up to handle this problem?

Dr. WIESNER. We don't think a single research center is needed for this particular problem. In other words, Agriculture, I think, should continue to have a major responsibility for the farm aspects, the crop aspects of pesticides.

The HEW has a health responsibility. It is in this area where we believe a great deal of additional research is needed because there is so little known about low-level chronic toxicity, not only with regard to pesticides, but with regard to practically everything else that we contaminate the environment with.

For example, we discussed radiation earlier. The air is being polluted by the gases from automobiles and in many other ways. We take in during our lives a great variety of chemicals and we take them in in very small quantities and little is known about the effects of these. Toxicology has not been a very exciting field perhaps, and one that has not received a great deal of attention from the medical research people.

We believe that as part of the National Institutes of Health there should be a very substantial toxicological research activity. Then groups like the Food and Drug Administration and others who are interested in regulation can use this basic data source in making their judgments. At the moment, they don't have the basic data.

It is also, I believe, necessary for the Food and Drug Administration to have a more extensive testing program than they have at the moment, and this is recognized. All of these things will probably be considered in the final proposals which the President makes to the Congress in the area of pesticides.

Mr. ROBERTS. You are familiar, I am sure, with the fact that the Public Health Service is desirous of setting up a thing called Environmental Health Centers.

Would it be part of the Center or part of its functions to look into the effect of some of the chemical pollutants and other pollutants that we are talking about?

Dr. WIESNER. Well, that is what we hope.

There is still some discussion within the HEW about just exactly how these responsibilities for air pollution and water pollution and chemicals and so on will be divided up. My own desire would be to see a single, very effective toxicological institute or center. I think that is the best way to tackle these problems, but the status is still under discussion.

Mr. ROBERTS. I am sure that this question has already been asked, or reference has been made in some way to the popular and very well known book by Miss Carson.

Do you agree that civilization is as fraught with dangers as she seems to believe it is?

Dr. WIESNER. I think it is potentially a very serious problem. I think that if the use of these chemicals continues to grow at the rate it has been growing, if we continue to use more and more toxic chemicals as we develop resistant strains of bugs, as the population grows and our agriculture problems become more intense, this could, if ignored, turn out to be a serious health problem.

I think it has been recognized early enough so that if we are wise, it should never become a major problem. I think it has already been a problem in those certain areas where there has been carelessness and abuse but, as a national problem, we should be able with the warning we have had to be wise enough to avoid getting into really serious trouble.

Mr. ROBERTS. We think again in alerting our country to these dangers that Miss Carson has performed a very fine service.

Dr. WIESNER. Yes, sir.

Mr. ROBERTS. Thank you.

Mr. Rogers has one question.

Mr. ROGERS of Florida. I just have one more question.

I have been concerned in looking over some of the legislation that this committee has dealt with, the fact that we will have a piece of legislation which evidently is supposed to handle a certain subject.

Then we get into it a little bit and we find there is so much general authority that this is only a phase of the program and we really can't grasp the extent of the Federal program in checking into what is supposed to be the legislation covering the subject.

As an example, on air pollution, we have just had a bill and we are considering it, in which I think a program recommended $5, $6, $7, $8, $9 million for the next 5 years. Now we find that this is the air pollution bill and, yet, under general authority in other bills with HEW spending now about $13 million a year, which would be in addition to this program.

It is my feeling, which I think would be helpful, perhaps not only to the Department, but certainly to us in Congress, if in considering this particular bill that is coming up, we tie in all of the functions in the one piece of legislation so when we go into this problem we have one piece of legislation to deal with and if the program needs to be expanded or cut down, it can be done very easily.

What would be your reaction to that?

Dr. WIESNER. Well, this is one of the hard things to deal with, it seems, and from the executive point of view is just as difficult. We have the problem that as many of the research and development activities are spread through a lot of agencies—and they have to be

because they support the individual mission of the agencies—we are forced to work very hard to just try to bring the numbers in one place so we know what is going on.

As I said, we did this in the water research field. But then when we try to support a program, we find that pieces of it, because of the agency responsibility, come in different things, and it is very hard for us to give a coherent picture to the Congress of what we are trying to do and very hard for the individual congressional committees to understand what is going on.

In the field of water resources, the atmospheric sciences, and oceanography, we now submit to the Congress each year what we call our national programs, showing what it is that each agency is doing and how they fit together. It is an attempt to help you and an attempt to hold our program together, because sometimes we are not doing something in one agency because we are doing it in another, only to lose it, you see.

The Navy, for example, has on several occasions withdrawn research proposals in the field of oceanography, which is very important to the Navy, in order to let Interior or Coast and Geodetic Survey or some other group do a piece of research. We then submit this in an integrated package.

Now, this might be for a sum of money which is insignificant in the Navy budget and which the Navy groups in the Congress readily have supported but in the commerce budget it may seem rather out of balance.

We find that, in spite of our best efforts, we have not been able to do a good enough job to make this all clear. I know it is a problem on your side but I think we have to work at it because if it is impossible to create national programs in the executive or to create them here in the Congress, we are going to have fragmented programs; we are going to have distortion, and we are going to have duplication.

Mr. ROGERS of Florida. Then, generally, you would be in favor of trying to coordinate where you can in legislation?

Dr. WIESNER. Yes.

Mr. ROGERS of Florida. I realize it may be difficult.

Dr. WIESNER. I don't know how you can do it with an independent responsibility, but this is a problem that I think the Congress should be very much concerned about; that in rightly impressing us with the need to do more coordination you have to recognize that one of the serious limitations we have is the fact that we are trying to coordinate agencies that deal with quite different groups of the Congress.

Mr. ROGERS of Florida. Yes. I think it is a more difficult problem when it goes past one agency, but what I was thinking and the question I directed to you was within one agency and yet we have a number of different laws under which they are operating rather than one law which would apply to that one agency.

Dr. WIESNER. Even that sometimes is hard to change.

Mr. ROGERS of Florida. I am saying I am willing to change it now; I hope this committee will.

Thank you very much.

I appreciate your testimony.

Mr. ROBERTS. Mr. Brotzman.

Mr. BROTZMAN. I have no further questions.

Mr. ROBERTS. Thank you again, Doctor.

I appreciate very much the fine statement you have made before our committee. I am terribly sorry I was not able to be here for all the hearing.

The subcommittee will stand in recess until 10 o'clock tomorrow morning at which time I believe we will hear Dr. Terry, the Surgeon General of the Public Health Service.

(Whereupon, at 12:10 p.m., the hearing recessed until 10 a.m. Tuesday, June 11, 1963.)

ORGANIZATION OF PUBLIC HEALTH SERVICE

TUESDAY, JUNE 11, 1963

House of Representatives,
Subcommittee on Public Health and Safety
of the Committee on Interstate and Foreign Commerce,
Washington, D.C.

The subcommittee met at 10 a.m., pursuant to recess, in room 1334, Longworth Building, Hon. Kenneth A. Roberts (chairman of the subcommittee) presiding.

Mr. Roberts. The subcommittee will please be in order.

Our witness today is Dr. Luther L. Terry, Surgeon General, Public Health Service, Department of Health, Education, and Welfare, accompanied by Mr. David E. Price, Deputy Surgeon General, Mr. James M. Hundley, Assistant Surgeon General for Operations, and Mr. Robert J. Anderson, Chief, Bureau of State Services.

Dr. Terry, you may proceed with your statement.

STATEMENT OF DR. LUTHER L. TERRY, SURGEON GENERAL, PUBLIC HEALTH SERVICE, DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE; ACCOMPANIED BY DAVID E. PRICE, DEPUTY SURGEON GENERAL; JAMES M. HUNDLEY, ASSISTANT SURGEON GENERAL FOR OPERATIONS; AND ROBERT J. ANDERSON, CHIEF, BUREAU OF STATE SERVICES—Resumed

Dr. Terry. Thank you, Mr. Chairman.

Mr. Chairman and members of the committee, I welcome this opportunity to explain more fully the purposes and provisions of H.R. 2410, a bill designed to provide a more flexible statutory basis for organizing the Public Health Service.

Earlier in these hearings, we reviewed for your committee the functions and responsibilities of the Service, with particular attention to their expansion during the past 20 years. This review was supplemented and reinforced by a number of program summaries, charts, and tables, some of which were included in a special committee printed entitled "Background Material Concerning the Mission and Organization of the Public Health Service."

The statutory provisions that now govern the basic administrative structure of the Service were first enacted into law in 1943. The growth of the Service and the new responsibilities assigned to it during th past 20 years make it imperative, in our opinion, that these provisions be modified to permit appropriate changes in the basic organization of the Service.

Section 202 of the Public Health Service Act now specifies that:

The Service shall consist of (1) the Office of the Surgeon General, (2) the National Institutes of Health, (3) the Bureau of Medical Services, and (4) the Bureau of State Services.

The Surgeon General has very broad authority to assign the various functions of the Service among these four statutory units. With the approval of the Secretary, he may also establish, consolidate, or abolish subordinate divisions or other administrative units. But all such subordinate units, and all functions of the Service, must be embraced within the four major units prescribed in section 202.

Thus, we cannot, without further legislative action, establish any new bureau or abolish or rename any of the four constituent units now specified in section 202.

In 1956, the Public Health Service Act was amended to provide—in part H of title III—for the establishment within the Service of a "National Library of Medicine." Although certain provisions of this legislation implied a special organizational status for the Library, no modification of section 202 was included to authorize the establishment of the Library outside of the statutory "bureau" structure. Therefore, the National Library of Medicine has been administratively located within the Office of the Surgeon General.

In addition to the organizational provisions of section 202, title IV of the act contains a series of provisions relating to the establishment of specific research institutes and advisory councils. These provisions limit to some extent the general authority of the Surgeon General and the Secretary to establish or abolish subordinate administrative units within the Service, but they do not modify the basic requirement in section 202 that all functions of the Service must be assigned to one of the four statutory units prescribed in that section.

The provisions of H.R. 2410 would in no way modify the provisions of title IV relating to specific research institutes and councils. They would, however, make four substantive changes in the present provisions of section 202:

(1) The statutory specification of a "Bureau of States Services" would be deleted;

(2) The National Library of Medicine would be added to the list of major constituent units of the Service;

(3) The Surgeon General would be authorized, with approval by the Secretary, to establish "such other bureaus or other constituent units" as he may find appropriate for the organization of the Service; and

(4) The Surgeon General would also be authorized, with approval by the Secretary, to redesignate any bureau or other constituent unit of the Service—including those specified in section 202—whenever he deems such action necessary in view of changes in the functions of the unit.

These four changes would, in effect, give the Surgeon General and the Secretary almost complete administrative authority with respect to the organization of the Service. A simpler means of effecting this result might have been to delete all statutory specifications regarding specific bureaus or other constituent units. This more direct approach has not been proposed for two reasons:

First, it would have required a series of conforming amendments to other statutory provisions referring specifically to the National Institutes of Health and to the National Library of Medicine.

Second, there are no organization changes contemplated in the foreseeable future that would modify the designation of the Office of Surgeon General, the National Institutes of Health, or the Bureau of Medical Services.

The proposed revision of section 202 would also delete an obsolete and no longer meaningful specification that the National Institutes of Health "shall be administered as a part of the field service."

In addition to these amendments to section 202 of the Public Health Service Act, H.R. 2410 includes several minor or conforming amendments to the act:

(1) The present requirement that the Deputy Surgeon General shall be responsible for administering the Office of the Surgeon General would be deleted from section 205(a) of the act. With the expansion of Service functions and responsibilities, the deputy has too many servicewide responsibilities to permit him to serve as administrative head of the Office of the Surgeon General.

(2) Section 205(b) of the act now requires the Surgeon General to assign three regular officers of the Commissioned Corps to serve, respectively, as Director of the National Institutes of Health, Chief of the Bureau of State Services, and Chief of the Bureau of Medical Services. It further provides that, while so serving, these officers shall be Assistant Surgeon General.

Since the proposed amendments to section 202 would leave the number, functions, and designations of bureaus of the Service to administrative determination, a parallel amendment to section 205(b) would simply specify the grade of Assistant Surgeon General for any officer assigned to serve as Director of the National Institutes of Health or as chief of any bureau of the Service.

(3) A conforming amendment would also be made in section 205(c) so as to omit the reference to a specific number of statutory positions and to delete the obsolete reference to the title of "Assistant Surgeon General."

Finally, H.R. 2410 would amend a provision in a 1960 appropriation act which established a Bureau of State Services management fund so as to permit its replacement with a fund or funds designed to parallel future revisions in the bureau structure of the Service.

The main objective of these proposed amendments, Mr. Chairman, is to enable us to adjust the administrative structure of the Service to fit the growth and change in our functions and responsibilities. We have already outgrown the four-unit structure now prescribed in law and, as I pointed out earlier in these hearings, there are two changes that we would make immediately upon the enactment of H.R. 2410:

First, we plan to replace our present Bureau of State Services with two new bureaus: a "Bureau of Community Health" and a "Bureau of Environmental Health." Actually, these two bureaus would be "new" only in their designation and status. Within our existing statutory authority, we have already organized the functions of the present Bureau of State Services into these two main categories. The proposed change would simply follow this grouping to its logical conclusion of dual bureau structure.

Second, we plan to convert two special units, now administratively located in the Office of the Surgeon General, into separate constituent units reporting directly to the Surgeon General.

The first of these units is the National Library of Medicine. While its size and functions are not such as to warrant full bureau status, the Library's mission is unique and cannot logically be embraced among the functions of any bureau of the Service, and the operational nature of its activities contrast with the staff character of units in the Office of the Surgeon General. We therefore believe the proper organizational status for the Library is that of a separate constituent unit reporting directly to the Surgeon General.

We also believe that such a status is most appropriate for our National Center for Health Statistics. Its functions and activities cut across the lines of all operating bureaus, but the operating character of its work is such that it requires no special coordination with the staff functions or units in the Office of the Surgeon General.

When these initial changes are effected, the Service will consist of seven bureaus or constituent units:

The Office of the Surgeon General;
The National Institutes of Health;
The Bureau of Medical Services;
The Bureau of Community Health;
The Bureau of Environmental Health;
The National Library of Medicine; and
The National Center for Health Statistics.

We believe this revised administrative structure is much better suited to our present needs and responsibilities than the four-unit structure now specified in section 202 of the Public Health Service Act.

If the next 20 years witness as many changes in the scope and emphasis of Service functions and responsibilities as the past 20 years, this proposed reorganization may require future revisions to keep pace with our changing responsibilities.

Therefore, the case for the amendments proposed in H.R. 2410 does not depend alone on the merits of our immediate reorganization plans or on the specific justification for any particular bureau or bureaus. On the contrary, we believe that, in an era of rapidly changing health problems and developments, we need flexible authority to change our organization accordingly. We now have such authority for organization at the division level and below, but we also need the authority to modify our bureau structure as well.

Before concluding, Mr. Chairman, there are two further points that I should like to call to your attention.

First, the several amendments proposed in H.R. 2410 relate only to administrative structure. They do not in any way extend or modify the program authorities or appropriations authorizations of the Service. While some of the organization changes may result in a few additional positions, the resulting costs will be negligible, and we do not contemplate any supplemental appropriations requests to implement these changes.

Second, although the proposed amendments would permit the administrative establishment of an indefinite number of new or additional bureaus within the Service, there are very real practical con-

siderations which will serve to offset any possibility of excessive use of this permissive authority.

If the establishment of new bureaus were to be viewed simply as a means of according recognition or status to major Service programs or administrative units, a case could be made for a number of additional bureaus—now and in future years. But such a narrow approach would be self-defeating, because the proliferation of bureaus would have to be countered by the creation of additional echelons or "layers" of coordinating officials or units in order to assure the effective direction and control of the Service as a whole. This, in turn, would offset or minimize the role of the bureaus and their chiefs as the principal aids of the Surgeon General in the development and coordination of Service policies and programs.

I am confident, therefore, that the practical requirements of responsible administration will serve to limit the number of major operating bureaus and constituent units of the Service and to retain our present concept of bureaus as a primary device for achieving coordination among a number of related programs.

This concludes my brief review of the provisions and purposes of H.R. 2410, Mr. Chairman.

I have purposely omitted any detailed description or explanation of our immediate plans for revising the administrative structure of the Service in view of the related information and materials we have already presented to your committee.

We would be pleased, however, to answer further questions on any aspect of these plans or on the provisions of H.R. 2410.

Thank you, sir.

Mr. ROBERTS. Thank you, Dr. Terry.

How long has this plan or request for changes in the act been under consideration in your office?

Dr. TERRY. This plan, Mr. Chairman, has been under consideration for approximately 3 years and, as you are aware, this specific proposal has been before the Congress for 2 years.

Mr. ROBERTS. Now, as I understand, your statement is that under the Public Health Service Act as now written there are certain services or certain bureaus which come under your office administratively which you think should have a separate organizational status; is that correct?

Dr. TERRY. That is correct. I assume you are referring specifically to the National Library of Medicine and the National Office for Health Statistics.

Mr. ROBERTS. Now, would there be an expansion of the activities of the National Library of Medicine under 2410?

Dr. TERRY. It is not anticipated, Mr. Chairman, that this act per se would result in any expansion of the activities of the National Library of Medicine.

However, I think we all appreciate that with the growing need for an increase in the communications of medical and health information that it is perfectly logical that the responsibilities of the National Library of Medicine, as the principal source for medical and health information in the whole United States and for that matter the outstanding one in the world, will grow over a period of time.

It will not be a result of this organizational action but, rather, the general factors which will be instrumental.

Mr. ROBERTS. Now, at the present time, would you give us a brief description of the mission of the Library?

Dr. TERRY. The National Library of Medicine, as you realize, Mr. Chairman, is a very old library. It was originally created in the 1800's and was operated for many years as the Library of the Surgeon General of the Army.

In 1956, by act of Congress, the Library, being recognized as a nonmilitary medical resource of broad importance and responsibility, was transferred to the Public Health Service and the name of the National Library of Medicine was established at that time.

Since that time, the Library has operated as a constituent of the Public Health Service attached to the Office of the Surgeon General.

The principal responsibility, Mr. Chairman, of the National Library of Medicine is related to the collection, storage, reproduction, and rapid dissemination of all printed information related to health and disease which is available. It is the largest central resource for this sort of information in the world.

In effect, the National Library of Medicine is largely a library's library. The larger part of its responsibilities relate to the providing of material to other medical and other types of libraries throughout the country.

However, this does not mean that an individual scientist does not have access to the National Library of Medicine; he does have such access.

The primary responsibility is directed toward the collection, storage, reproduction, and dissemination of such information to libraries and institutions.

Mr. SCHENCK. Will the gentleman yield for a question?

Mr. ROBERTS. Yes.

Mr. SCHENCK. Dr. Terry, I notice you indicate the purposes of the National Library of Medicine to be one of collection, storage, and dissemination.

Dr. TERRY. Yes, sir.

Mr. SCHENCK. Is that information to be reproduced with dissemination to individual physicians who have particular problems?

You indicate, also, that it was to be available to the scientists, but do they have to come here to get that information or is it reproduced?

Dr. TERRY. It is reproduced and disseminated largely through libraries.

For instance, Mr. Schenck, if a scientist in Cleveland, say at the Western Reserve University, desired some material- that was not available in the library there and yet existed in the Library of Medicine, the usual procedure would be for his library to request this material and obtain it for him and provide it to him.

It is reproduced in very large quantities by photocopy mechanisms which avoid sending out the original material and running the risk of losing it. These are very heavy volumes of which only a portion may be needed by a scientist outside of the Washington area.

Mr. SCHENCK. Dr. Terry, your illustration of Cleveland, Ohio, is very good because there is a medical school and a medical library there.

Dr. TERRY. That is right, sir.

Mr. SCHENCK. What occurs in the areas of the Nation, and there are thousands of them, where there are no medical schools with libraries closeby and where the individual physician may need some special help?

Dr. TERRY. An individual physician can either come to the library or can make a written request to the library for such information.

Mr. SCHENCK. And if he makes a written request, he will get a copy of the printed material you have in the library on that particular subject?

Dr. TERRY. Yes, sir.

Mr. Schenck, just to make it a little more clear, the best access that the physicians over the country have to information about what the Library has and what information is available on the subject is through the so-called Index Medicus. This is a volume which is put out which indexes all or essentially all of the world's literature on medical and health subjects.

It is a cooperative arrangement between the American Medical Association and the Library of Medicine in terms of compiling this bibliographical information, so that this is usually the source which the physician or the scientist uses in order to determine what sort of material is available and where it is located, so to speak.

Mr. BROTZMAN. Will the gentleman yield?

Mr. SCHENCK. May I just add this one additional question?

Now, is there an exchange of information with the National Library of Medicine and any foreign sources of information?

Dr. TERRY. Yes, sir.

There is a great deal of exchange of information and we, through the National Library of Medicine, have on hand practically every medical journal published in the world.

In addition to that, certain selected ones are translated and the translations are made available also as needed.

Mr. SCHENCK. I will yield to the gentleman.

Mr. ROBERTS. The gentleman from Colorado.

Mr. BROTZMAN. The doctor related to that same area. I know, on page 3 of your statement that you delete the statutory specifications of the Bureau of State Services and then your second substantive change refers to adding to the list of major constituent units of the service, the National Library of Medicine.

Now, what does the Bureau of State Services presently do.

Dr. TERRY. The Bureau of State Services, Mr. Brotzman, is a large Bureau of the Public Health Service which today involves two types of programs, two general program areas.

We have for purposes of administration divided the Bureau of State Services into two components. There are the Community Health Divisions. In these we have accident prevention, chronic diseases; the Communicable Disease Center which is located in Atlanta, Ga.; dental public health and resources; hospital and medical facilities (that is the Hill-Burton program); and nursing.

I might say this is given on page 10 of the committee print, Mr. Brotzman, if you would like to see the diagram.

The other divisions of the Bureau of State Services as it exists today are the environmental health divisions which consists of air

pollution, environmental engineering and food protection, occupational health, radiological health, water supply, and pollution control.

Mr. BROTZMAN. All right.

Now, the statutory specification is deleted. Does that mean that these services are moved into some other area?

Dr. TERRY. No, sir. It really does not amount to the moving of anything, quite frankly.

Insofar as this chart is concerned, you would erase Bureau of State Services at the top; you would draw a solid line down the middle where the dotted line exists, and instead of Community Health Divisions, it would be the Bureau of Community Health; and instead of Environmental Health Divisions, it would be the Bureau of Environmental Health.

This is specifically what it would do, or at least what we plan to do if such authorization were approved.

Mr. BROTZMAN. So this is a purely substantive change.

You said that it makes four substantive changes in the present provisions of section 202, actually more in name only as far as organizational arrangement is concerned and not to do away with services presently being afforded to the various States of the Union.

Dr. TERRY. This is largely correct, sir.

I say largely because, for instance, in certain of the proposals there would be a slightly different method, for instance, involved in the reporting of the National Library of Medicine to the Surgeon General.

It would be largely in name only, sir, but it would give us a more fundamental organizational pattern. For instance, today we can only have one Chief of the Bureau of State Services. This Chief of the Bureau of State Services is also the Chief of our Environmental Health Divisions and his Deputy is the Chief of the Community Health Divisions.

Actually, insofar as the functional responsibility, there is very little overlapping and no more than one would find with other bureaus and major constituent units to the Public Health Service.

Therefore, in terms of the delegation of authority for operating certain of our program activities, it is an abnormal sort of arrangement and we need a straightforward structure which shows how we are operating today in a straightforward manner.

Mr. DINGELL. If the gentleman will yield.

Doctor, would you tell us why?

Dr. TERRY. Why?

Mr. DINGELL. Yes. Why?

Dr. TERRY. I think I have already touched upon that, Mr. Dingell. I think that if you are going to have a large segment of programs in the Public Health Service, closely related programs, such as the community health programs, it is better to have these under a chief, have it as a bureau, which does report directly to the Surgeon General and where the delegation of power from the Surgeon General to that bureau and to that chief are clearcut and straightforward.

Mr. DINGELL. If the gentleman will yield further; why?

Dr. TERRY. To me, Mr. Dingell, it simply makes organizational and administrative sense.

Mr. DINGELL. It makes for a very neat organizational pattern but in terms of function, tell us why.

Dr. TERRY. As I mentioned previously, in terms of delegation of certain powers from the Surgeon General to the chief of the bureau, I think that it is perfectly clear that if there were a clear-cut Chief of the Bureau of Community Health and a Chief of the Bureau of Environmental Health, it would be more clear cut in terms of delegation of power; it would result in less confusion both inside and outside the Service.

Mr. DINGELL. Didn't you just get done telling this committee there was no overlapping under the present structure?

Dr. TERRY. I didn't say there was no overlapping. I said there was basically no overlapping; that is correct.

Mr. DINGELL. That is basically the same thing, so you are telling us that the present system is working well but you want something that looks good on paper; is that correct?

Dr. TERRY. No.

Mr. DINGELL. Tell us what operation, if any, would profit the taxpayers if the Public Health Service with the Department of Health, Education, and Welfare would make this change?

Dr. TERRY. It would make a more clear-cut organization which would be less likely to result in any confusion both inside and outside of the Service and it would greatly implement the direct assignment, delegation of responsibility from the Surgeon General to the chief of these particular program areas.

Mr. DINGELL. Now, Dr. Terry, you just got done telling this committee this morning that there is a very minimum amount of overlapping of responsibility and functions under the present situation, did you not?

Dr. TERRY. That is right, sir.

Mr. DINGELL. All right.

So, therefore, now, how will this be reduced by this proposal that you have before the committee right now?

Dr. TERRY. I think one of the considerations is where the regulations or provisions provide for the delegation of authority to a bureau chief. For instance, the person who is in charge of our community health program is not a bureau chief at the present time. Therefore, it has to be assigned to other persons and in turn assigned to this man, whereas the direct assignment, Mr. Dingell, would make much more sense.

Mr. DINGELL. As a matter of fact, though, this does not make any difference in carrying out a program.

Dr. TERRY. I don't think this is true, Mr. Dingell.

Mr. DINGELL. You tell us why.

Dr. TERRY. I have told you.

Mr. DINGELL. No; you have not.

Dr. TERRY. I have told you that it makes more straightforward and clear-cut delegations, the delegation of responsibilities to the head of that program area and that it will result in less confusion inside and outside the Service.

Mr. DINGELL. You just got done telling us that there was no overlapping and no duplication and then you come forward and you say it would make for less duplication and less overlapping. Which statement is true?

Dr. TERRY. Mr. Dingell, if you will recall, I said there was very little.

Mr. DINGELL. All right. Very little. That means practically none, doesn't it?

Dr. TERRY. I said very little, sir.

Mr. DINGELL. Are you coming forward to this committee and telling us that you have waste and overlapping and duplication in your administration?

Dr. TERRY. I didn't understand.

Mr. DINGELL. Are you telling us there is waste and overlap and duplication in your administration or are you telling us there is none?

Dr. TERRY. I am saying that this is not a clear-cut organizational and administrative structure such as I would desire in order to carry out the responsibilities in these two program areas.

Mr. DINGELL. What you are telling us is it would look pretty clear on paper but you have not told us how it is going to improve the administration of your department.

I have transgressed greatly on my colleague's time.

Mr. ROBERTS. Let the Chair state that the Chair had the floor and I yielded to the gentleman.

I am going to recognize the gentleman from Michigan after I conclude with the members of the committee as much time as is permitted to be given him, but I would like to try to keep the thing on the track.

The gentleman from Colorado.

Mr. BROTZMAN. I would like to ask one more question on this point, Mr. Chairman.

Referring to chart 2 again, if I understand correctly, the placement of the boxes indicated there are presently the Bureau of State Services which you have explained; you have explained the substitution there in a sense, the Bureau of Medical Services and the National Institutes of Health.

If this bill is passed, it is my understanding that there will be seven bureaus or constituent units which would be placed under this dark line, if you might put it that way. Would this be a fair statement?

Dr. TERRY. Not quite, Mr. Brotzman.

Let me explain just a little further. There would be under this dark line four bureaus designated there. Now, specifically, the legislation does not designate this but I have indicated to the committee what I would intend to do if this legislation were approved.

There would be four bureaus: The Bureau of Community Health, the Bureau of Environmental Health, the Breau of Medical Services and the National Institutes of Health. A fifth bureau would be the Office of the Surgeon General.

Then you will notice up to your right the National Library of Medicine which is shown as a part of the Office of the Surgeon General, and then over in the large block to your left the National Center for Health Statistics is also under the Office of the Surgeon General.

Well, actually, the diagram here shows the Library of Medicine directly reporting to the Surgeon General but not in the Office of the Surgeon General. It has a rather nebulous organizational arrangement, but this is basically the way it operates.

The National Center for Health Statistics would be moved over under another block next to the National Library of Medicine indicating that these were large constituent units of the Public Health Service reporting directly to the Surgeon General but not directly a part of the operating responsibility of any of the five bureaus thus established.

Mr. BROTZMAN. Thank you.

I thank you for permitting me to ask the question.

Dr. TERRY. In other words, there would be five bureaus. There would be two major constituent units that would be outside of any of the bureaus reporting directly to the Surgeon General, the National Library of Medicine and the National Center for Health Statistics.

Mr. ROBERTS. Now, let's take an example, Dr. Terry, that I think perhaps answers some of the questions that were asked.

Isn't it correct that in the operating of the community health programs now we have the division head and the head of the Bureau of State Services; now two persons, under the reorganization, there would be only one; that would be the head of Environmental Health.

Dr. TERRY. That is basically correct, sir.

Mr. ROBERTS. And with the reorganization you would achieve more——

Dr. TERRY. It would certainly make our organizational pattern more straightforward and descriptive and less likely to be confusing either within or outside the Service.

Mr. ROBERTS. Today, what organizational steps would you take now?

Dr. TERRY. I have indicated those just in discussing with Mr. Brotzman.

Mr. ROBERTS. Let's go over those again.

Dr. TERRY. All right, sir.

We would abolish the Bureau of State Services. Though it is not specified in the legislation, I would, with the permission of the Secretary, create a Bureau of Community Health and a Bureau of Environmental Health to cover these program areas.

I would designate the National Library of Medicine and the National Center for Health Statistics as major constituent units of the Public Health Service not encompassed within either or any of these five bureaus but reporting directly to the Surgeon General.

Mr. ROBERTS. Now, what about the proposal which was referred to several times to make the National Institute of Mental Health a bureau of mental health? What are the implications of such a change?

Dr. TERRY. This is a matter, Mr. Chairman, which, as you know, has been under discussion and it is under active consideration in the Public Health Service at the present time.

The programs in the area of mental health have grown so relatively rapidly, it is such an important part of our health program, that there has been a proposal submitted to me from the Director of the National Institutes of Health and agreed to by the Director of the National Institute of Mental Health that this be set up as a separate bureau in the Public Health Service.

There are many complications and implications involved in the creation of such a bureau. At the present time, Mr. Chairman, I have this under study by an internal committee which is headed up by Dr. Price, by Deputy Surgeon General, and other prominent members

of the Service, and this committee will report to me some time within the next few weeks.

At the present time, if you ask me directly, I do not know, Mr. Chairman, whether such a bureau is wise and whether such a bureau would be constituted if I had the authority at the present time.

Mr. ROBERTS. Now, if the House were to take similar action to that taken by the Senate on the bills with regard to mental health and mental retardation, would that have anything to do with this picture or the need?

Dr. TERRY. I think, Mr. Chairman, that the expanding programs involved in the mental health proposals which are now before the Congress, would obviously have some effect in expanding the size and the nature of the activities of the Service in the field of mental health.

On the other hand, Mr. Chairman, I do not feel that this is the deciding factor. Even if I were certain that the Congress were to approve these proposals, I am not sure that it would be wise for the Public Health Service to establish a Bureau of Mental Health.

So, very frankly, and very honestly, and I am not trying to evade the issue, Mr. Chairman, I do not know whether this is a wise proposal or not at the moment. It is certainly one that I will not endorse at the moment until it has had considerably further study.

Mr. ROBERTS. Is there any controversy within the Service as to this proposed change?

Dr. TERRY. I don't think there is any serious controversy, Mr. Chairman. Newspapers like to pick up things and make them look bigger than they are.

There is a difference of opinion; yes, sir; but at the same time I don't think that there is any serious controversy involved.

Mr. ROBERTS. One reason I asked that question; I know that you are familiar with the rather hot fights that have been going on in various States of the Union where proposals have been made to take out of the Department the functions relating to mental health and many cases created in the Department.

As a matter of fact, in our own State of Alabama, there has been quite a heated controversy. We don't get anything of that nature in the Public Health Service.

Dr. TERRY. We have, Mr. Chairman, in the Public Health Service, been dealing in the field of mental health for many years at the State level.

For instance, in many of the States, the State health department is the State mental health authority. On the other hand, quite a few of the States have separate mental health authorities.

I don't feel that this varying type of organizational pattern at the State level has been any serious obstacle to us in dealing with the States in either mental health or other fields of health.

Mr. ROBERTS. Generally, would you say that the State health departments are or have been primarily concerned with preventive measures, epidemic or sanitation or guaranteeing pure water supply, air pollution problems and things of that kind and that mental health is sort of a new category of its own?

Dr. TERRY. This is not necessarily so, Mr. Chairman.

For instance, in the water programs in the States there are often commissions or separate organizations within the State government which serve in this capacity so that the situation with regard to mental health and its organizational pattern in relation to the Government at the State level is not unique. There are other examples in other fields.

On the other hand, I think you must appreciate that in the field of mental health, and this is universally true, the State government has had a lot larger direct responsibility in terms of the operation of the State mental institutions and this sort of thing. It has had a much larger direct operating responsibility than the States have had in most other categorical fields of health.

Mr. ROBERTS. Now, what about the proposals for reorganizing the functions of the Public Health Service with respect to environmental health?

Dr. TERRY. Mr. Chairman, as you will notice from this table, we grouped together here in the Environmental Health Division of the Bureau of State Services the programs pertaining to air pollution, environmental health engineering and food protection, occupational health, radiological health and water supply and pollution control. These are five segments of the environmental health area.

This proposal would allow us to create a Bureau of Environmental Health which would embrace these five program areas.

Mr. ROBERTS. At the present time, you speak of environmental health engineering and food protection.

Now, how does the food protection get into the picture and then explain to us if there is any duplication or conflict there with the activities of the Food and Drug Administration.

Dr. TERRY. Mr. Chairman, for a long period of time, the Public Health Service has carried responsibilities in the area of food protection. For instance, food and sanitation aboard interstate carriers and vessels, trains, and buses.

In addition to that, we have had the responsibility in milk certification in the interstate program.

Thirdly, an example of activities in this area is the responsibility that the Public Health Service has in relation to seafood where the seafood comes into interstate commerce.

These are the principal areas. They are quite clearly defined in terms of our responsibilities; they are long standing in terms of the length of time that they have been carried out by the Public Health Service.

I think I can say quite frankly to you, Mr. Chairman, that I do not believe that we have had any conflicts with the Food and Drug Administration with respect to these programs.

Mr. ROBERTS. Now, under present legislation, could a person who is not an officer of the Commissioned Corps be appointed to head up one of the Public Health Service bureaus?

Dr. TERRY. I am sorry, Mr. Chairman. The hammers are so noisy I didn't get that full question.

Mr. ROBERTS. We will wait just a moment.

The question was: Under the present law, can a person who is not an officer of the Commissioned Corps be appointed to head up one of the bureaus, Public Health Services?

Dr. TERRY. Under the present law, in order for one to be made a head or chief of one of the bureaus of the Service, he must be an officer in the regular corps of the Public Health Service.

Mr. ROBERTS. Do you think that system has worked well or are you in agreement with the system?

Dr. TERRY. I think, Mr. Chairman, that it has worked quite well; yes, sir.

Mr. ROBERTS. Now, would this bill, H.R. 2410, change the purpose of that situation?

Dr. TERRY. The change that it would make would be this: In the way H.R. 2410 is stated, it would not require that a bureau chief be a member of the regular Commissioned Corps or even the Commissioned Corps of the Public Health Service.

Mr. ROBERTS. Well, now, since the other system has worked well, in your opinion, do you think it is wise that we change that?

Dr. TERRY. Mr. Chairman, I think we are going through a changing pattern in many respects. For instance, if you take the National Institutes of Health, approximately half of our scientists at the National Institutes of Health are employed as a part of the civil service system and approximately half are commissioned officers. This is not quite true when you confine it to physicians and/or dentists at the National Institutes of Health, but I think it represents an evolving pattern which was not true, for instance, 20 years ago.

I do not think there is any question, Mr. Chairman, but that the Public Health Service must rely upon and depend upon the Commissioned Corps as the primary source of our outstanding career leadership in the Public Health Service.

On the other hand, this proposal was actually made in the bill with the idea that should an eventuality exist where the proper person for heading a bureau, either existing now or some bureau to be created in the future, was not available in the Commissioned Corps of the Public Health Service, it would not limit the Surgeon General in selecting a capable person from elsewhere.

Mr. ROBERTS. Now, for instance, in your air pollution program, which it is my hope is going to be a greatly expanded program, do you have any top men in that program at the present time who are members of the Commissioned Corps?

Dr. TERRY. Yes, sir. The Chief of that Division, Mr. MacKenzie, is a commissioned officer, and I would say a very large percentage of the top level engineers, physicians, and others in that area are commissioned officers; not all.

Mr. ROBERTS. Is that same situation true in the field of occupational health?

Dr. TERRY. Yes, sir.

Mr. ROBERTS. What about the water supply and pollution control?

Dr. TERRY. Yes, sir.

Mr. ROBERTS. What about radiological health?

Dr. TERRY. Yes, sir.

Mr. ROBERTS. So, then, you don't know of any of the bureaus or any of the separate constituant parts where you do not have a pretty broad group of Commissioned Corps men to draw from in the case you need to head up one of these bureaus from the corps?

Dr. TERRY. Let me say it this way, Mr. Chairman: We have a good Commissioned Corps in terms of the people available and the people coming on. On the other hand, I think with the rapid expansion of the programs and responsibilities of the Public Health Service, which have been taking place since World War II, that we are thinner in terms of trained personnel available than we were many years ago.

I think as an example, Mr. Chairman, we have not gone as far as would be desirable in pulling a man off the job and giving him a period of training in a particular field in which he is to perform. This has been largely because (1) we have not had the funds to do this, and (2) we have needed the man so badly to carry on our program responsibilities we could not spare him for the required time period. This applies particularly to the longer terms of training, such as a year of postgraduate training.

On the other hand, I do think that we have a good supply of very capable, dedicated officers in the Public Health Service.

Mr. ROBERTS. Now, is it necessarily true that an officer of the corps would be the best qualified person to head, say, for instance, one of the National Institutes?

Dr. TERRY. That a commissioned officer would be the best man?

Not necessarily. As a matter of fact, two of the Institutes are headed up by persons who are not commissioned officers.

Mr. ROBERTS. What are those two?

Dr. MASLAND. Director of the National Institute of Neurological Diseases and Blindness, and Dr. Aldrich, who has recently come on as head of our new Institute of Child Health and Human Development.

We do have strong leadership in the Commissioned Corps, but these I think are examples of the fact that in certain program areas we have not felt confined to the Commissioned Corps but rather looked for the strongest man that we could find, sir.

Mr. ROBERTS. Well, it is also true that your Institute on Child Health is a little bit different from the other Institutes in that it is not directly concerned in any one specific disease; is that not true?

Dr. TERRY. That is right, sir.

Mr. ROBERTS. Now, let's take the person like you mentioned like Dr. Aldrich, who is not an officer of the Commissioned Corps. Say he were appointed as Director of the National Institutes of Health.

What would be the status under section 3 of the bill?

Dr. TERRY. At the present time, he could not be appointed Director of the National Institutes of Health.

On the other hand, if H.R. 2410 were approved as proposed, it would be possible for him or someone else who is not a commissioned officer in the Public Health Service to be chosen as Chief of a Bureau.

Mr. ROBERTS. So you would say that there should be more flexibility in the law?

Dr. TERRY. I think there is a possibility that we may need it in the future.

At the present time, Mr. Chairman, I don't see the need for it, but I think that it is entirely possible that we might need it.

For instance, it might be proposed some day that we have a Bureau of Administration in the Public Health Service. If this point were ever reached, I would seriously doubt that we would have commissioned

officers who were qualified to head up this particular type of activity. We might have and we might not have.

I think the approach here is that the Public Health Service should not be restricted in terms of persons who carry out leadership in program areas, to persons in the Commissioned Corps, but should get the best person wherever he is available.

Mr. ROBERTS. Now, as you well remember, the number of years it took for us to pass a law upgrading or at least establishing the Commission Corps of Public Health Service and something of the same position as to the services, I would like to know if, in your opinion, the passage of that act strengthening the Commission Corps has enabled you to hold people that you otherwise might have lost.

Dr. TERRY. Yes. I think it has strengthened this, basically. This is the sort of thing that is a little hard to define. The major objective of this recent legislation of this type was to make a career more attractive to the young man who is just coming into the Service.

Frankly, I think this legislation has been particularly effective in this direction.

On the other hand, we are in such serious difficulty in relation to paying anything comparable to compensation outside of the Government, that we are in real danger, Mr. Chairman.

Mr. ROBERTS. Well, Doctor, don't you believe that that will always be a real problem before us, the Government service versus service in private fields?

Dr. TERRY. Mr. Chairman, I think it will always be a problem. I would hope that it will not always be as exaggerated as it is right today. I think I can very frankly say to you that the legislation which the Congress has passed in relation to civil service employees has made the discrepancy even greater in terms of compensation for our commissioned officers in the Public Health Service.

Mr. ROBERTS. That is all I have at the present time.

Mr. Schenck?

Mr. SCHENCK. Thank you, Mr. Chairman.

Dr. Terry, on page 7 of your statement here you list 67 including the Surgeon General, but you list 6 other Institutes and Bureaus here with, as I understand it, an administrative head for each 1?

Dr. TERRY. Yes, sir. There would be an administrative head for each one of them.

Mr. SCHENCK. Would he have the title of Assistant Surgeon General?

Dr. TERRY. At the present time, neither the National Library of Medicine nor the National Center of Health Statistics is headed up by an Assistant Surgeon General.

Mr. SCHENCK. Under 2410, H.R. 2410?

Dr. TERRY. H.R. 2410 would not affect that.

I think, frankly, that both positions are important enough in the Service that they should have such recognition.

We have a limited number, as you know, Mr. Schenck, of Assistant Surgeons General positions and we have to use them on a priority basis. So far, I have not been able to make such a position available as head for the National Library of Medicine nor for Health Statistics.

Mr. SCHENCK. Isn't that because of the lack of personnel available, or is it a lack of permitted positions available?

Dr. TERRY. It is a lack of authorized positions as Assistant Surgeon General. We are limited by law to a certain number of Assistant Surgeons General in the Public Health Service, three-quarters of 1 percent of our active duty complement in the Commissioned Corps. At the present time this amounts to 31 such positions.

Mr. SCHENCK. Well, then, Dr. Terry, H.R. 2410 would not change that?

Dr. TERRY. H.R. 2410 would not affect that in any way, sir, either in terms of the distribution of the existing positions or the creation of others.

Mr. SCHENCK. Would the two organizations set up as you have recommended here on page 7 of your statement increase the cost?

Dr. TERRY. Mr. Schenck, we do not anticipate that these changes would increase the cost to any appreciable extent.

As I mentioned in my statement, we do not feel that it would necessitate the request for any supplemental appropriation.

Mr. SCHENCK. Dr. Terry, the Bureau of Environmental Health has created some questions as to the location of that facility.

Have you determined on that?

Dr. TERRY. Now, let me get this clear, Mr. Schenck.

When we speak of the Bureau of Environmental Health, we are speaking of a broad organizational structure which embraces these five program areas, including the headquarters functions, the Sanitary Engineering Center in Cincinnati and all of our field laboratories and installations.

Now, as a separate but a component part of this Bureau of Environmental Health, we have a proposal which is before the Appropriations Committee for funds for the beginning of the construction of an Environmental Health Center.

Mr. SCHENCK. An administrative center?

Dr. TERRY. No, sir.

This would be a partially administrative and partially scientific research and development. The real purpose of this proposal, Mr. Schenck, is to bring together in close working relationship the heads of these programs who are responsible and active in the development of the program activities, as well as those planning for the future in these fields.

Mr. SCHENCK. Do I understand, Dr. Terry, that you have tentatively decided upon a location for this Center that you described as to be in or near the Washington area?

Dr. TERRY. That is right, sir.

The specific proposal which we have and which just last week received approval of the National Capital Planning Commission is a site on the property at Beltsville now owned by the Department of Agriculture, and which Secretary Freeman has agreed to make available without reimbursement to the Public Health Service for this purpose.

This property, I might mention, Mr. Schenck, is immediately adjacent to the property which had been made available earlier to the Food and Drug Administration by the Department of Agriculture.

These two properties are side by side.

Mr. SCHENCK. Dr. Terry, is it not true that there is a great deal of resistance and objection to the further concentration of governmental services in the Washington area?

Dr. TERRY. Doubtless this is true, Mr. Schenck, and we have weighed this matter carefully over a period of several years in terms of this specific recommendation of location.

In spite of our recognition of this fundamental opposition, we feel that there are sufficient points which are of importance in terms of the location of this site in the Washington area to make us feel that it is a justifiable request.

Mr. SCHENCK. Dr. Terry, as an individual member of this committee and also of the Congress, I would remaind you that there is a great feeling among many of us who feel that the concentration of governmental activities in the Washington area is far too large at the present time and that these should be dispersed rather than increased by the creation of a new facility.

Dr. TERRY. Mr. Schenck, I am aware of this feeling on your part as well as other Members of the Congress.

On the other hand, I think that one cannot lay down flat rules which say that you are not going to put anything more in the Washington area.

I think, rather, that it is better to base decisions on the guidelines and criteria which have been drawn up in relation to centralization and decentralization of Federal facilities.

You may remember that, as a result of this being brought up before Congress previously, a committee was appointed which consisted of representatives from several departments, including Secretaries, high officials from the Bureau of the Budget, and other agencies in the Government, in which certain criteria for centralization and decentralization of Government agencies were drawn up.

I believe that our proposal for the Environmental Health Center fits the criteria justifying centralization.

Mr. SCHENCK. Dr. Terry, I will remind you that nearly every other department of the Federal Government would like to centralize here in the Washington area and that many of their component organizations would also like to be in the Washington area for a number of reasons, and that entire subject is one which I am sure we should rather carefully review.

Dr. TERRY. Mr. Schenck, may I call your attention to the fact that we are talking about one facility for a large program area. We are not talking about all of the facilities. We are talking about one facility, an Environmental Health Center.

Even if and when such a Center is created in the Washington area, we will have more than twice as many persons in the field outside of the Washington area in this program.

Mr. SCHENCK. I can well appreciate that, Dr. Terry, and, yet, at the same time, I think there are very persuasive arguments that would indicate that there should not be a further centralization of governmental activities in the Washington area.

I would urge that you give that very concentrated consideration.

Dr. TERRY. Before we leave this, may I call your attention to some of the problems we have in this area?

For instance, in the environmental health program area, we have the Sanitary Engineering Center in Cincinnati. We have three radiological health laboratories: Las Vegas, Nev.; Montgomery, Ala.; and Winchester, Mass.

We are in the process of establishing seven regional water pollution laboratories.

We have already authorized and are in the process of building two seafood laboratories, one on the gulf coast and one on the New England coast.

We have other laboratories authorized, such as two water quality laboratories.

We have a large number, Mr. Schenck, of our laboratory research, service, and related activities, outside of the Washington area.

I would like to assure you that I have given this very, very serious consideration over the past 2 years in recognition of just the thing you are talking about.

It seems to me that with the necessity of having a central focus for these laboratory activities and with the large number of activities of agencies and departments in the Washington area with whom we must deal daily on problems related to these programs, it is essential in order for us to do the best job that it be located in the Washington area.

Mr. SCHENCK. Well, there is a very honest and sincere difference of opinion, Dr. Terry, on that point.

Dr. TERRY. I was merely trying to make it clear to you that this was not a snap judgment. I agree with your basic concept opposing larger concentration of Government in the Washington area, but I still think that there are certain activities which are of such a character that it would be necessary or at least highly desirable to locate here.

Mr. SCHENCK. Dr. Terry, in order to get a recommendation such as you have presented here before this Congress for the approval of H.R. 2410, is it necessary for you to clear your reasons for that with the Office of Science and Technology and the White House?

Dr. TERRY. Of course, all proposals such as this which are made by departments have to be cleared by the Bureau of the Budget, and where there are scientific elements involved, of course, the Office of Science and Technology of the President is consulted.

For instance, they reviewed extensively and intensively with an outside consultant group the exact proposal which I am discussing with you now, both in relation to a Bureau of Environmental Health and to the Environmental Health Center and its location in the Washington area, and they indicated their approval.

Mr. SCHENCK. Well, that is one of the reasons why I asked the question, Dr. Terry.

I understand that the Office of Science and Technology costs about a million dollars a year and the question is whether or not that is not a duplication—and you don't need to answer this; I think it is—a duplication of effort to determine what ought to be done and what ought not to be done. Personally, I have a feeling that there is a greater competency in the Public Health Service to determine what it ought to do rather than to depend upon some outside advice which is not directly concerned and which has no responsibility for any program except to advance an opinion.

I again say you don't need to answer that.

Now, the question of H.R. 2410, Dr. Terry: Would that increase the efficiency of the Public Health Service?

Dr. TERRY. I think it would, Mr. Schenck.

Mr. SCHENCK. Would it give you better opportunity and authority for managing the programs of the National Institutes of Health, the research grants and your other research programs?

Dr. TERRY. No, sir. I don't think this particular legislation would have any effect on that specific point, Mr. Schenck.

Mr. SCHENCK. Is there any consideration being given toward improvement of the management of these research programs by the National Institute of Health?

Dr. TERRY. Mr. Schenck, there has been a tremendous amount of consideration given to this, not only at the level at the National Institutes of Health, but in the Office of the Surgeon General and with help and consultation at the departmental level.

We are working very hard to develop the most responsible management that we can at the National Institutes of Health and at the same time avoiding management practices which would interfere with the real progress of the development of medical research in the United States.

Mr. SCHENCK. Talking, Dr. Terry, about the administrative management of these grants and research programs and whether or not you personally are having any contact with that——

Dr. TERRY. I definitely am having contact with it and have had over a period of the entire time that I have been in the Office of Surgeon General.

I think I might point out to you in that respect, Mr. Schenck, that 10 years of my career before I came into my present position were in the National Institutes of Health and therefore I have a vital interest in it.

Other matters, too, have necessitated that the Office of the Surgeon General and the Surgeon General, himself, take a very active interest in our research management.

An example is the development of the research and training grants and related grant activities in other bureaus of the Public Health Service. A few years ago, the National Institutes of Health was almost the only component of the Public Health Service through which any significant grant, and particularly research grant activities, were carried on. Consequently, it was largely a problem of the National Institutes of Health.

Today, this is no longer true. We are employing research grant and contract mechanisms in our other bureaus and constituent units of the Public Health Service, particularly in the environmental health area and in the community health area.

I have recently created in my office, in the Office of the Surgeon General, a grants policy office and officer. Dr. Ernest Allen, who has been working in the National Institutes of Health in its grant management program for 15 years, was moved down to head this up because we realize that there is a great responsibility on the part of the Public Health Service to maintain close supervision of these grants and related activities, whether they are in the National Institutes of Health or in the community health area or in the environmental health area.

Mr. SCHENCK. Now, Dr. Terry, as you know, another responsible committee of the Congress has indicated through its study that a number of these research grants programs by the National Institutes of

Health have not even required reports from those to whom the grants were offered in order to find out what progress was being made.

Now, is that true? Has it been stopped?

Dr. TERRY. Mr. Schenck, insofar as I am aware, throughout the existence of the grants program of the National Institutes of Health, an initial description in the project application has been required at the time the application was made. In addition to that, insofar as I am aware, there has been a routine requirement for an annual progress report.

Now, it is true that certain operating deficiencies were discovered in our grants program at the National Institutes of Health, but I do not feel that these have been numerous or involve large sums of money in relation to the overall operation. I think it is merely illustrative of the problems that are faced in any large operation, and particularly a large operation which has grown as rapidly as the programs of NIH have grown. But I can assure you we are moving forward to correct those deficiencies as rapidly as we can.

Mr. SCHENCK. And you feel that the passage of H.R. 2410 will give you additional management authority that you need for that purpose?

Dr. TERRY. No, sir. I don't think H.R. 2410 has anything to do with that.

I already have all the authority I need in that respect, Mr. Schenck.

Mr. SCHENCK. And you are exercising that?

Dr. TERRY. I am trying to the best of my ability, sir.

Mr. SCHENCK. One question here about the environmental health situation. Has the level of safe radioactive fallout been determined?

Dr. TERRY. Mr. Schenck, I think the answers that you might receive to this question would depend upon whom you ask, because, obviously, there is a great diversity of opinion.

We in the Public Health Service have felt fundamentally that we do not like our population exposed to any radiological exposure.

On the other hand, we realize that there will always be some hazard from the standpoint of natural background and also other factors that go beyond our control. We also have to weigh them in terms of possible benefits to be obtained.

Even though I am concerned about all radiation exposures, this does not mean that I would be reluctant to X-ray a person's chest if it is necessary in my medical judgment.

In this whole area, I think that one must weigh the possible benefits to be derived against the possible dangers.

Frankly, in many respects, the possible dangers are not as clearly defined as we would like to have them in many respects.

Mr. SCHENCK. Of course, as I understand, Dr. Terry, X-raying a person is a rather temporary exposure to a radioactive situation that the effects are dissipated rather quickly, radioactive fallout, on the other hand, is a more or less of a continuing danger, is it not?

Dr. TERRY. This depends, Mr. Schenck, on the type of fallout and the particular individual and the way they handle this.

For instance, radioactive iodine, which is one of the principal components that we are concerned about in fallout, has a half life of 8 days. Well, obviously, you are not worried about the exposure that a person had from radioactive iodine 5 years ago.

On the other hand, many of the isotopes have many, many years half life and are of concern from a long-range standpoint.

We are concerned about the exposure of persons to X-ray machines and for that reason we have carried on quite a large program in the Public Health Service.

For instance, in relation to dental X-rays, we have found that large segments of the person's head were being exposed to X-ray where it was not necessary in order to get the film that the dentist needed to carry out the treatment. With the proper focus and management of the machine and calibration of the machine, this excessive exposure can be avoided.

We have carried on a very active program with the States in terms of inspecting X-ray machines and improving X-ray machines to cut down on exposure.

One of the things we have been very interested in is the question of more sensitive film which would allow less X-ray exposure to get an X-ray picture and the use of various techniques of amplification which would decrease the amount of exposure.

So, we are concerned about the amount of exposure people receive from X-ray in diagnostic procedures. At the same time, I think we are making real progress in this direction and I think that it has been one of our very important developments in recent years.

Mr. SCHENCK. And you would say that the Public Health Service has a very active and continuing interest in this entire question?

Dr. TERRY. Yes, sir.

Mr. SCHENCK. Mr. Chairman, I am glad to hear Dr. Terry say that there is relatively little overlapping with the Food and Drug Administration. I gathered from his testimony of the work being done that there must be a minimal amount, but apparently you feel that there is not excessive overlapping.

Dr. TERRY. Let me make a differentiation between overlapping and interrelationship.

I think there is a very close relationship in the exchange of information between the Public Health Service and the Food and Drug Administration, although even more needs to be done, and we are devoting a great deal of effort to improvements in that direction.

When you made the remark a while ago, Mr. Schenck, I was referring specifically to our food protection program. I think that this is literally true in this area, that our working relationships, our understanding of our area of responsibility, and so forth, with the Food and Drug Administration has been established and quite clear over a period of many years, and that I think that there is practically no difficulty of conflict there.

Mr. SCHENCK. Thank you very much, Mr. Chairman.

Thank you, Dr. Terry.

Dr. TERRY. Thank you.

Mr. ROBERTS. Mr. Brotzman.

Mr. BROTZMAN. Doctor, yesterday morning we had testimony by Dr. Wiesner, Director of the Office of Science and Technology, and he testified that his Office is going to initiate a study into the research programs of the NIH.

Are you aware of this?

Dr. TERRY. Yes, sir. I am.

Mr. BROTZMAN. Now, I was just going back over his testimony here while you were talking.

Are you aware of the objectives of his study or what he is trying to find out?

Dr. TERRY. Frankly, right at the moment, Mr. Brotzman, I have not received the details. Unfortunately, I was not here yesterday when he testified—if he revealed the details.

I have not had an opportunity to discuss this project with him or with his staff, so that I am not acquainted with the exact details of how they expect to proceed with it and what they expect to do.

Mr. BROTZMAN. Well, just quickly I found one.

I asked him this question: "What, specifically, did the President direct you to ascertain?"

His reply: "Well, what we are going to do is make the research of the National Institutes of Health program trying to get a feeling for the details of as many of these individual research activities as possible. We probably won't go into intensive detail on all of them; it is too long. We are going to try to devise, together with the National Institutes of Health people, a sampling procedure so that we can end up with a judgment about the quality of the research activities," and so forth.

Now, I think Dr. Wiesner testified that his qualifications—I don't know all of them, but I think that he testified that he was a graduate in electrical engineering and radio engineering.

If I understand what is going to happen, he is going to initiate a study in this particular area to try to make certain judgments about what is being accomplished in the National Institutes of Health.

It would seem to me that it would be your job and your responsibility to make these determinations and to come up with the answers in this area and to direct this program.

Dr. TERRY. Mr. Brotzman, I think this is a responsibility of mine. I don't say that it is my responsibility alone. It is my responsibility and it is a responsibility which I have been discharging in working with Dr. Shannon, the Director of the National Institutes of Health, over the past 2 years, and I think that we have done a good job.

On the other hand, I think there is merit in having someone else look at the program carefully. We want to be sure that we correct any deficiencies so that it might continue in the very productive and constructive fashion in which it has been operated.

Therefore, though I feel that I have done all I can in working with the Director of the National Institutes of Health, I do not see any contradiction in terms of having a capable scientific group from outside also take a look and tell us and tell the President what he thinks of the activity.

Mr. BROTZMAN. Do you know who is going to conduct the study from the standpoint of the Office of Science and Technology?

Dr. TERRY. I do not, Mr. Brotzman, in terms of the specific individuals involved, but I understand that it will be a non-Government group of outstanding scientists chosen from over the country for this particular purpose.

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Mr. BROTZMAN. The question I am raising: He was testifying on behalf of reorganization and pulling things together, if I understood his testimony correctly.

Dr. TERRY. Yes, sir.

Mr. BROTZMAN. Of course, I am certainly interested in seeing these programs function and I am wondering if this is a watchdog type of operation that he is performing at extra expense that probably you should be performing.

When I say expense, especially to the taxpayers, once again.

Dr. TERRY. Frankly, I don't look on this as a watchdog activity. I look on this as an independent review of our programs and methods of operation that will make available to us any advice that the group may have in relation to operations of these programs. It might also be helpful in advising Members of the Congress and the public whether this program at NIH has been a good program, an ordinary program or a fine program.

I don't think there is any question about the answer and, therefore, I am not at all reluctant to have any capable people look at it. I know it has been a superior program.

Mr. BROTZMAN. That is all.

Thank you.

Mr. ROBERTS. Doctor, I have just two brief questions I would like to get clear for the record.

Now, you talk about the effect of section 3 which says that "any commissioned officer assigned to be the Director of the National Institutes of Health," and so forth, "shall, while so assigned, have the grade of Assistant Surgeon General."

Now, my question is: What would be the status of the person who is not a commissioned officer but who would be appointed to be a Director of NIH? Now, he would not be an Assistant Surgeon General and therefore he could not become Surgeon General under section 205(a).

Dr. TERRY. That is right, sir.

Mr. ROBERTS. Don't you think that that is a rather bad situation?

Dr. TERRY. Mr. Chairman, I have not even thought what particular grade such a person would be if he were appointed Director of the National Institutes of Health outside of the commissioned corps, because I had not even come close to considering this as an immediate possibility.

I would assume that the other mechanism of employing such a person would be to provide one of the higher civil service grades, either in a special category such as 208(g) or something of that sort.

On the other hand, as I say, quite frankly, I have not even been concerned about it because I am not thinking of such action at the moment.

Mr. ROBERTS. I mean it is possible the way the law is set up that you would have a block there for someone for an outstanding job and it might be necessary to consider him.

Could we possibly have some language that would get us around that possibility?

Dr. TERRY. That would get us around what possibility, of blocking a person at the bureau chief level?

Mr. ROBERTS. Yes.

Dr. TERRY. I would not recommend any change in the present laws, Mr. Chairman.

Mr. ROBERTS. Do you feel that you have enough already in this category that would be available for appointment that you don't think there would be any need for the law to be changed?

Dr. TERRY. The thing I am saying very frankly to you is this, Mr. Chairman: I think the Surgeon General of the Public Health Service should be from the Commissioned Corps of the Public Health Service and therefore I have not given any thought to the possible change you are mentioning.

Mr. ROBERTS. I believe they had a similar situation that somebody became Director of the Institute and it seems to me that he ought to be blocked out even before he is considered.

Dr. TERRY. This is so highly theoretical, Mr. Chairman, I could not answer it.

I would not recommend any change in the present laws or regulations with regard to appointment of the Surgeon General.

Mr. ROBERTS. Now, let's go back to your Bureau of Environmental Health.

Now, you propose to place the water pollution programs within that bureau, that is, if the bill passes, do you not? You plan to put the water pollution program in the Bureau of Environmental Health?

Dr. TERRY. That portion which is delegated to the Public Health Service, Mr. Chairman.

Mr. ROBERTS. Now, the 1961 amendments to the water pollution program placed responsibility for administration of the program to the Secretary of HEW and not in the Surgeon General?

Dr. TERRY. That is correct, sir.

Mr. ROBERTS. Now, how, then, can you understand 2410 places any of these responsibilities anywhere else than where the 1961 amendments place that responsibility, or is it your viewpoint that H.R. 2410 should precede the 1961 amendments?

Dr. TERRY. No, sir. This bill would not affect the present authority of the Secretary. This is simply a case where certain responsibilities which are delegated by the Secretary may in turn be delegated to particular officials or operating units. In other words, the Secretary does have the statutory power and responsibility under the Water Pollution Act. After a study following the passage of this legislation the Secretary kept certain responsibilities in the Office of the Secretary and delegated the rest of the responsibilities in the water pollution control program to the Public Health Service.

Mr. ROBERTS. Now, would it not be wise to consider that since the water pollution program authority to this program is without the jurisdiction of this committee, there should probably be some language placed in 2410 which might exempt this committee from the jurisdiction of water pollution program?

Dr. TERRY. Mr. Chairman, I would not intrude myself into the question of committee jurisdiction over particular programs. I would simply say this: That, as long as the operating responsibility for this program is delegated by the Secretary to the Public Health Service, this is the way I would organize it and operate it.

Mr. ROBERTS. All right.

Mr. Dingell?

Mr. DINGELL. Thank you, Mr. Chairman.

Dr. Terry, you brought forward here a rather remarkable piece of legislation which proposes to afford to an officer below the secretarial level the authority to completely reorganize one of the major branches of this Government.

Will you tell us where else in the statutes there is similar authority afforded to an officer below the secretarial level?

Dr. TERRY. Mr. Dingell, this proposal would vest authority in the Surgeon General with the approval of the Secretary.

Mr. DINGELL. I understand the Surgeon General initiates this, does he not?

You tell me where else in the statutes in the United States there is similar authority afforded to an officer of similar rank in the Government.

Dr. TERRY. In practically all departments of the Government there is the authority for the Secretary or the head of that department to organize and reallocate responsibility within that unit.

Mr. DINGELL. I ask you to name where else in the statutes this is. I happen to believe that there is no similar authority anywhere in statutes affording this broad authority to a person below the Cabinet level.

Dr. TERRY. I don't think, frankly, that this is important as long as the Secretary has the decision to make.

Mr. DINGELL. I am not discussing whether the Secretary has the decision or anything else. I am asking you to name where else this broad authority is afforded to any person below the Secretary level.

Dr. TERRY. At the moment, I could not name such a place, Mr. Dingell.

Mr. DINGELL. Now, you discuss here the fact—I believe I am quoting you correctly here. At one point you indicated that no new appropriations would be required. Then, in your prepared testimony you said that you thought that there would be no supplemental appropriations request to implement these changes. Am I correct? That is on page 8.

Dr. TERRY. On page 8, I said:

> While some of the organization changes may result in a few additional positions, the resulting costs will be negligible, and we do not contemplate any supplemental appropriations requests to implement these changes.

Mr. DINGELL. What new positions would be required?

Dr. TERRY. I cannot identify one single new position that would be required at the moment, sir.

Mr. DINGELL. Then, you have no objection to the amendment requiring that there be no additional positions established by this reorganization; is that correct?

Dr. TERRY. I would have no objection to it.

Mr. DINGELL. All right. Now, let's go further.

The bill indicates on page 3 that certain officers will rank as Assistant Surgeons General; they will have the grade of Assistant Surgeons General.

How many of those will there be under this bill?

Dr. TERRY. This bill has nothing to do with the number of Assistant Surgeons General in the Public Health Service.

Mr. DINGELL. How many individuals are going to get the rank of Assistant Surgeon General under this legislation?

Dr. TERRY. Insofar as I read the bill at the moment, Mr. Dingell, I do not see that it will create any additional positions with the grade of Assistant Surgeon General.

Mr. DINGELL. You don't believe there will be a new position.

Now, there are environmental health activities conducted in how many other agencies of the Government?

Dr. TERRY. We drew up a list of those, Mr. Dingell, and it is approximately 25 other agencies in the Federal Government.

Mr. DINGELL. Will you submit that list to the committee for the record?

Dr. TERRY. I will be very happy to submit it.

(The information requested follows:)

PRINCIPAL BUREAU OF STATE SERVICES (ENVIRONMENTAL HEALTH) INTERAGENCY WORKING AND COMMITTEE RELATIONSHIPS (1963)

Specific examples of interagency and intra-agency relationships are indicated in tables A and B which follow.

Table A indicates primary working relationships which are based upon formal and informal cooperative agreements between agencies and the Bureau of State Services (Environmental Health). In certain cases these relationships involve transfer of funds or reimbursement and represent basic segments of congressionally approved or continuing programs. These types of relationships make it possible for one agency to utilize the competency and resources of another agency, thus precluding the development of duplicate program efforts among agencies having overlapping or related program jurisdiction.

Table B indicates primary committee relationships between agencies and the Bureau of State Services (Environmental Health). These are formal relationships established by written agreements, in some cases by direction of the President or by the Congress. These relationships promote continued coordination between closely related programs of various agencies and provide a mechanism for the exchange of information pertinent to problems of national concern.

It should be pointed out that a great deal of interrelationships between agencies and the Bureau of State Services (Environmental Health) is of an informal, nonrecurring nature representing contacts between individuals of the same or related scientific disciplines or professions, or between offices having similar functions. The total effect of these types of interrelationships cannot be measured accurately, but unquestionably play a fundamental role in the development and progress of Government research operations.

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TABLE A.—*Principal bureau of State services (EH) interagency working relationships (1963)*

Agency	Basis of relationship	Funds transferred	Working relationships	Number of people assigned
DIVISION OF AIR POLLUTION				
Department of Interior	Formal agreement	$450,000 from PHS to agency	Work program includes studies of sulfur dioxide removal from flue gas; engine exhaust gas analysis; removal of air contaminants by catalytic oxidation; noncatalytic afterburners for auto exhaust; investigations of oxides of nitrogen and sulfur in power station boilers; composition of diesel engine exhaust gases; survey of coal mine refuse-pile fires; and processes for desulfurization of fuel oil.	
Department of Commerce (U.S. Weather Bureau).	do	$266,000 from PHS to agency	Work program includes meterological studies of dispersal of community air pollution.	
Department of Commerce (National Bureau of Standards).	do	$125,000 from PHS to agency	Work program includes studies in organic chemistry; molecular spectroscopy; molecular kinetic; and applied analytical research.	
Department of Agriculture	do	$25,000 from PHS to agency	Work program includes research on agricultural effects of air pollution.	
Library of Congress	do	$12,500 from PHS to agency	Bibliography of air pollution material	
Department of the Navy (Bureau of ships.	do	$5,000 from agency to PHS	Work program includes analysis of air samples collected from submarines.	As required.
DIVISION OF ENVIRONMENTAL ENGINEERING AND FOOD PROTECTION				
Department of Interior (Fish and Wildlife Service).	Formal agreement	None	Work program includes cooperative efforts to maintain a high level of sanitation in the shellfish industry so that shellfish will not contribute to the interstate spread of disease.	As required.
Department of Interior (National Park Service).	do	$87,000 from agency to PHS	Work program includes providing consulting sanitary engineering services relation to the construction, operation, and maintenance of National Park Service. Annual survey of the 186 national park areas are made to assess and evaluate the sanitation level of facilities provided for public.	6 positions.
Department of Interior (U.S. Geological Survey).	Informal	None	Upon request, U.S. Geological Survey makes special analyses of water samples.	
Department of State (Canada)	Formal agreement	do	Work program includes activities relating to the international shipment of shellfish under U.S.-Canadian Shellfish Sanitation Agreement.	As required.
Department of State (Government of Japan).	do	$3,000 from agency to PHS	Work program includes maintaining liaison with Japanese shellfish authorities and conducting joint inspections.	Do.
Department of Defense	Informal	None	Work program includes technical assistance and consultation with regard to the prevention and control of diseases which may be transmitted through milk and food.	Do.
Department of the Navy (Office of Naval Research).	do	do	Work program includes oceanographic research and sanitary quality of shellfish.	Do.

Department of the Navy Bureau of Ships).	Formal agreement	$3,000 from agency to PHS	Work program review of plans for certain research and oceanographic survey vessels for compliance with PHS standards.	Do.
Department of Air Force (MATS)	Informal	None	Work program includes technical assistance and consultation on food sanitation on MATS.	Do.
Department of the Army (Army Chemical Corps).	Formal agreement	$60,000 from agency to PHS	Work program includes the development of a serum that when injected into humans will render them immune to paralytic shellfish poisoning.	7 positions.
Do	Informal	None	Work program includes technical assistance and consultation on etiologic agents.	As required.
Smithsonian Institution	do	do	Work program includes marine and oceanographic research	Do.
Department of Agriculture	do	do	Work program incaudes pesticide hazards in milk, food, shellfish, and water.	Do.
Do	do	do	Work program includes cooperative research project relating to the development of a feasible process for removing radioactive contamination from milk.	Do.
Do	do	do	Work program includes technical consultation with regard to the Economic Poisons Act, labeling of disinfectants.	Do.
Do	do	do	Work program includes technical assistance and consultation with regard to the prevention and control of diseases which may be transmitted through milk, food, and shellfish.	Do.
Tennessee Valley Authority	do	do	Work program includes assistance in setting up a pilot composting plant, agricultural testing of finished product, and marketing evaluation of composting.	Do.
Department of Justice (Bureau of Prisons).	do	None	Work program includes technical assistance and consultation on sanitation problems in penal institutions. Development of a manual "Institutional Sanitation."	Do.
General Services Administration	Formal agreement	$300 from agency to PHS	Work program includes technical assistance and consultation on food service sanitation, water supply, and plumbing in federally controlled buildings.	Do.
Do	Informal	None	Work program includes technical assistance and consultation with regard to the prevention and control of diseases which may be transmitted through milk and food.	Do.
Federal Aviation Agency	Formal agreement	$2,000 from agency to PHS	Work program includes furnishing sanitary engineering and sanitation services for the Washington National and Dulles International Airports including surveys of water and sewage distribution systems, sewage and industrial wastes disposal.	Do.
Do	Informal	None	Work program includes review of plans for sanitation facilities for local airports.	Do.
Department of the Treasury (U.S. Coast Guard).	do	do	Work program includes technical assistance and consultation on vessel sanitation.	Do.
Federal Martime Commission	do	do	do	Do.
National Aeronautics and Space Administration.	do	do	Work program includes assistance on water supply problems at missile tracting stations.	Do.
Housing and Home Finance Agency	Formal agreement	$13,400 from agency to PHS	Work program includes assistance in a program of area development with particular emphasis to related public health problems.	1 position.
Do	Informal	None	Work program includes coordination of meetings on policy of Federal assistance for local planning, stimulation of metropolitan planning agencies, and enforcement of local housing codes. Assistance on drinking quality problems in FHA areas.	As required.
Department of Commerce (National Bureau of Standards).	do	do	Work program includes assistance in connection with work of the PHS Technical Committee on Plumbing Standards.	Do.

TABLE A.—*Principal bureau of State services (EH) interagency working relationships (1963)*—Continued

Agency	Basis of relationship	Funds transferred	Working relationships	Number of people assigned
DIVISION OF OCCUPATIONAL HEALTH				
Department of Interior (Bureau of Mines).	Formal agreement	None	Work program includes studies of health hazards in mines; medical examinations and environmental evaluation of metal mines.	As required.
Department of Labor (Bureau of Labor Standards).	Informal	do	Work program includes responsibility for the control of occupational health hazards in industry.	Do.
DIVISION OF RADIOLOGICAL HEALTH				
Atomic Energy Commission	Formal agreement	$718,000 from agency to PHS.	Division provides offsite radiological surveillance in connection with NTS.	DRH assignees vary according to effort of each project. Range approximately 33 to 60.
Do	do	$15,000 from agency to PHS.	Division provides health physics support and technical experience to the NS *Savannah* operation.	1 position.
Do	do	$40,000 from agency to PHS.	Division provides harbor surveillance for pre- and post-visits of the NS *Savannah*.	2 positions.
Department of the Navy	do	$10,000 from agency to PHS.	DRH provides health physics competence to the agency in the operation of its developmental reactors at the Bettis Plant, Pittsburgh, Pa.	1 position.
Do	do	$52,000 from agency to PHS.	Division performs environmental surveillance and offsite monitoring in connection with the power reactor in Antarctica.	4 positions.
Department of Defense	do	$130,000 from agency to PHS.	Division provides offsite monitoring of radioactivity levels in Pacific nuclear test area.	10 positions.
Atomic Energy Commission	do	None	Agency allows Division to use NTS for work oriented toward collection and evaluation of environmental data in support of their aerospace nuclear program.	
Department of Commerce	do	$150,000 from PHS to agency.	Agency is conducting a nationwide food consumption survey for Division.	
Do	do	$5,000 from PHS to agency.	Agency provides Division with rainfall data on punched cards.	
Department of Air Force	do	None	Division provides assistance to the Agency in connection with nuclear accidents or incidents.	As required.
Department of Defense	Informal	None	Division provides environmental surveillance and offsite monitoring at Atlantic and Pacific Missile Ranges.	Do.
Department of Commerce	do	do	Division provides health physics competence to the maritime service in connection with the NS *Savannah*.	Do.
Department of the Air Force	Formal agreement	$5,000 transferred from PHS	Cooperative study of effects of low-level radiation on primates.	4 positions.

		to agency for housekeeping services.	Division provides staff and some other objects, cost, AF space, animals, etc.	
Registry of Radiation Pathology, Armed Forces Institute of Pathology.	do	PHS funds staff, agency funds other costs.	Provides staff to operated registry located in AFIP, Walter Reed Hospital.	7 positions.
Department of Agriculture	do	$7,000 from PHS to agency	Agency collects bovine thyroids for analysis by Division for iodine content.	
Atomic Bomb Casualty Commission (NAS-AEC).	do	$86,000 from agency to PHS.	Division provides medical officers to staff part of epidemiological study in Japan.	8 positions.
Department of Agriculture	do	$15,000 from agency to PHS.	Agency collects milk from various feed situation in 3 midwest milksheds—Division analyzes for radioactivity.	
Do	do	$100,000 from PHS to agency	Division participating in funding and technical direction of agency contract for development of a pilot commercial plant to remove strontium 90 from milk.	
Atomic Energy Commission	Informal	None	Regular meetings between Division and agency, Division of Biology and Medicine to discuss research activities.	

DIVISION OF WATER SUPPLY AND POLLUTION CONTROL

Department of Defense (Office of Civil Defense).	Formal agreement	$123,000 from agency to PHS.	Furnishing OCD with information on vulnerability of all public water supplies to attack by nuclear weapons (bomb damage assessment).	
Department of Interior (Fish and Wildlife Service).	Informal	None	Division maintains a national inventory on pollution-caused fish kills and transmit data to agency.	As required.
Department of the Interior (USGS and Bureau of Reclamation).	do	do	Agency cooperates on site selection and assists in collecting samples for national water quality network.	
Department of the Army (Corps of Engineers).	do	do	do	
Department of the Air Force	Formal agreement	$3,000 from agency to PHS.	Division provides analytical services for Life Support Systems Unit, Wright-Patterson Air Fore Base, Dayton, Ohio.	Do.
Department of the Army (Corps of Engineering).	Informal	None	Agency cooperates in comprehensive river basin planning, studies in streamflow augmentation below Federal dams.	
Department of the Interior (Bureau of Reclamation).	do	do	do	
Department of Agriculture (Soil Conservation Service).	do	do	do	
Department of Interior (Fish and Wildlife Service).	do	do	Agency cooperates in comprehensive river basin planning	
Department of Agriculture (Forest Service).	do	do	do	
Department of Interior (National Park Service).	do	do	do	
Department of Interior (USGS)	do	do	do	
Department of Commerce (U.S. Weather Bureau).	do	do	do	
Department of Interior (Bureau of Mines).	do	do	Agency cooperates in surveys to determine extent of acid mine drainage causing stream pollution.	
Department of Labor	do	do	Agency determines wage rates paid on sewage treatment works projects receiving Federal grants from PHS.	

TABLE A.—*Principal bureau of State services (EH) interagency working relationships (1963)*—Continued

Agency	Basis of relationship	Funds transferred	Working relationships	Number of people assigned
DIVISION OF WATER SUPPLY AND POLLUTION CONTROL—continued				
Area Redevelopment Administration	Informal	None	Agency and Division cooperate in administering accelerated public works funds for construction of sewage treatment facilities.	
Community Facilities Administration	do	do	do	
Housing and Home Finance Agency	do	do	do	
Department of Commerce	do	do	Representative of Department of Commerce required to sit on specially constituted board when hearings are held in enforcement proceedings initiated by PHS in matters of stream pollution.	
Department of Justice	do	do	Attorney General brings suit on behalf of the United States when Federal court action is necessary in enforcement proceedings initiated by PHS in matters of stream pollution.	
Department of the Army (Biological Labrs).	Formal agreement	$68,000 from agency to PHS	Research on improvement of procedures for detecting biological and chemical pollutants in fermentation industry wastes.	As required.
Department of Interior (Bureau of Reclamation).	do	$10,000 from agency to PHS	Research on development of bacteria resistant monomolecular film for evaporation suppression.	Do.
Federal Housing Administration	do	$2,500 from agency to PHS	Completion of report on study of soils receiving septic tank effluent.	Do.
Department of Interior (Bureau of Mines).	do	$17,000 from PHS to agency	Research on feasibility of using pulverized coal as adsorbents for refractory organics in waste effluents.	
Department of Agriculture	do	$2,000 from PHS to agency	Use of Department of Agriculture facilities at Coshocton watershed in Ohio for studies of pollutional character of agricultural land drainage.	
Department of the Army (Corps of Engineers).	do	$238,000 from agency to PHS	Studies of streamflow regulation and municipal and industrial water supplies provided to agency.	Do.
Do	do	$250,000 from PHS to agency.	Agency performs services for GLIRB project	
Do	do	$26,000 from agency to PHS	Agency's share of costs of a contract negotiated by the PHS with the National Planning Association.	
Department of Interior (Bureau of Reclamation).	do	$110,000 from agency to PHS	Studies of streamflow regulation and municipal and industrial water supplies provided to agency.	
Department of Interior (Fish and Wildlife Service).	do	$50,000 from PHS to agency	Agency performs services for GLIRB project	
Department of Interior (USGS)	do	$100,000 from PHS to agency.	Agency furnishes facilities in connection with comprehensive, special, and enforcement projects.	
Department of Agriculture (Agricultural Research Service).	do	$30,000 from PHS to agency.	Agency furnishing economic background studies on two comprehensive projects.	
Atomic Energy Commission	do	$25,000 from agency to PHS	Agency furnished services in connection with Water Quality Management Section.	Do.
Department of Commerce (U.S. Weather Bureau).	do	$13,000 from PHS to agency	Agency furnishes services in conjunction with Lake Michigan studies.	
Department of the Army (Walter Reed Research Institute).	do	$1,500 from PHS to agency	Agency provides consultation on heat pollution in the Columbia River project.	

TABLE B.—*Principal Bureau of State Services (EH) interagency committee relationships, 1963*

Name of committee	Functions of committee	Agencies represented
DIVISION OF AIR POLLUTION		
Interdepartmental Committee on Community Air Pollution.	To provide liaison between Federal agencies concerned with air pollution; to review the pertinent research programs of such agencies, and to advise the Surgeon General thereon.	Public Health Service, Agriculture, Atomic Energy Commission, Commerce, Army, Interior, and National Science Foundation.
Air Resources Subcommittee, Committee on Natural Resources, Federal Council for Science and Technology.	To review research on resource aspects of atmosphere, the control of air, and its pollution.	Public Health Service, Commerce, Interior, National Aeronautics and Space Administration, Agriculture, Atomic Energy Commission, Department of Defense, Federal Aviation Agency, and National Science Foundation.
Interdepartmental Committee for Atmosphere Sciences	To examine the role of the Federal Government in atmospheric sciences research, to evaluate the needs for such research in the Federal Government, and to make recommendations with respect to present programs and the development of future activities.	Public Health Service, Agriculture, Atomic Energy Commission, Bureau of the Budget, Commerce, Defense, Federal Aviation Agency, Interior, National Academy of Sciences, and National Aeronautics and Space Administration.
DIVISION OF ENVIRONMENTAL ENGINEERING AND FOOD PROTECTION		
Interdepartmental Committee on Sewage and Waste Disposal from Vessels.	To ascertain the most effective and economical means of sewage and garbage disposal from ships in the Great Lakes, inland and coastal waters within the jurisdiction of the United States, to minimize contamination of waters used for potable, recreational and other purposes.	Public Health Service, Navy, Maritime Administration, Army, and U.S. Coast Guard.
Joint Committee on Rural Sanitation	To establish standards of rural sanitation to serve as guidance to member agencies.	Health, Education, and Welfare, Agriculture, Interior, Coast Guard, Veterans' Administration, Federal Housing Administration, and Tennessee Valley Authority.
Interagency Committee on Recreation	To serve as a clearinghouse for the exchange of information on policies, plans, methods, references, and procedures among the agencies.	Public Health Service, Office of Education, Interior, Housing and Home Finance, Defense, and Agriculture.
Subcommittee on Waste Disposal, Committee on Sanitary Engineering and Environment, National Academy of Sciences, and National Research Council.	To act as an advisory body on problems concerning sanitary engineering and the environment.	Army, Navy, Public Health Service, Atomic Energy Commission, Federal Housing Administration, Agency for International Development, World Health Organization, Coast Guard, Interior, and Veterans' Administration.
Subcommittee on Water Supply, Committee on Sanitary Engineering and Environment, National Academy of Sciences, and National Research Council.	To act as an advisory body on problems concerning sanitary engineering and the environment, specifically water supply problems.	Public Health Service, Army, Navy, Air Force, Federal Housing Administration, Agency for International Development, and U.S. Geological Survey.
Subcommittee on Milk and Milk Products Standards, and U.S. Food and Agriculture Organization.	To review standards developed by Food and Agriculture Organization Committee of Governmental Experts on Milk Standards, and develop U.S. position with respect to such standards.	Public Health Service, Agriculture, State, and Food and Drug Administration.
Building Research Advisory Board	To survey the science and technology of buildings, recommend criteria, define areas requiring further research and suggest directions which research should take.	Public Health Service, Commerce, National Bureau of Standards, Defense, and Army.

TABLE B.—*Principal Bureau of State Services (EH) interagency committee relationships, 1963*—Continued

Name of committee	Functions of committee	Agencies represented
DIVISION OF OCCUPATIONAL HEALTH		
Advisory Committee to the Silicosis Study in Metal Miners.	To direct administrative aspects of the joint Public Health Service-Bureau of Mines silicosis study.	Public Health Service, and Interior.
Committee on Toxicology	To integrate available toxicologic knowledge on substances of interest to the Armed Forces for their current information.	Public Health Service, and National Research Council.
DIVISION OF RADIOLOGICAL HEALTH		
Federal Radiation Council	To advise the President with respect to radiation matters, directly or indirectly affecting health, including guidance for all Federal agencies in formulation of radiation standards and in the establishment and execution of programs of cooperation.	Department of Health, Education, and Welfare, Atomic Energy Commission, Labor, Department of Defense, Agriculture, and Commerce.
Joint Committee on Radiation Environment Studies at Nevada Test Site.	Coordinate interagency programs involved in collection and evaluation of radiation data resulting from nuclear reactor test sites at the Nevada Test Site.	Public Health Service, Atomic Energy Commission, U.S. Air Force (Department of Defense), and Commerce.
Committee on Radiation Preservation of Food	To achieve a high level of participation by Government agencies and industry on research and development of food processing with ionizing radiation.	Department of Health, Education, and Welfare, Agriculture, State, Interior, Army, Atomic Energy Commission, Small Business Administration, Agency for International Development, and Commerce.
Committee on Radiological Assistance Representatives	Maintains continuous liaison between representatives of various Federal agencies with respect to emergency radiological assistance.	Department of Health, Education, and Welfare, Atomic Energy Commission. Department of Defense, Commerce, Labor, Post Office, General Services Administration, Treasury, Interstate Commerce Commission, National Aeronautics and Space Administration, and Office of Civil Defense and Mobilization.
Joint Advisory Committee on Removal of Radioactive Nuclides From Milk.	To develop a feasible system for the removal of radioactive nuclides from milk.	Public Health Service, Atomic Energy Commission, Agriculture, and Canadian Department of Agriculture.
Working Group of the Federal Radiation Council	To advise their respective agencies with respect to radiation matters directly or indirectly affecting health.	Health, Education, and Welfare, Atomic Energy Commission, Labor, Defense, Agriculture, and Commerce.
Subcommittee on Livestock Damage	To provide advice on best procedure for assessing damage to livestock from radioactive fallout.	Health, Education, and Welfare, Atomic Energy Commission, Agriculture, and Department of Defense.
National Committee on Radiation Protection and Measurements.	To develop recommendations regarding radiation protection standards and methods.	Public Health Service, National Bureau of Standards, Atomic Energy Commission, U.S. Air Force, Army, and Navy.
Subcommittee 15 of National Committee on Radiation Protection.	To study problems of radiation hazards and protection in teaching institutions.	Public Health Service and National Bureau of Standards.
Subcommittee on Use of Radioactive Standards	To insure that users of radioactive standards use them properly.	Public Health Service, National Research Council, and National Bureau of Standards.
Subcommittee of U.S. Food and Agriculture Organization Interagency Committee.	To be responsible for any interagency cooperation that may be necessary in arranging for international training courses on surveys for radionuclides in foods.	Public Health Service, Agriculture, State, and Interior.

Interlaboratory Technical Advisory Committee	To advise the Chief, Division of Radiological Health (Public Health Service), on technical matters involved in Division of Radiological Health radiochemical laboratory operations.	Public Health Service and Food and Drug Administration.
DIVISION OF WATER SUPPLY AND POLLUTION CONTROL		
Interagency Committee on Water Resources	To provide improved facilities and procedures for coordination of policies, programs, and activities in the field of water and related land resources.	Health, Education, and Welfare, Agriculture, Army, Labor, Interior, Commerce, and Federal Power Commission.
Subcommittee on Hydrology, Interagency Committee on Water Resources.	To coordinate agency activities in collection, analysis, and interpretation of hydrologic data.	Public Health Service, Agriculture, Interior, Defense, Commerce, and Federal Power Commission.
Subcommittee on Evaluation Standards, Interagency Committee on Water Resources.	To formulate mutually acceptable principles and procedures for determining benefits and costs of water resources projects.	Public Health Service, Agriculture, Army, Commerce, Interior, Labor, and Federal Power Commission.
Subcommittee on Sedimentation	To coordinate agency activities in collecting analysis and interpretation of data on sedimentation as related to effects on water resources.	Public Health Service, Agriculture, Army, Commerce, Interior, Labor, and Federal Power Commission.
Interdepartmental Coordinating Committee on Oceanography.	To plan coordinated national programs for expanded oceanographic research to allow the Nation as a whole to benefit from potentialities of the sea. Public Health Service concerned primarily with effects of pollution on marine environment.	Public Health Service, State, Navy, Air Force, Army, Interior, Treasury, Commerce, Bureau of Budget, Atomic Energy Commission, National Science Foundation, National Academy of Sciences, Federal Council for Science and Technology.
Subcommittee on the Economics of Research, Committee on Natural Resources, Federal Council for Science and Technology.	To conduct a survey of research and development programs by categories which would be defined by the subcommittee and measured in convenient terms; to identify the problems requiring short- and long-range scientific research and development effort to support Federal action; to evaluate the adequacy of the scientific content of the Federal effort as a whole; to recommend a 10-year effort in scientific research and development.	Public Health Service, Interior, Commerce, Army, Agriculture, and Council of Economic Advisers.
Interagency Task Group on Water Resources Management.	To coordinate emergency water functions as set forth in the National Water Program.	Public Health Service, Interior, Commerce, Army, Agriculture, Defense, Tennessee Valley Authority, Office of Emergency Planning, and Office of the President.
Washington Metropolitan Regional Sanitary Board	To promote coordination of water supply and sewerage activities of the various jurisdictions and agencies of the Washington metropolitan region; and to act as an advisory board to the National Capitol Regional Planning Council.	Public Health Service, District of Columbia government, Army, and Washington Suburban Sanitary Commission.
Special Cabinet Committee on Evaluation Standards for Water Resources Projects.	To prepare evaluation standards for economic analysis of water resources projects; these standards to replace Budget Bureau Circular A-47; and to prepare interdepartmental agreement that will be the framework of a water resources council.	Health Education and Welfare, Army Interior, and Agriculture.
Subcommittee on Water Resources Research, Committee on Natural Resources, Federal Council for Science and Technology.	To develop Government-wide long-range goals for a program of water resources research to provide basic knowledge which will support more effective conservation, development, and use of water resources; to undertake necessary interagency planning that would lead to recommendations for a coordinated and coherent program and related set of budgets to meet these goals; to develop plans and proposals for international cooperation in scientific hydrology.	Public Health Service, Agriculture, Defense, Commerce, and Interior.

Mr. DINGELL. And, also, the amounts of money.

You indicate in your testimony that you expect that there will be a significant number of changes in your Department if this proposal goes through.

Why did you not specifically enumerate those in the legislation before the committee on 2410?

Dr. TERRY. For the simple reason, Mr. Dingell, that I did not feel that it would be wise to do so. I think that from the operational standpoint, and the responsibility of the Secretary to conduct the affairs of the Department, it would be better not to have such a rigid statutory limitation as exists at the present time.

Mr. DINGELL. As a matter of fact, this legislation authorizes you or your successor to, in effect, completely reorganize the Department at any time you so choose; am I correct?

Dr. TERRY. With the approval of the Secretary.

Mr. DINGELL. I see.

Now, you also indicated to the committee that it was your expectation that you will set up certain activities within your Department with regard to water pollution.

The chairman today indicated that there was legislation enacted by this Congress during the past session which he was going to sponsor, and I am sure you recall it.

Dr. TERRY. Yes, sir; I do.

Mr. DINGELL. Which specifically sets certain statutes for water pollution activities. Am I correct?

Dr. TERRY. It assigns those responsibilities to the Secretary; yes, sir.

Mr. DINGELL. All right.

That being so, what is your interpretation of this legislation with regard to the previous legislation?

Is this legislation authorized to supersede that legislation?

Dr. TERRY. No, sir; it certainly does not.

The Secretary still has the responsibility.

I am indicating how, as long as the Secretary assigns these responsibilities to the Public Health Service, I would propose to organize them and operate them.

Mr. DINGELL. Now, General Terry, you indicated that you expected certain organizational advances to occur in your agency if this bill is passed.

Will you enumerate to the committee what substantive advances in terms of water pollution abatement and in terms of air pollution abatement will occur by result of enactment of this legislation?

Dr. TERRY. I don't know of any specific advances in either of those programs that would be authorized or implemented by this legislation with the exception of giving us a better organizational structure on which to develop.

Mr. DINGELL. Your statement is, then, that you know of no substantive advances in the field of water pollution abatement or air pollution abatement which would occur by reason of enactment of this legislation; is that correct?

Dr. TERRY. With the exception of giving a better organizational and operational framework in which to carry out these programs.

Mr. DINGELL. All right.

Now, in the event this legislation is passed, it will give impetus to the creation of an Institute of Environmental Health, will it not?

Dr. TERRY. Mr. Dingell, though it is not a part of the bill, I have indicated that if this legislation is passed, I will create, with the Secretary's approval, a Bureau of Environmental Health.

Mr. DINGELL. How many people do you propose to employ in this Institute of Environmental Health?

Dr. TERRY. I do not know the exact number, but this particular legislation would not determine the number of persons to be employed. It would be on the basis of the already existing and developing programs.

Mr. DINGELL. As a matter of fact, you have programed an increase of approximately 500 people for that particular operation for the coming fiscal year; have you not?

Dr. TERRY. For what operation?

Mr. DINGELL. For the Institute of Environmental Health.

Dr. TERRY. I don't have immediately at hand the exact number that we have planned to increase in all of our areas of environmental health next year, but there is a proposed increase.

Mr. DINGELL. 1,614 positions.

Dr. TERRY. Are you talking of the water pollution program?

Mr. DINGELL. I am talking about an increase in environmental health.

Submit that for the record.

Dr. TERRY. I will be glad to submit it for the record, but let me make this clear, Mr. Dingell: That this legislation regarding our organization will not determine any increase in positions; it will be a question of program development.

(The information requested follows:)

The 1964 budget includes a requested increase of 339 positions over 1963 for all environmental health programs.

Mr. DINGELL. Now, I understand, also, that your Institute of Environmental Health in its first phase contemplates approximately 4,500 to 5,000 positions; am I correct?

Dr. TERRY. No, sir; that is not correct.

Mr. DINGELL. How many positions?

Dr. TERRY. Let's get clear what we are talking about.

Mr. DINGELL. I am very clear what I am talking about, Doctor. I am talking about the Institute of Environmental Health.

Dr. TERRY. The thing that we specifically refer to, Mr. Dingell, is the Environmental Health Center.

Mr. DINGELL. The Environmental Health Center, then, is going to involve how many jobs and how many people?

Dr. TERRY. In the early stages, it would involve something in the vicinity of 1,600 by 1968.

Mr. DINGELL. I see, but the first phase contemplates approximately 5,000 people; am I correct?

Dr. TERRY. No, sir. I was speaking of the first phase.

If it develops further, along the lines we feel that it may over a period of years, it may involve up to 5,000 persons.

Mr. DINGELL. All right.

Now, what will be the annual operating cost of that institution at the level of 5,000 employees?

Dr. TERRY. I do not have the figures immediately at hand.

Dr. Anderson, do you know what would be the approximate operating cost of the Environmental Health Center when it had the full development up to a projected employment of 5,000 persons?

Dr. ANDERSON. I do not have that figure for the projected maximum potential of this center, Mr. Dingell.

We have done our planning on the basis of what we would expect to have in the Center by the year 1968–69.

Mr. DINGELL. What is the cost of this Center going to be?

Dr. ANDERSON. Well, the developments that we have proposed to this point call for a physical plant to house the environmental activities of the Public Health Service.

Mr. DINGELL. Five thousand?

Dr. ANDERSON. No.

What we have proposed in our budget proposal has been the development of a plant which would house about 1,600 people by 1969–70, and the cost of that plant would be about $33 million.

Mr. DINGELL. The ultimate cost is expected to be $78 million; is that right?

Dr. ANDERSON. That would depend upon further developments in the budgetary area.

Mr. DINGELL. An ultimate payroll of $45 million a year.

I am reporting from what was reported in the newspapers not long back.

I have been trying to get these figures, and I have to go to the daily newspaper to get them.

You indicate that you exepct a payroll of $45 million a year.

Now, the point I am trying to get: This is ultimately aiming at going into radiological health; am I correct?

Dr. TERRY. No, sir.

This Center would involve all of the program areas we have mentioned in the field of environmental health.

Mr. DINGELL. Among them will be radiological health?

Dr. TERRY. Yes.

Mr. DINGELL. This will be duplication of what the Atomic Energy Commission is doing in the field of radiological health.

Dr. TERRY. It will not.

Mr. DINGELL. The Atomic Energy Commission is engaged in this rather extensively.

Dr. TERRY. They certainly are, and we have also been since this responsibility was given to the Public Health Service.

Mr. DINGELL. Are you taking over their responsibility?

Dr. TERRY. No.

Mr. DINGELL. Then you are going to duplicate it?

Dr. TERRY. We are not.

Mr. DINGELL. You are not going to. All right.

Now, the National Institutes of Health presently does work in the field of environmental health, does it not, and makes grants for this purpose?

Dr. TERRY. During the past year, Mr. Dingell, those grant activities, grant programs, which are clearly identified as in the field of environmental health, have been transferred to our Bureau of State Services.

Mr. DINGELL. All right.

The Drug people engage in extensive environmental health research, do they not; they are responsible for food, pesticides, drugs, and so forth?

Dr. TERRY. As a matter of fact, at the present time, the Food and Drug Administration per se does relatively little research.

Mr. DINGELL. All right.

How about the Department of the Interior? They are engaged in rather extensive research in the field of pesticides?

Dr. TERRY. Yes.

Mr. DINGELL. Now, you are going to engage in pesticide activities in your agency.

Dr. TERRY. I don't think there is any question but that the problem of chemicals in our environment is going to be a very important part of this program.

Mr. DINGELL. So, in the end, you will be duplicating what the Department of the Interior is doing?

Dr. TERRY. I beg your pardon, sir.

Just because I said we would be engaged in it does not say we will be duplicating. We will do everything in our power to work with their program and not duplicate it.

Mr. ROBERTS. The chairman will have to state that we have a quorum call on the floor, and I will have to adjourn.

Mr. DINGELL. I appreciate the courtesy. I am particularly grateful. I am not a member of the subcommittee.

Mr. ROBERTS. We are always happy to have the gentleman from Michigan.

I am very sorry we cannot go ahead with the questioning, but we have to announce that the hearing will recess subject to the call of the Chair.

(The following letter was submitted for the record:)

AMERICAN MEDICAL ASSOCIATION,
Chicago, Ill., July 16, 1963.

Hon. KENNETH A. ROBERTS,
Chairman, Subcommittee on Public Health and Safety, Committee on Interstate and Foreign Commerce, House of Representatives, Washington, D.C.

DEAR CONGRESSMAN ROBERTS: The American Medical Association appreciates the opportunity to submit to this committee its views on H.R. 2410, a bill to amend the Public Health Service Act to authorize greater flexibility in the organization of the Public Health Service. In the main, the American Medical Association supports this legislation.

For purposes of our consideration of the bill, we have divided the provisions of H.R. 2410 into two major parts. The first part deals generally with the reorganization of the Public Health Service, and the second part deals with the appointive power of the Surgeon General.

As we understand section 2 of the bill, it would amend existing law to provide that the Public Health Service would consist of—

(1) The Office of the Surgeon General;
(2) The National Institutes of Health;
(3) The Bureau of Medical Services;
(4) The National Library of Medicine; and
(5) "Such other bureaus or other constituent units as the Surgeon General may find appropriate for the organization of the Service and the efficient administration of its functions" as may be approved by the Secretary.

If this section is enacted, the existing Bureau of State Services will be eliminated.

It is a further understanding of the American Medical Association that the contemplated reorganization, which would be carried out if H.R. 2410 is enacted, is based on the final report of the Study Group on Mission and Organization of

the Public Health Service which was initiated by the former Surgeon General, Dr. Leroy E. Burney. Among the recommendations contained in the final report is the establishment of a Bureau of Environmental Health and a Bureau of Community Services which would replace the Bureau of State Services.

While the association has not taken a position on the final report and therefore does not necessarily agree with all the recommendations contained in it, it does agree that the Surgeon General should have authority to adapt the organizational structure of the Public Health Service to meet significant program variations and increased responsibilities without the necessity of seeking new legislation. The great advances in technology, which have resulted in new and emerging public health problems, and the remarkable progress in medical science, which promises solutions to problems that have long plagued mankind, can be expected to continue into the foreseeable future. If the Public Health Service is to meet its responsibilities to the people of this Nation, it must be able to adapt to these changing conditions.

In endorsing the amendment contained in section 2 of H.R. 2410, the association assumes that the Surgeons General of the future will consult with interested medical groups, as well as with outside management experts, as did Dr. Burney's study group.

With respect to the provision we have designated as the second part of H.R. 2410, subsection 3(b), as presently written, is a source of concern to the American Medical Association. It appears to take away the Surgeon General's existing authority to appoint the Director of the National Institutes of Health, the Chief of the Bureau of Medical Services, and the chiefs of new bureaus established under clause (5) of the proposed section 202(a).

The association believes that the language of subsection (b) will weaken the authority proposed to be granted to the Surgeon General in section 2. Further, the elimination of the requirement that the individuals selected for these key positions be made from among officers of the regular corps of the Public Health Service is not, in our opinion, in the best interest of the Service. We believe it could have a disastrous effect on the recruiting activities of the Service and in the maintenance of a stable regular corps. Such an effect could, in turn, result in a loss of efficiency on the part of the Service through the appointment of individuals who lack a complete background of the agency's mission. The American Medical Association believes that the selection of individuals for top-level positions in the Public Health Service should be made from career-oriented officers of the regular corps. The positions should be filled by individuals who have had responsibility for a substantial number of important programs over a period of years in both the United States and in foreign assignments. Their acquired knowledge, experience, and familiarity with the multiplicity of operations of the Service will do much to assure satisfactory performance and the continuity of related interests both within and without the Government.

For these reasons, the American Medical Association respectfully suggests that the committee give consideration to an amendment which would continue the Surgeon General's existing authority to assign commissioned officers from the regular corps to be, respectively, the Director of the National Institutes of Health, the Chief of the Bureau of Medical Services, the chief of any bureau established pursuant to clause (5) of section 202(a), the Chief Medical Officer of the U.S. Coast Guard, the Chief Dental Officer of the Service, and the Chief Sanitary Engineering Officer of the Service.

The amendment merely seeks to continue the Surgeon General's existing authority and to relate it to the amendment contained in section 2 of the bill.

The American Medical Association again thanks you for this opportunity to present the views of the physicians of America on this important legislation. We shall be pleased to be of further service should the committee require from the association any additional information or comment.

Sincerely,

F. J. L. BLASINGAME, M.D.

(Whereupon, at 12:10 p.m., the hearing recessed, subject to the call of the Chair.)

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