

FOR IMMEDIATE RELEASE

MONDAY, FEBRUARY 23, 1976

Office of the Vice President  
(Boston, Massachusetts)

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REMARKS OF THE VICE PRESIDENT  
AT THE  
AMERICAN ASSOCIATION FOR THE ADVANCEMENT OF SCIENCE  
GRAND BALLROOM, BOSTON SHERATON HOTEL  
BOSTON, MASSACHUSETTS

(AT 8:35 P.M. EST)

Ladies and gentlemen, I have to say that Professor Revelle is a very generous and warm person, and I am deeply grateful for those kind words. I think perhaps it is due to our association with that small college, Dartmouth. There are those who love it, and he and I are two of them.

This man has done so much himself that I feel humbled in his generous words. He has been such a tremendous influence in this country for good, and to have the privilege of being on the platform with him and Margaret Mead is indeed an honor for me as a politician and a public servant. Thank you.

I have identified her staff as a staff of life. That is not exactly the way she described it, but that is to me symbolic of her life, too. At least, that is what I thought it looked like. I would like to also identify myself with Emilio Daddario, and I congratulate you for selecting him as incoming president. And to Bill Carey, and Dr. Johnson, and Mr. Bleicker, and all the members of the American Association for the Advancement of Science, I want to thank you for giving me this opportunity of being here. And I would like to say what an honor it is.

This is the oldest and largest scientific organization. And I would like to also welcome so many distinguished scientists and friends from abroad who have come here for this uniquely important occasion in our Bicentennial year. We appreciate your presence and hope that these days will be useful. I would like to say that I welcomed and readily accepted your invitation to speak at this Bicentennial meeting of the American Association, because I profoundly believe that America's science, America's material progress and America's freedom are closely intertwined. I am convinced that too little attention is given today to these basic interrelationships which have helped to produce the world's greatest standard of living for ordinary people, the greatest individual liberty for people in all walks of life, and the greatest economic freedom men and women have ever enjoyed.

It is most appropriate that this annual meeting is reviewing the emergence of science and technology in America from our colonial beginnings through two centuries of development and progress, and examining the potentials of science and technology in the service of the Nation and humanity as we enter America's third century. Moreover, the meeting has done more than celebrate past accomplishments in scientific discovery and technological applications. It has dealt as well with the important problems of a changing world: hunger, population, energy, resources, human settlements, the problems which impact the future of all peoples and nations, and which must engage science, technology and

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statesmanship seriously in the years ahead.

Scientific advancement, economic progress and the quest for freedom have marched together in America for over two centuries. It was in 1752 that Benjamin Franklin with his son, William, flew the kite into the storm and proved that electricity and lightning were one and the same. This brilliant Philadelphian brought America's economic promise in sharp attention in 1755 when his paper criticizing the British Parliament's restriction on iron manufacturing in Pennsylvania was presented to the American Philosophical Society, printed that year and circulated abroad. Franklin also foresaw the great growth of the colonies and the immense market they would provide, boldly called for a reversal of the shortsighted policy. This was the same Benjamin Franklin who persuaded the Pennsylvania delegation, the only group still in operation on July 2, 1776, to vote for the Declaration of Independence.

Franklin exemplified the spirit of scientific inquiry, applied technology, economic freedom and political liberty that has characterized this nation during most of its history. He, and those of you who followed over several generations, have contributed to the great industrial, scientific and technological strength of these United States.

It is appropriate that we give thanks to the men and women of science, to Franklin and his successors, at this Bicentennial. But mere thanks are not enough to discharge our obligation. It is far more fitting to honor them by carrying on the task they set with the same virile spirit they exemplified.

But before we congratulate ourselves, let us stop for a moment and review our present position. I wonder if we can say we are moving with the same kind of thrust, the same contagious confidence, the same conviction of the rightfulness of our cause as they did. Certainly we have achieved marvels in man's history. We have fractured the atom and brought in the nuclear age; leaped from electricity to electronics and left footprints on the moon. We have developed memory machines, calculators, and automatic devices with fantastic capabilities and even more fabulous potentials.

But all of this has been accompanied, one might observe, with a certain questioning of these accomplishments and a growing cynicism respecting their value. This is unfortunate. For these very attainments are what has made it possible for more and more people to have the benefits of science and technology and individual freedom more than ever before. If we but have the wits and the courage to continue to use them properly, we can increasingly enhance the quality of life for all Americans.

There is always risk in life. So risk in invention, in discovery. When the first man made the first man-made fire, he probably struck terror in his neighbors. But man's ability to contain, to channel, to master his discoveries and inventions are what have made civilization. We must not forget this. And yet, listening to the debates and reading the emotional arguments about energy sources and energy technology, one wonders at times whether we are dealing with a world of science and fact or a world of superstition and fear.

To make possible a decent standard of living for all Americans, to provide the kind of economic growth that will offer employment to all those who can work, to meet our national security needs, it is clear we must develop additional energy resources from the extraordinary range of choices that we have within our own borders. Both our immediate dependence on imported OPEC petroleum and the limited quantity of this resource world-wide, dictate such a course. But two and a quarter years after the Arab embargo exposed our weakness, we have yet to take major steps toward achieving greater energy self-sufficiency.

The reasons for stalemate are several. They run the gamut from pure politics, to lack of political concern, to concerns that exploitation of new energy sources will degrade the environment, misuse our resources and imperil human life. Concerns for the environment, for the use of resources and for human life are vital and necessary, but science and technology can provide the necessary safeguards for all these areas in energy development and transmission. Nuclear power has been with us for two decades and is making increasing contributions to the generation of electricity both here and abroad. In the 18-year history of commercial nuclear plant operation, no accidents have occurred involving public injury. In this same period in the United States alone, 848,544 people have been killed by motor vehicles and more than 75 million have been injured by this highly popular invention. Yet, to my knowledge, there is no popular movement to "ban the auto."

Nuclear power is not going to go away. Once a scientific discovery sweeps the world and a new technology is widely disseminated, it will not disappear, nor can it be suppressed by any one group or a nation. As with other technologies, it behooves us to push forward to realize its full potential while, at the same time, we provide essential safety, improve efficiency and the handling of the problem of nuclear waste.

The environmental problems of increased oil and coal energy development can be met by science and technology as well. Leaks from offshore drilling rigs are not a demonstrated hazard anywhere near the emotional opposition they arouse. In fact, they are only a fraction of the risk to costal areas that occur from spillage by tankers, and can be handled by technology and security procedures. I am confident that scientists and engineers can also develop more economical and environmentally sound methods for burning high sulphur content coal and oil to produce power.

The hard fact of today is that America's independence, our very freedom depend on our achieving energy self-reliance. It would take an all-out effort by scientists, our enterprise system and government to accomplish this. It can be done, and it is time we got started.

To provide a salutary environment for our own and the world's growing population will require more energy, not less. My own work on the water pollution control clearly indicates the need for energy to help clean up our waters and to keep them that way. Expansion of energy supply and the provision of a healthful environment for our people are not only compatible objectives, they are both essential for the future of mankind. Unless we provide more energy, a continuing

supply of food, and basic raw materials and a healthful environment, we cannot achieve a satisfactory level of living for all Americans, much less play a significant role for the rest of the world.

Without economic growth, we cannot have the opportunity for all groups in our society, for all individuals to employ their talents, dedication, ambition and energies looking to the betterment of their status and the future opportunities of their children. Citizens of a free society like ours will not only seek but will demand opportunity for improving their lot. The challenge to science and technology is to provide the base for this growth and economic and environmental progress, thereby continuing the climate for individual freedom and personal liberty. These three forces: economic freedom, political liberty, and progress fostered by science and technology have marched inextricably together since the Declaration of Independence 200 years ago.

The stake of science and of scientists in economic freedom to choose the areas of their inquiry and their stake in political liberty, freely to proclaim their findings and opinions, is crucial. Americans have fostered free inquiry. Our government has sponsored vast programs and a vast spectrum of scientific and technological activities. Our laws of patent and copyright protected discovery and invention. Our system has sought to reward those who have so benefited our society. Our government, through the encouragement of tax laws, has produced philanthropic foundations whose sponsorship of research and experimentation has also encouraged science, expanded the horizons of mankind, and brought health and better living to tens of millions on this earth.

But freedom and liberty are constantly and increasingly threatened in this world. Not only is the threat direct, but it can be indirect. It can even be so subtle as to be insidious. This free society, this America, faces such dangers today. A free science requires a free society. Our system of free interchange stands in stark contrast to those totalitarian societies where free exchange of knowledge, opinion and information by scientists and others can lead to prison or incarceration in mental hospitals. Our own science community is aware of the stake we have in keeping America strong, that the hope for freedom throughout the world depends upon America's strength.

A crucial part of this strength is military power. The free world's military power, principally that of the United States today, depends on accelerating progress of science and technology. But scientific and technological progress are no monopoly of the free world. We know today the impressive military inventory produced by regimented and directed scientists and engineers in present-day totalitarian societies. We are in serious danger now of losing our lead time in the development of military science and technology. This can be disastrous. We must significantly increase our support for scientific research and technological development in the defense area. The President has recommended an increase of nearly \$2 billion for research and development expenditures in his 1977 budget for defense.

As a democracy, we run a real danger if we allow

ourselves to be deluded that defense expenditures are necessarily unproductive and wasteful. Such neglect by democracies in the 1930's brought them perilously close to extinction under the Nazi totalitarian attack. Defense research and development have played a major role here in America, not only in buttressing our national security, but in the significant by-products for civilian use, and hence for our own trade and economic growth. The strength of our aviation industry from the time of the Wright brothers has stemmed largely from military support and military prototypes in large measure. This is but one example of the many collateral results that benefitted Americans from military research and development. In the kind of world in which we live, Defense Department support for research and development must be continued and expanded.

It is equally important that we expand and support scientific and technological development outside defense as well. President Ford's increase of close to a billion dollars for this purpose, also in his proposed budget is certainly a positive step, particularly in this year of financial problems. In fact, support for scientific and research development is the only area he asked for a substantial increase in his budget -- a 20-percent increase for basic research. And the National Science Foundation's 18 percent for energy research and development, and 11 percent across the board.

Indeed, the export of our know-how has been and can continue to be a significant element in our balance of trade and balance of payments. But if this happy circumstance is to continue, it will require more specific attention to education for science and technology, greater recognition of their rôle in our society and greater support generally. It will also require of the scientific community and of the science-reporting media that more attention and more care are exercised in putting forth information, claims, promises or warnings. The public esteem and confidence is shaken if a product like cyclamates is prematurely removed from the market because of its alleged cancer-causing danger, only later to have it be shown to be harmless and, as a matter of fact, superior to its substitute.

Public confidence is shaken if a small minority of scientists without adequate basis for their claims, spread unfounded fear and retard or prevent progress. In a free society, however, there must be a better method for bringing into focus for the people the facts and the informed, mature, objective judgments of the scientific community. Whether it be an impartial science court or a series of duly constituted panels in various areas of science, or some other vehicle, there is obviously a need. However, any such vehicle, no matter how well constituted, will not be fully effective unless the scientists, the media, and Congress and the Executive give it the weight to which it is entitled. An important step in this direction is the Administration's proposal for the establishment of the Office of Science and Technological Policy in the White House. Legislation creating the Office is expected to pass the Congress in the very near future.

In America, we have demonstrated for two centuries how a virile, adventurous people of many backgrounds and many views can achieve a consensus for liberty, freedom and progress. It has not come automatically. It has come through sacrifice, compromise, and compassion. It has come from creativity with

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perseverance and dedication. And so, pursuing our enlightened national self-interest as free human beings, we not only give greater meaning to our own lives and improve our own lot, but give help and hope to people everywhere. In this third century of our national life, we dare do no less.

Thank you.

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(AT 9:00 P.M. EST)