

## PRESIDENT'S ADDRESS

## OUR HOPES FOR TOMORROW

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In order to have a strong foundation on which to build our hopes for tomorrow, a brief review of progress in the various branches of science would seem to be appropriate.

In the field of transportation, the trend is toward greater and greater speed. That the speed of sound may be equaled or surpassed is no longer a matter of doubt but an accepted fact. Rockets traveling at the rate of 10,000 m. p. h. are considered a distinct possibility and it would be folly for a man of science to say that such speeds for human transportation in the unknown future would be impossible. Because of a number of factors, too obvious to mention, the trend in engine design seems to be toward the use of gas and liquid fuels; the turbo-jet engine receiving the most attention for aircraft. High speed engines require materials of construction which will withstand high temperatures and will resist corrosion. This need has stimulated research in metallurgy and the search for other suitable structural materials. The type of fuel required has made continued research in fuel technology necessary. It is well known that oil reserves in the United States are inadequate for our needs and even now the situation has changed from one of net-export to net-import. Recent estimates, however, indicate that the Eastern Hemisphere has greater oil reserves than were in the Western Hemisphere when oil was discovered. Conservation of fuel supplies in the United States has therefore received considerable attention. It is now possible to obtain, by special treatment, 80 octane gasoline from natural gas, much of which had formerly been wasted. Yield estimates of 350,000 barrels per day from this process alone have been made. Hydrogenation of coal, known for many years to be a possible source of liquid fuel, is now being considered seriously, along with the extraction of oil from shale. Assuming that the present rate of coal consumption will continue it has been estimated that there is a 250 year supply

in the United States. At the Northern Regional Research Laboratory of the U. S. Government at Peoria, Illinois, research is in progress on the conversion of agricultural wastes into liquid fuel. It has been conservatively estimated that from all known sources there is sufficient energy available in the world to last 2000 years at the present rate of consumption. This is without the assumption that new and novel sources of energy will be discovered in those 2000 years.

The appalling destruction and drain on our natural resources in World War II has directed our attention toward the conservation of these materials. Interest has been particularly active in soil conservation for erosion and fertility control; in the more efficient extraction of oil from wells where only 50 per cent had been taken out; in the development of insecticides, weed killers, plant hormones and vitamins in order to get the best possible yield out of a given planting; in the development of hybrids and new strains of both plants and animals to increase not only the yield but also the quality of the products; in the development of irrigation, flood control and water power to make better use of the land and to supplement as well as to conserve fuel supplies; finally, in rain making, in an attempt to guard against crop failure due to lack of natural rainfall. It will be difficult to obtain a large scale acceptance of many of these conservation measures, however, without extensive educational programs. It seems to me that informal as well as formal education on the importance of conservation is an obligation that we as scientists owe to society.

In the field of medicine there have been important advances in nutrition, in the study of vitamins, hormones, antibiotics, and bacteriostatic agents to mention only a few. Research funds are set up on a national scale to work out problems relative to cancer, tuberculosis, poliomyelitis and heart disease. At the moment, tuberculosis seems to be the one most nearly under control.

In the chemical field, in addition to contributions to the progress in other fields already indicated, there has been considerable success in the development of new textiles,

plastics and protective coatings. The general objective being to combine wearing qualities with beauty in clothing and in structural materials. This should bring joy to the hearts of those who pay the bills, but imagine the state of mind of the ladies when they discover that the dresses they have just purchased may never wear out.

The rapid development of electronics during World War II has contributed greatly to improvements in communication including television, wire recording, wirephotos and the radio facsimile newspaper. The increase in rate of industrial production without loss of efficiency, and usually at less cost, is due in large measure to the development of automatic machinery controlled by electronics. Guided missiles, radio-controlled aircraft, proximity fuses and numerous detecting devices have strengthened our defense and have added to our striking power on offense.

The possibilities of atomic energy have scarcely been tapped. The destructive power, when suddenly released, is well known. We may have to wait for some time before its use as a source of steady power becomes practical. As an aid to the understanding of the nature of the atom and as a tool in research it has already become invaluable.

With this brief and admittedly incomplete review of scientific progress as a background, what are our hopes for tomorrow? We may look with assurance for the following: Improvement in our physical well-being through the use of antibiotics and other disease controlling agents, new anesthetics, improvements in surgical techniques, vitamins, etc. The Nobel Prize in medicine and physiology for 1948 was awarded to Paul Mueller for his contribution to the discovery of D.D.T. By the combined use of D.D.T. and anti-malarial drugs, malaria in Greece has been reduced from 1,000,000 to 50,000 cases per year. Advances in the medical field will also increase our life-expectancy. This would seem futile if we were not promised that by the proper administration of hormones our years of usefulness to society will also be increased.

Improvements in travel and communication will lead to greater intimacy between peoples of the world. We may

expect thereby to encounter new problems to solve. Diseases of man, animals and plants will be more easily and more rapidly spread from one part of the globe to another. I have no doubt that this challenge will be successfully met through research.

With improvements in and widespread practice of conservation of natural resources, it should be possible to raise the standard of living throughout the world. Could it be possible that at last an enduring peace is at hand? Only if improvement in our spiritual makeup keeps pace with the physical can we hope to give an affirmative answer to that question. It thus becomes evident that there has never been a greater need for the practice and spread of the Christian principle of brotherly love than now if the present civilization is to escape destruction.

What of the future of research? Research in any field is no longer an enterprise of questionable value but one of necessity. Funds allotted to research are still on the increase and curtailed only by lack of construction and equipment. Whether we like it or not, government agencies are now contributing a major portion of the total annual expenditure for research in the United States. In order to ensure that the best use be made of these funds, we had better take advantage of our democratic privilege of the free vote to see that our government is what we would like it to be. It is essential that a continuous supply of competent research workers be made available to all agencies. We can assist in this by giving all possible encouragement to our young people who show a strong aptitude for science.

Again I would emphasize that we must be spiritually right to make sure that research, that indispensable stimulus to progress will be a genie rather than a monster.

In closing I would recommend for your consideration a quotation from Paul's letter to the Philippians (Phil 4:8) "Finally brethren, whatsoever things are true, whatsoever things are honest, whatsoever things are just, whatsoever things are pure, whatsoever things are lovely, whatsoever things are of good report, if there be any virtue, and if there be any praise, think on these things."