

Disease is one of the enemies that can strike at the very foundations of our society. For if we are to be strong, individually and collectively--if we are to live full and happy and productive lives, we and our children and our children's children--we must make better use of the knowledge now available to medical science, and we must at the same time intensify the search for new knowledge through medical research.

All of us have a direct, personal stake in both of these fields. We want our physicians and medical care institutions to help us achieve and maintain good health. And--whether or not we are aware of it--we are each of us investing to an increasing degree in medical research, through public and private agencies.

I have been closely identified with this latter field as a legislator. I can assure you that it is both a stimulating and a challenging and a rewarding experience.

One reason it is so stimulating is that it permits me to see research progress for myself, and be able to know such progress for what it is, and for what it is not.

Let me use the medical research program of the National Institutes of Health in Bethesda, Maryland, as a case in point. This Public Health Service activity either itself conducts or supports through grants a sizeable proportion--perhaps between a third and a half--of all medical research in this country today. I have always felt pride and a deep sense of accomplishment in the NIH program, for as a long-term member and more recently chairman of the Committee on Health Appropriations, it has been my

privilege to play a major rôle in the evolution of these programs.

You will be, I am sure, glad to hear that one of the most prevalent forms of heart disease, atherosclerosis, is slowly beginning to yield up some of its secrets. The rôle of the fat content of the diet stands out as a significant--though not the only--factor medical research has shown in recent years. There is also some preliminary evidence that the condition--atherosclerosis--may be reversible. This is tremendously encouraging, though there is still a long way to go before we have in hand a cure or a preventive or really effective treatment. But just a few years ago the picture was entirely black.

Meanwhile, highly promising work is underway all over the United States. Among this is that of the National Heart Institute. They are exploring a new approach, among their many studies, to the problem of a high content in the blood of cholesterol, a fat-like substance implicated in atherosclerosis. This approach is to lower the level of cholesterol in the blood by interfering with the body's mechanism for manufacturing it. Experiments with rats look promising. The researchers are using a synthetic compound related chemically to cholesterol. Its chief value to date, they say, is to show that there is a feasible approach to the complex problem. This doesn't mean that the compound is a practical treatment of high blood cholesterol in man. A number of factors, such as possible harmful side effects must be taken into account. Preliminary trials in man must be carefully approached and worked out. Meantime, however, with the usefulness of the preliminary animal tests established, other types of

drugs are also being studied. Even though, as is not unlikely, the present synthetic compound should prove of no value in human disease, it is hoped that there will shortly be available for trial other substances which might do the job.

Another great stride made possible through National Institutes of Health programs has been in the study and development of new vaccines. In the field of preventive medicine, few weapons have yielded more spectacular gains against man's microbial enemies than immunization. Once common and widely feared childhood diseases like diphtheria have become clinical curiosities in this country, and many physicians today have never encountered a single case of smallpox in the course of years of practice.

Despite these gains, however, it is nonetheless true that vaccines for certain diseases have often produced undesirable side reactions and have often had questionable ability to protect against disease.

Recently, scientists of the U. S. Public Health Service have devised techniques which may lead to greatly improved vaccines for the American people. The new method involves breaking up by physical or chemical means the tiny microbes from which vaccines are made. This enables the scientists to remove those parts of the dead organisms which contribute nothing to the protective value of the vaccine, leaving a concentrated fraction that provides durable immunity and largely eliminates uncomfortable side reactions.

At the present time Government scientists and university investigators are trying to apply this knowledge to the development of an improved

tuberculosis vaccine. This is an important problem because the vaccine presently available for tuberculosis has never been extensively used in this country because of wide disagreement among scientists as to its precise value. One of its shortcomings has been its ability to induce a state of allergy in some vaccinated persons. This drawback might be eliminated if a TB vaccine can be made by using fractionation methods.

Other diseases are also being investigated with the fractionation techniques. They include a widespread fungus disease which affects the lungs and is often mistaken for tuberculosis; and a common microbe called Salmonella, which is responsible for many outbreaks of food poisoning.

This type of research emphasizes the importance of developing simple, practical methods for purifying vaccines and making them more potent. It also suggests that many opportunities still remain for refining and improving the biological products which safeguard the Nation's health. In this task your Government laboratories, and private investigators working with aid of Government grants, are playing a leading rôle.

There are many thousands of people with heart conditions who are alive today after successful surgery and therapy because of accurate diagnosis of their heart condition.

But National Heart Institute scientists have just developed a new method that may make it possible to calculate the output of the human heart precisely, something that cannot now be done. Thus, physicians would be able to judge the reserve power of the hearts of both normal persons and cardiac patients. This would be of great value in determining the physical abilities and limitations of heart patients and in better judging the risks of surgery.

The new method measures the blood velocity in the great blood vessel--the aorta--leading out of the heart by means of a double tube (catheter) inserted through a leg artery. The scientists caution, although tests show it safe and accurate in animals, that further refinements are necessary before it can be applied to patients -- and work is progressing toward this.

Interestingly, this Heart Institute work involving the catheter--and other research supported by Institute grants--is associated with the recent Nobel prize award in medicine. Doctors Cournand and Richards, the two New York physicians, who, with a German doctor, received the award for their heart catheterization work have been aided for a number of years with some \$364,449 (to date) for their research studies.

Today, heart catheterization is almost a routine procedure as a prerequisite to heart surgery in many U. S. hospitals and is invaluable in determining for diagnostic purposes what is going on inside the living human heart.

There are many other such advances: the development of new hormone substances to prolong life for the unfortunate victims of leukemia.... promising drugs which may serve as a substitute for insulin in the management of diabetes.....the use of human rib grafts to patch damaged human skulls.

There are several new projects in medical research that reach directly into our state of Rhode Island.

Our state Health department in cooperation with the National Cancer Institute is establishing a demonstration of the usefulness of a new technique for the early diagnosis of cancer of the uterine cervix. With such early diagnosis, the possibility of successful treatment is increased many-fold.

Grants are being made to Rhode Island institutions to participate in the large scale evaluation of the tranquillizing drugs and in the screening of chemical compounds that have possible use in the treatment of cancer.

~~Our own Brown University was one of the first seven institutions in the entire United States to receive a grant for the construction of research laboratories, matching Federal funds with private capital available for this purpose.~~

And in an action that is just being announced, a group of investigators and institutions in Rhode Island will receive sizeable grant support over an extended period of time to study the hereditary and environmental factors which may be responsible for disturbances in the functions of the central nervous system which are manifested clinically by such disorders as cerebral palsy, mental retardation, blindness, and deafness.

As it has in the past, medical research of today and tomorrow will produce results that have direct meaning to the health of the people. It is a sound investment that helps ensure both the productivity of our economy and the health and well-being of the individual members of our society.