GENERAL SCIENCE

Training the Creative Scientist

The success with which the United States meets the challenge of the future depends upon the extent to which exceptional talent is discovered and developed today.

By DR. GLENN T. SEABORG

Remarks of the Chairman of the U.S. Atomic Energy Commission at the 14th National Science Fair-International, Albuquerque, N. Mex., May 7.

➤ IT WAS ONLY A CENTURY or two ago that modern science became an organized study of natural phenomena deduced from experimental evidence.

Since that time applied science and invention have influenced the life of the individual, the development of industry, the evolution of political societies and the course of history. In the past few decades we have seen a great increase in the impact of science on our society owing to a new factor which was not previously present. This new factor is the systematic and intensive accumulation of new scientific knowledge—the result of basic or fundamental scientific research.

Unrestricted Research

We now know that the search for new knowledge, if not restricted to subjects of foreseeable and immediate practical importance, results in an unexpected increase in our understanding of physical or biological phenomena. These increases, in turn, give rise to far-reaching practical applications which could not have been anticipated from the original basic research.

Our scientific knowledge and technology are advancing at an explosive rate. The time lag between the discovery of a fundamentally new scientific principle and its application in engineering or medicine is now very short, and these rapid developments are changing the lives of all of us in many ways which we only dimly perceive.

Because of our inescapable dependence on modern science and technology we must regard trained brainpower as a precious natural resource.

The extent to which we discover exceptional intellectual talent, encourage and develop it, and provide conditions for its effective flowering will be a measure of our success in meeting the truly challenging problems which technology and population growth are posing for us in the remainder of this troubled twentieth century. I refer broadly to two types of trained brainpower. One is represented by the professional scientist or engineer, the other by the educated person in other fields who has mastered enough of the meaning and content of modern science to make valid judgments on the many questions raised by the influence of science on his field, whether it be law, medicine, politics, military affairs, industrial management or some other.

It is fitting, therefore, that considerable attention be paid to the early identification of intellectual talent.

Tonight we are gathered to participate in one attempt at the identification of boys and girls who have exceptional aptitude for a creative and productive career in science. We are here to honor young men and women who have demonstrated by their conception and execution of some science project that they have a strong motivation and exceptional promise for a scientific education.

I think it is quite proper that we pause on regular occasions to acknowledge the intellectual, esthetic and idealistic aspirations of our young people and encourage them by recognizing their academic excellence. Not unnaturally, a young person is influenced to seek goals which are recognized and respected. If praise is reserved only for athletic prowess or monetary success, who can blame him if he seeks these even if it means sacrificing a great potential in some other field. Perhaps some of you may have seen the Lichty cartoon of a month ago in which a father admonished his son, "The future is wide open for a science graduate, Otis! —But he can do still better if he can hit over .300 and catch fly balls!"

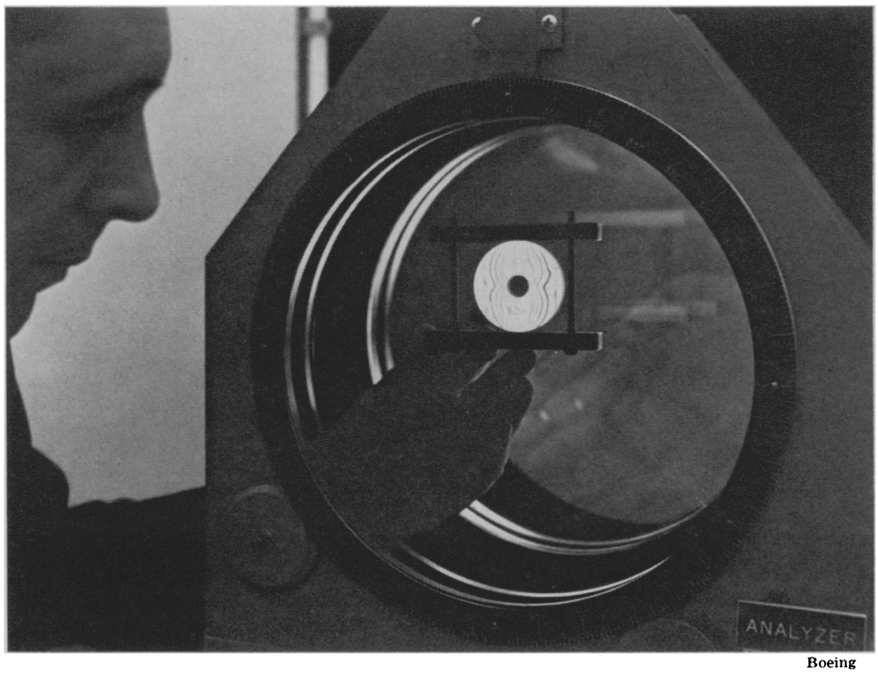
So, I am most happy to extend my personal congratulations to these young men and women. It would be extraordinary indeed if all of you should develop into brilliant scientists of international reputation. I would be the last to lay the heavy burden of such an expectation on your shoulders. It would also be extraordinary if any of you failed to contribute in some way and in some pursuit, which none of us can predict here tonight, much more than an average share of intellectual achievement.

I would like now to mention briefly a few important steps in the education of a scientist, and a few attractive features of the life of a research scientist.

Work of Research Scientist

The work of a research scientist is of great interest and importance. Often it is difficult to relate his work to matters of dollars and cents but in the value system of the scientist the subject he has under study—whether this be the origin of the solar system, the biochemical basis of heredity, or the nature of a meson—is of great significance.

I believe that most people have a deep psychological need to feel that what they are doing is of some importance. The scientist feels the satisfaction of this need, and this gives drive and zest to his efforts. This is particularly true if, from time to time, his efforts are rewarded by the thrill of discovery. In his search he knows that in the final analysis his success as a scientist is measured against the criteria of nature



Boeing

STRESS PATTERN—Polarized light reflecting from special coating on test part indicates stress pattern caused by drilling a hole in a metal disc. The plastic test parts covered with the special coating were used by the Boeing Company, Seattle, in designing landing gear for their 727 jet plane.