ADDRESS OF THE HONORABLE JOHN EL.FOGARTY, MEMBER OF CONGRESS FROM THE SECOND DISTRICT OF R.I., AT THE CONVOCATION OF THE GRADUATE SCHOOL OF BROWN UNIVERSITY ON JUNE 1, 1959.

# PUBLIC RESPONSIBILITIES IN SCIENCE AND EDUCATION

This indeed is a memorable day for all of us assembled here. You in the Graduate School who are ~~to graduate~~, and you who are the parents, friends, and mentors of students the graduates have reason to be proud today. And I, too, am proud--for I feel especially privileged to take an active part in these ceremonies.

I have always had great respect for Brown University. Not only is Brown the seventh oldest college in the Nation, but also the spirit of religious liberty--on which it was founded in 1764--is widely recognized as a particularly early and significant example of freedom of conscience in American. Brown's Charter included the requirement that the public teaching should "in general respect the Sciences." This also was an unusually liberal stand for an educational institution to take in the mid-eighteenth century, and it is relevant to what I shall have to say later. I admire Brown for this very early contribution to individual and intellectual freedom.

I like what your former President, Henry M. Wriston, has said about this University:

> "Brown's central business is the increase of knowledge, the inculcation of wisdom, the refinement of emotional responses, and the development of spiritual awareness."

Surely, these four points are among the highest objectives for an institution of higher learning. Judging from the caliber of the Brown faculty, the educational standards of the University, and the collective record of its graduates, the four objectives outlined by Dr. Wriston continue to be met in full measure.

For you graduates, this is a day of glory, a glory which should not be diminished in any way. But there are words that must be said and must be given thoughtful consideration by everyone. Think about this statement:

> "The period since the war has witnessed some of the most rapid advances in science and at the same time some of the greatest revolutions in social, moral, and religious thought and practice of any time in the world's history...Yet humanity stands today in a position of unique peril. An unanswered question is written across the future: Is man to be the master of the civilization he has created, or is he to be the victim?"

Do these words sound particularly appropriate? Does the question provoke a timely challenge? The message and the question I have just quoted were spoken to the Brown graduating class in 1930; they were delivered by Edwin Grant Conklin 29 years ago today. In 1930, there were no hydrogen bombs, no so-called cold war involving one tense international crisis after another; no threat of a nuclear war. Still, men considered their peril unique. What shall we call the peril we face now? Twenty-nine years have passed since Edwin Conklin sounded the warning. The situation has intensified; we find advances in science coming even more rapidly than before, and almost it seems concommitantly, we find our peril more extreme. The basic fear is the same. The question of whether we can cope with the civilization that we have evolved and continue to modify must continue to be asked.

Let us go back to the year 1800. A reference to the Brown commencement address given by Jonathan Maxcy in that year, 159 years ago, could never be passed off to you as contemporary. The difference, I think, will be readily apparent to you. He said, and I quote:

> "...we are baffled in explaining the causes of the most common appearances...We sigh to explore the hidden causes of things, their intimate constitutions, and their final destination. We sigh to wield a world, as we do an atom,

> to search the center of the earth and to sail among the stars. Experiment destroys our vain imagination."

In the intervening years, man has proved that he <u>can</u> explain the causes of many "common appearances." He has proved that experiments no longer--perhaps never did--wreck our imaginations. On the contrary the products of each generation's experiments have, in many cases, far exceeded the imagination of the previous one.

Thomas Huxley defined science as "common sense at its best." Since his death in 1895, the "common sense" of scientists has been getting better and better in many ways. Speaking as a layman who is vitally concerned with the well-being of people everywhere, I would like to cite a few of these ways I consider important.

...The scientist has vastly improved communications with his colleagues within the scientific community. He has done this despite the many technological advances that have created requirements for new specialties and subspecialties.

...At the same time, the scientist also has improved his communications processes with the general public. As a result, the public's image of the scientist is no longer one of an off-beat character who chases butterflies with a net or of a highly introverted recluse in a basement corner or of an arrogant egotist who refuses to concede that his work and its results can be translated into words and phrases that might be understood by those who support him.

...Finally, the scientist has shown that given proper support and

enlightened understanding on the part of an informed public, he can produce near miracles for the continuing benefit of mankind. In fact, researchers in the medical and biological sciences have performed so admirably that I am inclined to think of the last 15 years or so as the first chapter in what we might call the Golden Age of Medicine. The biometricians provide us with some rather exciting projections on the health status of our people. By the year 2,000, they estimate that the average expectance of life after age 60 will increase from the current 17.5 to 22 years. They predict that the death rate from heart disease for men fifty years of age will be 50 percent of its current rate. And they predict the death rate from cancer for women aged 60 will also be only half the current rate.

These are rather dramatic predictions, but they are not at all improbable. You may well ask, "Why is this so?" or "How can this be accomplished?" To answer these questions, I would like to review some of the developments in the recent past, from the standpoint of enlightened support and scientific accomplishment, that indicate a bright future for the health status of the American people.

Those of you who know of my principal interests and activities--both as a Representative to Congress from the Second District of Rhode Island and as Chairman of the Subcommittee in the House of Representatives having responsibility for Federal appropriations for the Nation's health programs--are well aware that my keenest interests are in the field of health research. I have experienced considerable personal satisfaction in having a part in the formulation of our national program for conduct and support of scientific research for the past 18 years. In these years, there

has been dramatic progress in the acquisition of new knowledge and in its application for positive health gains.

At the close of World War II, the country had its choice. Either we would return to the pre-war levels of effort in medical research, or we would seek to capitalize on the opportunity to support man's effort to extend his horizons in the life sciences. The question was resolved, as are all important questions in our society, by consensus. To most people, whether scientists or laymen, the course seemed clear. If a Nation's scientific effort could produce so well under the stress of war, surely it could flourish to provide an opportunity for better health in peace.

As a result, Congress began to increase appropriations for Federal funds used by the government to stimulate medical research in private laboratories throughout the country -- in universities and medical schools, in hospital laboratories, and in other research centers. Appropriations also were steadily increased for the operation in Bethesda, Maryland, of what is today one of the world's largest medical research centers -- the National Institutes of Health of the U. S. Public Health Service. This is the research program in which I have been most deeply interested; my committee has had responsibility for its appropriations, which have become a significant part of the Nation's total investment in medical research.

The appropriations for NIH, including its own operations and grants for research projects and awards for fellowships and training, amounted to less than $3.5 million in Fiscal Year 1946. For 1959, our current fiscal year, their appropriation stands at $324 million. Lest you conceive of this

expansion as a reckless effort to BUY new knowledge, let me detail some of its elements.

First, in research project grants: In 1945, this appropriation totaled $85,000; this year, the same appropriation is a little over $141 million -- supporting nearly 8000 research projects in virtually every nonprofit research center in the country. Let me assure you now that prior to each year's increase, from 1946 through 1957, the Congress received convincing evidence of (1) the accomplishments and potentialities of existing research projects, and (2) the existence of promising ideas for new and needed research projects.

At the same time, it was necessary for those of us dealing with this program to keep well-informed on two other elements of medical research, namely, the existence of trained manpower to do the research and of adequately equipped facilities in which to carry out the research. To keep these three all-important elements of medical research in relative balance has been no easy task.

The level of support for research training, including fellowships, began to make solid advances in 1947. In that year the appropriation for fellowships and training grants totaled $428,000 compared to $57,000 in 1945. But as each year passed and as it became more and more evident that scientific manpower was the most important single factor limiting further progress in the life sciences, the program expanded until today the annual appropriation stands at about $60 million.

The third element of the Public Health Service's pattern for research

support -- research facilities -- received only emergency attention during 1949 and 1950 for heart and cancer research facilities, totalling some $22 million. More recently, again responding to an evident need for nation-wide expansion of health research facilities and equipment, the Congress passed legislation authorizing $90 million to be made available over a period of three years for construction and equipment of research facilities in all the health fields. Now finishing its third year, the $90 million available has been awarded to 256 nonprofit institutions in 38 States. Through matching funds, this initial investment of $90 million in Federal money has been more than equally matched by funds from local sources.

Your own university has grown in stature over the years to the point where its science department has merited increasing Federal support. Just in this past fiscal year, for example, the number of research projects that have won Federal support increased from 12 in 1958 to 22 in Fiscal Year 1959. Your Dr. Brooks, with his studies in cerebral palsy, Dr. Wilson in biology, and Dr. Montagna in histophysiology are among the outstanding scientists receiving substantial grants in recognition of their excellent work.

So much for the expansion of Federal support for medical research. It is a fair assumption, I think, that it has played an important part in the progress that has taken place in the decade. I see these scientific achievements solely in the light of their meaning to the public as a whole. I am thinking, for example, of the discovery and development of synthetic hormones and related agents for rheumatic disease ..... the widespread availability of penicillin and the development of other antibiotics ..... the development of chemical agents for control of high blood pressure .....

the discovery of chemical agents in the study and treatment of mental illnesses ..... the improved protection against rheumatic fever and resulting heart damage ..... the new tests for detection of cancer ..... surgery of the heart ..... the discovery and application of a new vaccine for poliomyelitis ..... the use of radioactive isotopes for studies of body chemistry ..... the development of drugs and chemical agents for treatment of tuberculosis.

As a Congressman, I hear a great deal of discussion of new and better chemical agents, new drugs, new treatments, and even the claim that 50 percent of today's prescriptions could not have been written ten years ago simply because the materials incorporated in them did not exist. But the acid test of progress against disease lies in statistics which show that progress in broad terms.

Perhaps the best single index of health progress is a comparison of over-all death rates. I am told that the decline in death rates since World War II from some of the major illnesses dramatically shows how over a million lives have been saved by modern medicine.

Influenza, for example, has been reduced over 90 percent in its death rate. Once-great killers like acute rheumatic fever, tuberculosis, diseases that cause maternal deaths, and appendicitis have all had the rate at which they cause death reduced over 70 percent. The death rate from syphilis has been brought down over 60 percent; pneumonia, over 40 percent; some kidney disorders, 60 percent; infant death rates, over 30 percent; and paralytic polio, the disease about which much is still unknown, has been reduced dramatically in the past two years. Even high blood pressure, one of the greatest medical problems in terms of the numbers afflicted, has seen some

decline in death rates in the past few years.

It is this record of growth and accomplishment that gives me the confidence to support those who make such dramatic predictions concerning the future of medical research.

I would like to make one further point that emerges when one considers the human dynamics, the tangible results, and the potentials for advancement that have had a part in this first chapter of the Golden Age of Medicine. It is this: that when the public is adequately informed, when it is assured that the basic resources and mechanisms exist to accomplish certain problems common to all people, when it is asked to support the efforts to meet these problems, the public will respond and will continue to respond almost in direct ratio to the results and potentials realized.

It is most interesting, therefore, to speculate as to whether this principle that an informed public is a responsive public would be as effective in meeting the impending educational challenge as it has been in writing a brilliant first chapter in the Golden Age of Medicine.

The statistics on education indicate at least a part of the impending challenge. In 1939, only 154 of 1,000 high school pupils went on to college; in 1954, 283 of every 1,000 entered college. Illiteracy has declined to a new low. In 1870, 20 percent of the population over 14 years of age could neither read nor write. In 1920, the figure had gone down to 6 percent; in 1952, only 2.5 percent of the population were illiterate. The number of students enrolled in America's colleges and universities this year exceeds

last year's figure by more than a quarter million. In ten years it should pass six million -- nearly double today's enrollment.

These statistics provide just a hint as to the problems that confront education. Certainly we cannot expect the public to respond to an array of statistics without an examination of the factors and problems that are necessarily a part of those statistics.

The United States educational system, as you know, has come under very close scrutiny in the past few years due to the sudden challenges produced by the Soviet Union. It was clearly shown that there is much room for improvement. But the fact is that our universities face the very real danger of being engulfed by sheer numbers of undergraduate students. Not only must we find staffs to handle the influx, but we must beware of their being loaded down with repetitive undergraduate teaching which leaves them with no time for imagination, contemplation, and other intellectual pursuits. Within a decade, some 495,000 college teachers may be needed -- more than twice the present number. And on the salaries which the average college teacher receives, it is no wonder that quality sometimes suffers. Faculty salaries are woefully out of kilter in the current American scene.

I consider it a glaring failure -- at least to date -- that new impetus to American education has not been given by providing Federal assistance in the construction of schools. It is my conviction that the strength of our democracy is intimately related to the strength of our educational processes, and I find it somewhat distressing that special interest pressures have contributed so much to this national failure -- failure, first, to provide adequate school facilities for the increasing numbers of boys and girls in our

society, and second, failure to provide other support to decrease the teacher deficit. Here is a goal of the people which is not being met.

Today's educational effort has not been raised to the levels of other essential elements in the space age. We need not spend public money irresponsibly to show our interest. What we need is a completely revised attitude toward education and the public support of education. We must make the same order of radical change in our attitude towards education as we have made in our attitude towards medical research. We must measure our educational effort as we do our medical research effort. That is to say, we must measure it not by what it would be easy and convenient to do, but by what it is necessary to do in order that the nation may survive and flourish. We have learned that the support of medical research, whatever the cost, pays rich dividends in the long run. We must now learn that higher education for the academically oriented is an investment in the nation's future.

You who have just finished your ~~college years~~ GRADUATE WORK today and you who have made that possible -- faculty and families -- have a direct responsibility as harbingers of enlightened information about the importance of higher education. Education has been called "study for the purpose of understanding." You have received understanding that opens doors to you, and you will wish to share it with others. You in the class of 1959 will want your children someday to receive an education as you have done, and as good a one as possible. Support for quality education must come from every single available source.

The Federal government, I am glad to say, has taken several steps in the right direction towards alleviation of the problem, though it has not gone far enough at all. I am speaking of the National Defense Education Act of 1958, which in its aid to students is good, in its lack of aid to teachers is bad.

The Act which became a Public Law in September of last year is aimed at 'strengthening the national defense and encouraging and assisting in the expansion and improvement of education programs to meet critical needs.' It recognizes that our present emergency demands more adequate educational opportunities, and emphasizes that what is being offered is financial support, and not control.

The program of providing loans to students in institutions of higher education is the largest; in the four years from 1959 to 1962, a total of $295,000,000 will be lent. In selecting the students to receive loans, special consideration will be given to those who express a desire to teach in elementary or secondary schools and to those whose academic background indicates a superior capacity or preparation in science, mathematics, engineering, or a modern foreign language -- the subjects where we are remiss. To strengthen the instruction in these subjects, $280,000,000 will be paid to state educational agencies over the same four year period. The money is to be spent for equipment. And here I ask -- why not some financial assistance for the subject teachers themselves?

The only provision which has bearing on the teachers' situation is the program for National defense fellowships. Fifty-five hundred fellowships are to be awarded over the four year period 1959-1962, and preference will be given to persons interested in teaching in institutions of higher education. An important part of this is that in order to win a fellowship, the graduate program in which the student is to participate must be approved by the Commissioner of Education, and only those institutions with new or expanded graduate programs will receive such approval. The institution itself will be awarded up to $2500 a year. Thus, by indirect pressure, encouragement is being given to higher institutions to improve their graduate training facilities. I like this provision, but I think it could stand much expansion. The stipends awarded do not exceed $2400; students are discouraged from taking outside work unless it pertains to their study -- and rightfully so -- but the temptation must be great in our time of economic inflation.

The other provisions of the Act are generally admirable. Programs for the guidance, counseling, and testing of students which are aimed at identifying and encouraging the most able students will be set up in the states which desire them and which submit a state plan for their execution. Language centers and institutes are a part of the Act as is research in the utilization of radio, television, and motion pictures for educational purposes. Vocational education and science information are partially covered.

College professors were strangely left out of all this. They should not have been. They deserve not only much more money than they are now

receiving, but also much more prestige and distinction among their fellow Americans. Raising faculty salaries is a necessary step in giving recognition where it is long over-due.

These, then, are some of the problems that are universal to education today. Although medical research and its features that have an implication in medical education have achieved an outstanding measure of success in recent years, the leaders in these fields continue to reevaluate their roles and the foreseeable challenges that lie ahead. In a recent and unusually forthright report, a group of distinguished advisers brought to the attention of the Secretary of Health, Education, and Welfare, that if the predictable needs for physicians and scientists are to be met, this country needs some 15 to 20 additional medical schools. The same report estimates that it will cost nearly half a billion dollars to bring these new schools into being. Implicit in the report, too, is the belief that the Federal government must bear a part of the cost of constructing these new schools.

Someday, I believe that one of these new medical schools should be brought into being in this State, preferably right here at Brown. I realize that this recommendation cannot be taken lightly, and I assure you that it is not offered without serious consideration. The location and operation of a school of medicine entail considerable responsibility.

What are some of the responsibilities of a medical school? First, it is an institution for the training of gifted young men and women to practice the greatest of all healing arts. Second, it is a haven for community services related to and including the practice of medicine. Third, it is a

point of focus for medical research, both in the laboratory and in the clinic. And fourth, it is most often an extension of a university, expending and strengthening the university's traditional role as intellectual and cultural center for its community.

I do not pretend to know how Rhode Island can develop its own medical school. I do not know when it can. But I do know <u>that</u> it can. For ours is a proud and progressive State and Brown University has a tradition of progress and forthright action. If we want it enough, we can have a medical school and cease to be one of the nine States that do not have one today.

This is not a decision to be made hastily. There are many critical problems to be considered. How would the new construction be financed? Would the Federal government make funds available without insisting on a degree of control? Could an effective set of working relationships be developed with local hospitals and physicians?

There are more questions than there is time to phrase them.

I am sure there are answers for them.

And I intend to see that the answers are sought, and my hope is that they may lead to a course of action that will add one further resource to the array of medical resources in Rhode Island that do credit to the State. These facilities and programs are a source of pride to all of us who have worked, each in his own way, to help bring them into being. I am confident that once again we will be successful in expressing the public need and carrying out the public responsibility in this important cause.

Almost a hundred years ago, in 1864 when Brown University was celebrating its centennial, the then president said this:

> "We are about to open a new century. Shall it be one of increasing brightness for our University? Shall our successors, at the end of the new century, be able to give a good account of our doings?"

Here you are, his successors, and that 'new century' is almost over. It would be my sincere wish for Brown to be able to include the addition of the medical school as part of its "good account" by the time it celebrates its bi-centennial anniversary.

I have found, as I have said before, that when the public is informed, the public will respond. Now is the time for the friends of Brown to carry their story to the people in somewhat the same manner that medical science has taken its story to the people. There is no possible reason why either the medical scientist or the educator should have to be solely responsible for his field when his work touches the lives of everyone. We, the public, have a duty which has become more important than ever before; we must share the increasing load of problems facing science and education. The public must keep informed and concerned and must be willing to ~~support with~~ give special effort and Provide other resources to see that the task is accomplished that lies ahead.

I salute you upon the completion of your work at ~~your graduation from~~ this fine university. In closing I would like to recall for you a line written by H. G. Wells:

> "Human history becomes more and more a race between education and catastrophe."

And I say: Let us leave no doubt; we must win the race for education.