

THE DIRECTOR'S STATEMENT

The nations of the world recognize the importance of progress in science and technology to economic and military strength. This recognition is a strong stimulant in their promotion of industrial research, development, and production; in their support of basic research underlying such efforts; and in their provision for training of scientists and engineers. All of them recognize that technological accomplishment depends on skill and experience in production, supported by applied research and development sufficiently financed, resting on a strong foundation of basic research. To these ends, an adequate and continuing supply of competent scientists, engineers, and technicians is indispensable.

Our technology is strong in experience and preparedness to cope with sudden and large demands upon it, both industrial and military. Its facilities are advanced, efficient, and extensive, and there is no lack of drive and energy in putting them to work. Our weakness has been in developing a sufficient number of adequately trained scientists and engineers, and in providing sufficient support for those capable of doing the basic research needed for technological advancement. The shortage of such personnel is critical.

Our educational system has established a truly remarkable record in providing general training for our children through high school. However, for the purpose of training scientists and engineers or, for that matter, other professional specialists, this record is spoiled in the transition from secondary school to college—about half our ablest young people do not go on to college. Contrary to popular opinion, the chief difficulty appears to be primarily not financial, but rather a lack of motivation toward pursuing further education, or a

deliberate choice in favor of an immediate job which will provide a satisfactory income and a promising future. There is thus a need for improved counselling of high school students.

Lack of interest or motivation in the sciences and engineering is but one part of a much larger problem. The potentialities of a college education in developing skills and aptitudes for most professional careers are simply not understood. Managers of technical industries know that the years of specialization in science and engineering lead to more rapid advancement and to far more opportunities in rewarding employment. We must emphasize that making the most of one's opportunities to develop professional aptitudes is in the best interest of the individual and in the best interest of society. He who aspires to a successful career in the fields of science and technology must now, more than ever before, be thoroughly grounded in the fundamental sciences underlying his specialty so that he may keep pace with the increasingly rapid advances in technology.

In the American economy, the need to develop professional competence extends across all fields of knowledge, whether in the arts or in the sciences. However, the need is particularly critical today in science and engineering. Shortages here directly affect, in immediate practical ways, our capabilities for defense and for the industrial progress so necessary to our strength and welfare.

The widely publicized need for scientific and engineering manpower is beginning to evoke the interest in young people in such careers. If the current demand continues and strong efforts are exerted to fill these needs, the output of trained scientists and engineers will markedly increase. However, these increasing numbers may be expected to be more interested in research and the practice of science and engineering than in teaching, although it is obvious that more and better qualified teachers are needed to keep up with the growing numbers of students. To provide the teachers poses a difficult problem. To incline the younger generation towards a teaching career in science can hardly be successful, until such a career is attractive in terms of salary and professional prestige.

Most helpful and important is the current interest taken by industry in training scientists and engineers. Many technical industries are now performing valuable service in providing fellowships and scholarships, funds for research, opportunities for training, and direct stimulation for improvement of science education in secondary schools and colleges. Likewise, scientific societies and associations can be most helpful. The President's Committee for the Development of Scientists and Engineers is taking steps further to encourage and stimulate activity by the interested organizations—scientific, industrial, and labor, as well as state and municipal governments.

In the United States, support of education is by tradition a matter of local concern, with funds provided by the states and municipalities, and by private sources. Educational support is, above all, responsive to the wishes of parents and citizens. When parents and citizens realize fully the extent to which our future depends upon the competence of our teachers, conditions will rapidly improve.

Support of basic research among colleges and universities is closely linked to the immediate output of trained scientists and engineers, since funds for research are commonly used to employ graduate students as research assistants. Thus, additional support for basic research in colleges provides advanced research training for more graduate students who will complete their training and be available within one or two years.

To the increased need for basic research and the training of scientists, we must add the urgent need for general research equipment to supplement and replace the obsolete equipment now in use. For that matter, there is a great need to renovate research facilities of all kinds at colleges and universities. Even more extensive is the need for equipment for instructional purposes, both for laboratory and demonstration use—a need felt in all colleges, but probably most acutely in the secondary schools. Better laboratories and scientific equipment would prove a great asset for recruiting desperately needed science teachers in the elementary and secondary schools.

Perhaps the most critical question is: can these widespread needs of science in our educational institutions be met adequately and quickly in the customary way by local support,

from state, municipal, or private sources? Indeed, our national welfare depends in considerable degree upon the promptness and thoroughness with which we can assure the maintenance of a strong scientific research effort and an adequate supply of trained scientific manpower. A major consideration is the degree to which the Federal Government should participate in the solution of these most urgent problems. The most important goal is to create an awareness and an understanding on the part of our citizens regarding the fundamental and critical nature of these problems, in order that speedy progress may be made toward their solution.

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