SYMPOSIUM ON WORLD MEDICINE

Neglected Avenue to Knowledge

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EPIDEMIOLOGIC research has been applied in a most rewarding fashion to many health problems. In transmissible disease, such research has expanded understanding of causation and the mechanics of disease distribution, and together with allied sciences, has pointed to means for controlling epidemic spread in population groups and preventing disease in the individual. In human nutrition, from the strikingly effective studies of pellagra in the early decades of this century through a host of specific nutritional deficiencies to recent observations on kwashiorkor, epidemiologic research laid a firm foundation for the understanding of these complex diseases. An extension of such research in collaboration with allied sciences provided information on the specific nutritional deficiencies that led to rational therapy and prevention.

One might wonder, then, why this area of medical research, particularly in relation to world health, needs special highlighting by this symposium when the contributions have been characteristically major as well as worldwide in their genesis and application. I believe this might best be answered in light of certain problems that have increasingly concerned us all during the past decade.

This century has seen the development of means for the virtual eradication of transmissible and nutritional diseases as causes of premature death in both young and old and as serious barriers to socioeconomic advancement. Yet these diseases continue to be widespread and persistent. They can be expected to yield only to further heroic strides in the social and

economic fields. Even here, however, the epidemiologic sciences can help in determining how present knowledge might be applied with the least disruption of existing or developing social patterns and at the least overall cost for a given result.

As infection and malnutrition are attacked with mounting effectiveness, chronic diseases have emerged as old problems with new dimensions. I have in mind the cardiovascular diseases, cancer, the disabling neurological complexes, mental illness, and others. Since the 1940's these disorders have increasingly occupied our medical investigators.

These studies have been highly productive in the identification of specific diseases and of correlations with related disorders. They have also contributed to our knowledge of the natural history of diseases, the biological basis of their manifestations, and the amelioration of disease or symptoms by medical agents.

On the other hand, studies to elucidate the ultimate causes have been less rewarding. A number of individual diseases have been adequately defined and broad general leads relating to causation have been uncovered and actively pursued. But mystery still surrounds the genesis of cancer in general, of hypertension and atherosclerosis, of the devastating demyelinating diseases of the central nervous system, of major psychiatric entities such as schizophrenia, and of such prosaic and common conditions as rheumatoid arthritis and gastrointestinal disorders.

Extensive and intensive research is being conducted on many fronts in the modern clinic and its intellectually adjacent laboratories. And yet, if one looks beyond these modern factories of new knowledge, he cannot but feel a lack of

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confidence that major breakthroughs and clarifying generalities will derive from a simple evolution of work already begun. It seems likely that we will require in addition a totally different kind of information.

During the past 5 years we have gone a long way in one direction, toward deeper penetration into the study of individual man. Notable in this phase has been the broad employment of physical sciences and their servant, mathematics, in the investigation of life processes. We must now move in an equally positive fashion to consider disease in the aggregate, particularly those factors that are contributed by man himself and his environment.

Such studies cannot be conducted solely in a conventional setting, but require comparative observations of disease development in population groups, that is, an epidemiologic approach. The population groups selected for study must be characterized by significant differences in their genetic composition, their physical environment, or their culture. In effect, we must bring the tools of the epidemiologist to bear upon the problems of chronic illness with an intensity not heretofore applied. Productive epidemiologic studies have been undertaken here and in other countries in order to define general factors associated with disease development. In evaluating such programs with a view to their possible extension, we must consider the obvious opportunities that are peculiar to the international scene.

It is considerations such as these, rather than the urgency to foster international good will, that should be the driving force in developing an adequate study program. Its importance should be judged by (a) the impact of the disease problems undertaken and (b) the prospects of success.

Lest this last point be misunderstood, let me add that I fully recognize the value of medical research as a platform for improving international understanding and good will. But the extent to which medical research will contribute to these ends, or detract from them, depends more upon the terms and conditions under which the studies are undertaken than on the substance of the studies themselves.

I will not try to enumerate the special opportunities open to epidemiology. I would simply

state for the record that the opportunities have been generally appreciated by many scientists, in many fields, and for many years. Still, the logistics of support, which in the hands of the Rockefeller Foundation made such outstanding contributions over the first half of the century, have not been generally available.

For this reason I should like to list some conditions for what most of those who have given serious consideration to such programs would deem essential to success.

1. The programs must be staffed by our best investigators in the field and at home, and laboratories at field and home bases must be adequate and complementary.

2. They must be truly collaborative programs employing the scientific communities of the participating countries. It will frequently be necessary to provide broad training opportunity to scientists of the host country.

3. The programs must have long-term continuity, as contrasted with the characteristic "hit and run" tactics so frequently employed in today's international projects with narrowly defined targets. This will be possible only if we provide institutional careers in science wherein the international capabilities of individuals can be fully developed.

4. The programs must evolve with a deep understanding of the cultures of the peoples studied, so as to interpret properly the contribution of social as well as biological factors in the evolution of disease.

5. They must be more than parasitic; they should clearly recognize not only our needs and goals but those of the host country as well.

Parenthetically, it might be mentioned that these points were largely inherent in the research programs conducted by colonial powers as a necessary condition of the development of colonial areas. In our collaboration with independent countries and in the absence of a long-term medical service responsibility, we must still develop a cadre of knowledgeable scientists through some purposeful system oriented toward research. It will not happen in a wholly spontaneous fashion.

The five points listed were considered in the recent development of an international program of the Public Health Service. This provides

for the establishment of a limited number of international centers, broadly conceived and university based.

The centers will conduct research, initially of an epidemiologic nature but later developing as need and opportunity dictate. They will facilitate the welding of medical, biological, and behavioral sciences and have a broad capability for understanding and studying complex disease situations. Incidentally but importantly, the centers will develop and nourish a corps of well-trained and internationally oriented medical investigators for service to our country outside the areas of their specific and personal undertakings.

These centers represent a radical departure from the traditional mechanisms of support of international medical research through the use of Federal funds. They are made possible under the International Health Research Act of 1960, Public Law 86-610. An appropriation of some \$5 million was made available to the National Institutes of Health, in part to develop this Program of International Centers for Medical Research and Training.

The law states the intent of Congress that the Public Health Service shall support health research and research training overseas and the objectives to be sought in overseas health research and training programs.

In substance, the program provides for the development of a range of highly stable international centers for medical research and training, with full opportunity for the develop-

ment of productive careers. The centers will enable U.S. physicians and scientists to acquire broad field experience through projects conceived in ample breadth and duration. They will also encourage physicians and other health personnel of collaborating foreign institutions to participate in the development of health research and training resources in their national environment.

The two components of a center, the U.S. base and its overseas institutions, will have these characteristics: a U.S. university providing a stable professional framework in which medical research projects, planning, and training can be conducted, and associated research and training establishments overseas where these activities can be pursued under environmental, ethnic, and medical conditions that do not prevail in the United States.

The program is just getting underway. Funds are limited and our experience insufficient to warrant conclusions. But I believe the International Centers for Medical Research and Training will be particularly useful for developing international scientific manpower, for strengthening international operations already in progress, and for cementing relations among participating institutions and agencies. I am confident that they can fulfill in some measure the express hope of Congress for "a program through the U.S. universities for the early development of research and research training centers with adequate field opportunities for international studies."

School Teachers Health Manual

The "Brookline School Health Manual," a guide for the school teacher in her part in the management of accidents and communicable diseases in schools, has been issued jointly by the health department and the school system of Brookline, Mass.

A section on accidental injuries tells when injuries require only simple measures, when professional help should be called, and what the teacher can do. Sections on communicable diseases include information on signs and symptoms, cycles of infection, and prevention and control measures. The information is arranged in charts and is tab-indexed.