Material for
Cong. John E. Fogarty
75th Anniversary of
PHS Research on
Infectious Disease

THE ROLE OF CONGRESS IN PUBLIC HEALTH RESEARCH

It is a distinct pleasure for me to be with you tonight. I am most grateful to you, Doctor Andrews, for your kind invitation to share my thoughts with you on this memorable occasion.

After considering once more the old problem of what a layman like myself might say to a professional audience of this kind, I concluded there was only one thing to do: That is, to speak from the point of view of a Congressman whose major efforts have been directed toward formulating legislation to advance the cause of better health through research.

As a legislator, I have had the extremely good fortune to be closely associated with the programs of the Public Health Service for the past 20 years. In retrospect, it seems to me that this has been one of the most dramatic periods in the history of public health and medical research.

The fine program presented today by the National Institute of Allergy and Infectious Diseases has enabled us to review a number of the many outstanding accomplishments of the Public Health Service in the vital field of microbiology. But beyond this, it has provided us with a fresh insight into present trends and the probable course of future developments in infectious disease research.

On this 75th anniversary of the beginning of research in the Public Health Service, I would like to recall with you a few of the legislative landmarks which pointed the way for the recent rapid and encouraging growth of our national research support in the biomedical and health-related sciences.

To begin with, we might turn back for a moment to 1887 when the Federal government employed only one scientist to conduct medical research. He was given one room in which to carry out his investigations. There was no specific Congressional appropriation to finance his work.

Today, out of a total national manpower pool of about 40,000 professional workers in health research, there are approximately 8,000 medical scientists and other professional workers employed by the government. It is interesting to note that more than one-third of these government Scientists are members of the staff of the National Institutes of Health. Health scientists in the government today occupy hundreds of laboratories. Their work is underwritten by hundreds of millions of dollars appropriated by the Congress specifically for this purpose. I've been told that a baby born in 1887 might have been expected to live about 40 years. Today a newborn infant has a life expectancy of some 70 years. In less than a century, then, the average person's life span has been nearly doubled. It seems to me that there is a striking parallel between the increase in medical research activity in this country and the rise in longevity among our population.

One of the chief factors in this has been the record of the American Congress over the years in shaping legislation to provide the tools and treasure required by our public health scientists to do their job.

When Doctor Kinyoun established the Hygienic Laboratory in 1887, I understand his equipment consisted mainly of a microscope, camera, glassware, and a collection of the standards reagents of that day. Surgeon General

Woodworth of the Marine Hospital Service (as it was then called) managed to scrape together enough funds from other appropriations to finance the initial investigations.

For four years Doctor Kinyoun labored in his tiny laboratory. It was cramped and out of the way. Repeatedly, he recommended that it be given more space and moved to Washington where it would be more in the center of public health activity.

Finally, in 1891 the Service purchased the Butler Mansion on Capitol Hill in Washington for its new headquarters, The Hygienic Laboratory was installed on the fourth floor of the building. Although there was still no Congressional appropriation for research, the work of the laboratory continued to expand.

In addition to his research on cholera and other diseases, Doctor Kinyoun examined the drinking water of Washington, obtained from wells, springs, and the Potomac. He reported that most of it was "contaminated with sewage." He next examined the ventilation system and the quality of the air within the House of Representatives to make certain that ventilation there was adequate. These, I take it, are examples of some of the first environmental health studies undertaken by the Service.

Doctor Kinyoun also began to teach bacteriology to other public health physicians and thus helped to build the corps of competent microbiologists who came after him.

Although the Laboratory's Director now had more elbow room and equipment than he had enjoyed in his original quarters on Staten Island,

he still felt ill at ease. "A laboratory," he wrote, "should not be placed in a building used for public offices. It is not only disagreeable to the other accupants, but is no little degree dangerous.

"I would recommend," he continued, "that a separate building be provided for the laboratory work." His point about the dangers of contamination was borne out some years later, I believe, during an outbreak of psittacosis in the laboratory. A dozen people, most of whom were relative bystanders, came down with the disease. It was necessary to close the laboratory and fumigate the whole building.

In the meantime, however, an appreciation of the value of public health research had begun to pervade Congress. In the Sundry Civil Appropriation Act of 1901, provision was made for the appropriation of $35,000 for the construction of a new laboratory building. The wording of this Act was significant. The funds were to be used for a laboratory "for the investigation of infectious and contagious diseases, and matters pertaining to the public health." (emphasis added) Congress had now given the Service a mandate to concern itself no longer solely with the plight of disabled seamen, but to investigate health problems of general interest.

The very next year Congress expressed its feelings even more strongly by changing the name of the Marine Hospital Service to the "Public Health Service and Marine Hospital Service." I think it is noteworthy that "Public Health" was placed first in the new title.

The Surgeon General called this Act the most important event that had happened to the Service that year, "if not in its entire history."

Under the new law, the Hygienic Laboratory was reorganized with Divisions of Chemistry, Zoology, and Pharmacology, plus an Advisory Board composed of government and private scientists to suggest areas of investigation.

Federal control of biological products for human use also began in 1902 with the passage of an Act which established the Laboratory of Biologics Products, forerunner of today's Division of Biologics Standards.

Public health scientists now had the space and mans to broaden their research activities. They began to study Rocky Mountain spotted fever; they contributed to the fight against bubonic plague in San Francisco; they undertook research into hookworm disease. Impressed with their work, the Surgeon General referred to the Service's research laboratory as being one "of which so much is expected and which may be developed into a hygienic institute second to none."

By 1911, the Hygienic Laboratory, according to the Surgeon General, was "acknowledged by all to be now one of the five or six greatest research laboratories in the world." One facility that it lacked, he pointed out, was a hospital attached to the laboratory to which patients suffering from a particular disease of interst to public health scientists could be admitted for study. Congress took the first step toward providing such a facility when it authorized the Service to admit a limited number of persons with infectious or contagious diseases to Marine Hospitals.

The following year, Congress took the phrase "Marine Hospital" out of the Service's name, making it simply the "Public Health Service." At the same time it stated, in very broad terms, the Service's authority to carry out research, saying it "may study and investigate the diseases of man and conditions influencing the propagation and spread thereof."

In the short span of 25 years Congress had completely changed the character of the Service. From an agency concerned with seamen's health, it had become an instrumentality for promoting better health for all our citizens.

Up to this time, research had been centralized in the Washington laboratory. In 1914 Congress appropriated $200,000 to permit the Service to undertake field studies. Scientists were now able to tackle diseases prevalent in rural regions, in industrial areas, and among certain occupation groups on a much larger and wider scale than before.

Throughout World War I and the post-war years Congress enacted additional legislation affecting the Service's research activities. The Rocky Mountain Laboratory was established in 1921. But the next great step came in 1930 when Congress erased the old name of "Hygienic Laboratory" and wrote a new title, "National Institute of Health." Under the new law, the government was permitted to accept gifts that finance "study, investigation, and research in the fundamental problems of the diseases of man" at the Institute. Congress further authorized the Surgeon General to set up fellowships at NIH, and provided funds for new laboratories.

The passage of this Act closed the chapter on the Hygienic Laboratory, then only a little more than 40 years old, and opened a new chapter on an Institute that would soon grow to proportions that would have amazed Doctor Kinyoun.

In August 1937 Congress struck directly at a specific disorder. It established the National Cancer Institute "for the purpose of conducting researches, investigations, experiments, and studies relating to the causes,

diagnosis, and treatment of cancer." This was the first time that the legislators had mounted a large scale national research attack on a single disease. In the Senate, 94 members sponsored this Act, and two who were absent at the time later asked that their names be added, thus making Senate approval unanimous.

Congress also established a National Advisory Cancer Council and gave the Institute authority to provide fellowships, to train investigators, and to make general grants-in-aid to universities and individuals for research. In 1935 Mr. and Mrs. Luke Wilson had given the government 35 acres of the land that lies on the other side of Wisconsin Avenue. It was to be used in the service of public health. Three years later, the cornerstone of the first building was set in place. This structure was soon followed by others. And today that original cluster of buildings has become the center of one of the greatest public health research organizations in the world.

Shortly after NIH moved to Bethesda, World War II came along. Certain experiences during the war encouraged Congress to focus its attention on the mental health problems of the American people. In 1946 Congress passed the National Mental Health Act, authorizing a National Institute of Mental Health.

As a further result of World War II there was another expansion within NIH. The Office of Scientific Research and Development, a wartime agency, made grants in support of medical research. At the end of the war, it was decided that the Public Health Service should continue support of these research projects. The Division of Research Grants was established

in 1946 with technical review panels or study sections to make the initial scientific appraisal of grant applications. These were then reviewed by the National Advisory Councils who passed on their recommendations to the Surgeon General for final action.

In 1948 Congress created two new Institutes: the National Heart Institute and the National Institute of Dental Research. For sixty years research had been growing within the Service. The name of the Service's chief medical research center was changed and updated to become the National Institutes (plural) of health.

Two years later Congress descided to stimulate research on crippling diseases such as arthritis, nervous disorders, and blindness by establishing an Institute of Arthritis and Metabolic Diseases and an Institute of Neurological Diseases and Blindness. The Surgeon General was authorized to emphasize the fight against certain diseases by setting up additional Institutes, when necessary, to enlarge the scope of NIH.

Four laboratories that were investigating viruses, bacteria, and other microorganisms were brought together in 1948 to form the Microbiological Institute. A few years later in 1955 research in allergy and immunology has assumed topical importance and the Surgeon General changed the name of the Microbiological Institute to the Institute of Allergy and Infectious Diseases.

The new line-up of Institutes devoted to individual categories of disease flourished and grew, murtured by an attentive, responsive Congress which, year by year, frequently over the objections of the Administration, succeeded in raising the annual appropriations in support of NIH research activities and extramural programs.

None of this was achieved without difficulty, nor without Congress having first assured itself that continuing support of the Nation's medical research program, with NIH as the focal point, was desirable and necessary.

As an example of the kind of progress being made today by the National Institutes of Health--and, incidentally, this advance seems to justify the continued support of the public and the Congress--I would like to discuss some of the programs of the National Institute of Allergy and Infectious Diseases.

This Institute has as wide a range of research responsibilities as any component of NIH. The fields of allergy and infectious disease encompass a formidable array of disorders. Measles, asthma and hayfever, hepatitis, viral encephalitis, smallpox, streptococcal and staphylococcal infections, tuberculosis, poliomyelitis, and rabies are but a few examples.

These diseases are not all dramatic killers. They do not always cause long-term disability. But in the aggregate they are destructive to our national health and detrimental to our national well-being. Together they constitute the greatest cause of acute disability in the country.

I need hardly remind this audience that our most prevalent illness today is upper respiratory infection, including the so-called common cold. Research on respiratory disease is an area of activity in which, I am assured, steady progress is being made. Having recently clarified many of the causes of respiratory illness--through identification of some 60 viruses as causative agents in respiratory diseases--our scientists now have an opportunity to design protective vaccines.

During the past year, this Institute established a Vaccine Development Program. This is to be a major collaborative effort against the "common cold." But it is also aimed at the serious complications, such as the viral pneumonias, which accompnay these illnesses. Already a number of contracts have been awarded to nongovernment research groups with long experience in developing and testing vaccines of various kinds.

And just last month, NIAID acted as host for a Conference on Newer Respiratory Diseases held at NIH. This meeting was so successful, I understand, that it may well become a biannual event.

It is easy to understand why this program has generated such intense public interest when one remembers that upper respiratory diseases have been estimated to cause one billion illnesses annually, in this country alone. On the average winter day about 20 million persons suffer from colds. The average adult American experiences from four to six respiratory disease episodes each year. One recent survey reported that 284 million work days and 195 million school days were lost because of respiratory illness. The huge loss to industry, the drain on education, and the yearly medical cost amount to a staggering three billion dollars.

Each year 50 to 60 thousand deaths are attributed to pneumonia and other acute forms of respiratory disease. And current statistics suggest that fatalities due to this cause are climbing. Of particular concern is the nursery age group since infants are especially susceptible to pneumonias, a common complication of these infections. They are, in fact, a leading cause of infant deaths today. One of the main objectives of the new Vaccine

Development Program, then, is to safeguard babies during the early months when they have not as yet developed their own antibody protection.

Another major program initiated by the Institute has the broader aim of improving virological research generally. This is the Viral Reagents Program, a coordinated effort to provide standardized reagents that will permit research workers to recognize new viruses as they are isolated. In coordinating production and distribution of virus reagents, program planners realized that two needs must be met. These are related but distinct. The program must provide reference reagents for use as reliable standards of comparison to assure uniformity of identification. And it must provide a means of furnishing diagnostic reagents for use in screening viruses under study in epidemiologic and inter-related projects by NIH grantees and other qualified investigators.

In line with the well-established NIH tradition of enlisting the aid of experts in a particular field, the Viral Reagents Program has been put under the guidance of an advisory board composed of nongovernment scientists and representatives from the NIH staff. Several panels of outside consultants, technical experts in pertinent fields, back up the Board for Virus Reference Reagents. Respiratory and related viruses, enteroviruses, and arthropod-borne viruses are presently involved in the new enterprise.

The importance of this program is by no means limited to the Institute, of course, but extends to all the other Institutes having a stake in the field of virology. Since viral diseases present problems on a countrywide and global scale, close liaison is being maintained with the PHS Communicable Disease Center in Atlanta, with other government agencies, and with international groups such as the World Health Organization.

The first nine contracts, totaling one and one-half million dollars, have already been awarded to industry and academic research groups committed to furnishing standardized reagent materials.

If this program can accomplish its goals, it will have had a beneficial effect on problems ranging from basic biomedical studies, viral vaccine development, and virus-cancer relationships, to improved diagnosis and treatment of all the viral diseases.

On another research front of vital interest, the U. S. government earlier this year issued a special postage stamp commemorating the world-wide effort to eradicate malaria, a disease which afflicts about 200 million people, and kills two million annually. Aside from its effect on world commerce, this disease is of more immediate concern to use because of its effect on numbers of American citizens who find themselves in malaria-ridden parts of the world.

On the same day the malaria stamp was issued, the Public Health Service announced the development of the first blood test to make possible precise studies of human antibody protection as related to anti-malaria drug treatment. Research by the PHS has also indicated a spreading resistance to standard anti-malaria drugs and has given evidence that monkeys may be reservoirs of malaria infection for man. Thus, the new antibody test comes at an opportune time. The Institute is also taking part in development of an anti-malarial drug that gives promise of being extremely long-lasting in its preventive effect.

You have heard today of some of the recent studies, findings, and other developments relating to infectious diseases, but to underline the diversity of research conducted or supported by the NIAID I would like to list a few other items:

... a seven year study of bat rabies, conducted by the Rocky Mountain Laboratory, which helps spell out the scope of an actual and potential public health problem

... a new vaccine against cholera now undergoing testing in humans at the University of Texas

... use of a precipitin test to implicate milk allergy in infant illnesses

... discovery of a method of purifying disease-causing rickettsia, resulting in a high yield of pure organisms

... an intensive two-month study of the effectiveness of live measles vaccine in Africa

... successful treatment of a fungus-caused inflammation of the heart lining with an antibiotic.

Those of us in Congress who have been privileged to witness the development of public health programs since World War II fully recognize that the National Institutes of Health must at all costs retain flexibility of operation if it is to cope effectively with our constantly changing health needs.

Through the years the principal mechanism contributing to the success of NIH programming has been the system of grants-in-aid. NIH leadership in medical research is founded on a tradition of the support of excellence. The use of technical study sections and policy-oriented National Advisory Councils has assured the full participation of the scientific and academic world in the decision-making process, both for general policies and for specific research grants.

Collaboration by responsible outside advisors, primarily from the universities, with NIH scientist-administrators has resulted in the elimination of much of the misunderstanding that formerly existed between the government and the scientific and educational community.

The NIH extramural system has proved remarkably workable by virtue of its ready adaptability to new conditions as they arose.

One example of how this system can be modified to meet new needs is the General Clinical Research Center program. This was established in 1959, as the result of recommendations by the Congress, in recognition of the need for improvement in clinical research. The program was designed to provide additional resources to facilitate more complex types of broad scale clinical studies. These naturally involve a variety of fundamental biomedical problems.

Institutions awarded grants under this program may establish clinical research centers as a means for precise observation and control of research with patients, plus correlative laboratory research on animals. To date, 56 such grants have been awarded to 51 institutions for a total of more than $44 million.

Another example of the built-in effectiveness of a flexible grants system is the General Research Support program. These grants are made, not for specific research projects, but to help defray the direct costs of research projects selected by the grantee institutions themselves. The program was conceived and developed to provide research and research training institutions more freedom in deciding how to make the best use of their funds in carrying out their scientific commitments.

I think this program goes a long way toward helping grantee institutions correct certain imbalances and rigidities imposed by mounting government-supported projects. As of today, 153 general research support grants, totaling $20 million, have been awarded to schools of medicine, dentistry, osteopathy, and public health. In the coming year, eligibility for this program will be extended to schools of pharmacy, nursing, and veterinary medicine; hospitals; and other nonprofit institutions already engaged in health research.

If history is any guide, these programs are destined to make as great a contribution, in their way, as has the Health Research Facilities Construction program, now six years old. We know how effective that program has been. Its results are evident in the form of new laboratories and renovated research facilities at academic and scientific centers in every State in the Union.

I realize, of course, that expanded research facilities are only a part of the picture. The central issue of what we can do to insure a constant supply of skilled scientific manpower remains to be decided. Consider that by 1970 this country must train double the number of professional investigators we have today, if we are to meet our future estimated need for medical research.

University medical schools and other health-related professional training institutions will bear the major burden. But any national training effort of this magnitude demands that our Federal government must share in the task. Legislation looking toward this goal of increased support for medical education is scheduled for early consideration by the Congress in

the coming session. I am hopeful that this time some satisfactory means will be found to increase the quantity while retaining and even improving the quality of our national pool of new physicians and related professional workers in the health sciences.

As I see it, the biggest challenge we in Congress face is the problem of how to obtain the facts and expert judgments we require in drafting new legislation to authorize new programs to meet our changing public health needs.

It is a heavy responsibility. But it is one I am confident we can confront and deal with successfully, given the aid and support of our dedicated Public Health Service.

I think it's perfectly clear that all the general programs we have discussed will exert a profound influence on the course of public health research in the future. Trained, experienced scientists are going to be needed in increasing numbers to follow the many promising research leads being developed today. Improved, expanded facilities now being provided will enable medical investigators to carry out the necessary studies.

I feel safe in predicting that some of the most significant research advances in the next 75 years will stem from the work of public health scientists in the basic disciplines of microbiology and immunology. I look for improvements in research methodology and instrumentation, in addition to the development of more timely laboratory and clinical procedures. These, I am sure, will lead inevitably to a host of important new findings bearing on the parasitic diseases such as schistosomiasis; autoimmune diseases such as

lupus erythematosus, nephritis, and rheumatoid arthritis; staph and strep infections; and enigmatic disorders such as cystic fibrosis.

It may seem that the main emphasis of my remarks tonight has been on the programs of the National Institutes of Health, especially the National Institute of Allergy and Infectious Diseases, as the direct descendants of the Hygienic Laboratory.

The record would not be complete, however, without some mention of the equally important work performed by the NIH Division of Biologics (Standards) and by other segments of the Public Health Service. I have in mind, for example, the well-established research programs of the Division of Hospitals under whose aegis the old Laboratory of Hygiene was first founded.

Most U. S. Public Health Service hospitals have long been qualified as teaching hospitals with internship and residency training programs in a dozen different medical specialities. The PHS hospitals provide extensive clinical and pathological resources for the conduct of inter-hospital cooperative investigations and individual studies. A large number of investigations are carried on in collaboration with the research staffs of leading university medical centers. The programs of the USPHS hospitals, in short, form a vitally intrinsic part of the overall research effort of today's Public Health Service.

One final word. The examples of research progress we have cited here were intended merely to reflect the general shape and scope of our national health programs. By capitalizing on the research gains of the past and our strong position today, I believe the productive partnership between the Congress and the Public Health Service is bound to result in untold benefits for the American people. Thank you.

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