Address of the President of the United States*

I am deeply honored in being with you tonight on the 100th anniversary of the founding of the American Association for the Advancement of Science. As President of the United States, I welcome you to Washington.

In the 100 years since this Association was organized, science has helped transform the United States into the most productive nation in the world. I know that in your meetings this week you will be looking back over the progress of American science in the past century. I also know that you are much more interested in looking into the future.

You are looking forward, I know, because we stand at this moment at the threshold of revolutionary developments. Scientific research daily becomes more important to our agriculture, our industry, and our health. The members of this Association know better than I what developments to expect in the years ahead in physics, in chemistry, in biology and the other sciences, but I am certain of this—that science will change our lives in the century ahead even more than it has changed them in the 100 years just past.

I hope you will also be thinking about the relationship between science and our national policy.

Two years ago, I appointed a Scientific Research Board. Its report, entitled *Science and public policy,* was submitted last fall to the 80th Congress. That report stressed the importance of science to our national welfare, and it contained a number of important recommendations. The most important were these:

First, we should double our total public and private allocations of funds to the sciences. We are now devoting, through Federal and private expenditure, little more than $1,000,000,000 for research and development per year. With a national income of more than $200,000,000,000 annually, the Board felt that we should devote at least $2,000,000,000 to scientific research and development each year.

Second, greater emphasis should be placed on basic research and on medical research.

Third, a National Science Foundation should be established.

Fourth, more aid should be granted to the universities, both for student scholarships and for research facilities.

Fifth, the work of the research agencies of the Federal Government should be better financed and coordinated.

I hope that you have been weighing these recommendations carefully and that, if you agree with me that they are sound, you will consider how they can be made effective national policies.

I know that you are also deeply concerned with the relationship of science to our national defense and security. Three years ago, when the fighting stopped, all of us were eager to return to our peacetime pursuits. The first thought of a great many of us was how to translate our wartime advances in scientific knowledge into better standards of living.

It is an unfortunate fact, however, that the peace we hoped for has not come quickly. We are still living in hazardous times. We are required to give unremitting thought to the defense of the United States at a period when defense has become incredibly more difficult. American scientists must like all the rest of our citizens, devote a part of their strength and skill to keeping the Nation strong. At a time when we hoped our scientific efforts could be directed almost exclusively to improving the well-being of our people, we must, instead, make unprecedented peacetime efforts to maintain our military strength. For we have learned—we have learned the hard and bitter way—that we cannot hope for lasting peace with justice if we do not remain strong in the cause of peace.

If we are to maintain the leadership in science that is essential to national strength, we must vigorously press ahead in research. There is one simple axiom on which this thought is based. The secrets of nature are not our monopoly. Any nation that is willing and able to make the effort can learn the secrets that we have learned. Such a nation may, indeed, discover new facts of nature we have not yet discovered.

Our problem, therefore, is not a static one of preserving what we have. Our problem is to continue to engage in pure—or fundamental—research in all scientific fields. Such research alone leads to striking developments that mean leadership. Yet it is precisely in this area that we, as a Nation, have been weakest. We have been strong in applied science and in technology, but in the past we have relied largely on Europe for basic knowledge.

Pure research is arduous, demanding, and difficult. It requires unusual intellectual powers. It requires extensive and specialized training. It requires intense concentration, possible only when all the faculties of the scientist are brought to bear on a problem, with no disturbances or distractions.

Some of the fundamental research necessary to our national interest is being undertaken by the Federal Government. The Government has, I believe, two obligations in connection with this research if we are to obtain the results we hope for. First, it must provide truly adequate funds and facilities; second, it must provide the working atmosphere in which research progress is possible.

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As to the first point, the Government is developing impressive programs in many scientific fields. Fundamental research is being carried on for the National Military Establishment in the laboratories of the armed forces, of industry, and of our universities. The Atomic Energy Commission has been pushing its extensive research. The National Advisory Committee for Aeronautics has expanded its many aeronautical developments. The Federal Security Agency has engaged in extensive medical studies, in its own laboratories, like the National Institute of Health, and through grants to colleges and universities. Other Federal agencies, such as the Departments of Commerce, of Agriculture, and of the Interior, have pursued vigorous programs. The Inter-Departmental Committee on Scientific Research and Development, appointed by me last March, aids in coordinating the Government's many research programs. I sincerely hope that these programs will be further developed and coordinated by the early passage of a National Science Foundation bill.

The second obligation of the Federal Government in connection with basic research is to provide working conditions under which scientists will be encouraged to work for the Government. Scientists do not want to work in ivory towers, but they do want to work in an atmosphere free from suspicion, personal insult, or politically motivated attacks. It is highly unfortunate that we have not been able to maintain the proper conditions for best scientific work. This failure has grave implications for our national security and welfare.

There are some politicians who are under the impression that scientific knowledge belongs only to them. They seem to feel that it is dangerous to let scientists know anything about scientific developments in this country. This situation has been of increasing concern to me. It was highlighted by a telegram I received last week from 8 distinguished scientists. These men expressed their alarm at the deterioration of relations between scientists and the Government because of the frequent attacks which have been made on scientists in the ostensible name of security. The telegram points out that the actions of certain groups are "creating an atmosphere that makes men shun Government work," and that the Federal Government is losing the services of excellent scientists because they have been looked upon from certain quarters as "men not to be trusted." The telegram points out that scientists fully appreciate the need for sensible security measures. But scientists very understandably are reluctant to work where they are subject "to the possibility of smears that may ruin them professionally for life." That telegram was a balanced and sober presentation of a vital problem that concerns every American.

Continuous research by our best scientists is the key to American scientific leadership and true national security. This indispensable work may be made impossible by the creation of an atmosphere in which no man feels safe against the public airing of unfounded rumors, gossip, and vilification. Such an atmosphere is un-American. It is the climate of a totalitarian country in which scientists are expected to change their theories to match changes in the police state's propaganda line.

I hardly need remind this Association that it is primarily to scientists that we owe the existence of our atomic energy enterprise. It was the scientists who first saw the possibility of an atomic bomb. It was the scientists who proved the possibility. It was the scientists who first saw the need of security measures and who, on their own initiative, clamped down a tight lid of secrecy on all experiments. It must not be forgotten for a moment, and certainly it must not be obscured by any smear campaign, that but for the scientists we would have no atomic energy program.

We are only in the beginnings of the atomic age. The knowledge that we now have is but a fraction of the knowledge we must get, whether for peaceful uses or for national defense. We must depend on intensive research to acquire the further knowledge we need. We cannot drive scientists into our laboratories, but, if we tolerate reckless or unfair attacks, we can certainly drive them out.

These are truths that every scientist knows. They are truths that the American people need to understand.

Science has no political affiliation. Concern for our national security is nonpartisan. Sober recognition of scientific research as the basis of our future national security should certainly be nonpartisan. All Americans have a solemn obligation to avoid those methods and procedures which are impeding scientific research—whether adopted mistakenly with good intent or advocated in the name of security by men with other axes to grind.

My emphasis tonight has been on the physical and biological sciences. These are obviously in the forefront in terms of our industry and technology. But the social sciences and related fields are at least as important in the present stage of human affairs. The physical sciences offer us tangible goods; the biological sciences, tangible cures. The social sciences offer us better ways of organizing our lives. I have high hopes, as our knowledge in these fields increases, that the social sciences will enable us to escape from those habits and thoughts which have resulted in so much strife and tragedy.

Now and in the years ahead, we need, more than anything else, the honest and uncompromising common sense of science. Science means a method of thought. That method is characterized by openmindedness, honesty, perseverance, and, above all, by an unflinching passion for knowledge and truth. When more of the peoples of the world have learned the ways of thought of the scientist, we shall have better reason to expect lasting peace and a fuller life for all.