

GENERAL SCIENCE

The Qualities of a Scientist

The young scientist of today needs to develop qualities of compassion, tenderness and high-mindedness in addition to technical and academic abilities in his chosen field.

By DR. JAMES R. KILLIAN JR.

Special Assistant to the President for Science and Technology

An address given at the awards banquet of the Seventeenth Annual Science Talent Search, in Washington, D. C., March 3.

► I HOLD TWO convictions which make me happy to appear here tonight and to congratulate this year's 40 winners of the Science Talent Search Awards.

The gathering obligations and challenges of our time place a mounting premium on excellence, on high performance, on better taste in all of our work and living in the United States. This is my first conviction.

My second conviction is that the quality of American life and the enhancement of this quality depend upon the quality of our leaders, our thinkers, and our innovators. Hence, we must give high priority to motivating and educating an adequate supply of leaders, thinkers and creators, for in doing so we are seeking the principal levers to lift the level of total performance, total opportunity and total welfare of our people.

Using Our Human Resources

The identification, encouragement and education of high talent, then, is of first priority in any program to better the utilization of our human resources. More than any other kind of society, democracy requires talent and leadership.

Started as it was 17 years ago, the Science Talent Search has been a pioneering and sustained effort to contribute to these national needs. It has consistently demonstrated that it is possible to seek out—and identify—those young men and women who are likely to become creative scientists of the future, and the Westinghouse Educational Foundation, Science Service and the Science Clubs of America have served the nation well through this program. I am told that of the 640 winners of these awards over the years, more than half have gone on to receive doctoral degrees—and many have distinguished themselves in academic research, in teaching, or in industrial research.

So it is that those of you who are here tonight to receive the awards your past performance has merited, deserve not only hearty congratulations but also the charge and reminder that your selection places you under special responsibility to develop your talents to the fullest and to act with poise and responsibility.

I have had the privilege of long being associated with education, especially science education, and with talented young people.

I know the deep satisfaction of watching them learn and grow and achieve maturity. In speaking to you who have such exceptional talents and such unusual opportunities for future development, I would like to draw on this experience of mine and consequent faith in young people and say some very personal things about the responsibilities, and the art of living, which are important for those seeking professional careers in the field of science and engineering.

On the road ahead some of you will be successful in teaching, or research, or design; others, ultimately, in the responsible direction of great enterprises. Some of you, when you finish your education, may grow to influence the life of our times by your qualities of leadership, or by your discoveries and creative efforts, or by some powerful exemplification of moral strength or purpose. Others of you will win their success and make their contributions not on the superhighways of life, but on the quiet back roads where character, ability and dignity yield rich careers, unclaimed but marked by grace and dignity. Statistical probability predicts that a few of you will encounter roadblocks or highway accidents and you may not achieve marked success in the conventional sense.



PRESIDENTIAL ADVISER — Dr. James R. Killian Jr., special assistant to the President for Science and Technology.

Whatever may befall you on your journey from now on, success in the deepest and truest sense will be found in the dignity and poise which you reveal in meeting both the failures and the successes of life. It will be found in your perception and acceptance of high standards and ideal aims. Your success will reside especially in your relations to people, in your capacity to be compassionate as well as bright, tender as well as high-minded in your loyalties and your allegiances. It was once said of the people of Athens that they had the gift of making "gentle the life of mankind." In my benison tonight I include the hopeful anticipation that you will mix with your professional work some of this ingredient for making gentle the life of our turbulent times, for cultivating civility in a period of harsh and brutal incivilities. Scientists and engineers, if they are to be of maximum effectiveness, must possess the true professional spirit of ministering to the public.

"An Indefinable Quality"

Some time ago I read the very moving autobiography of Tenzing of Mount Everest, one of the two first to climb that mountain. He is an unlettered, burly man but still, as Ullman, his collaborator, says, a man possessed of "taste and dignity, courtesy and grace." "There is a flame in Tenzing," says Ullman, "a marvelously strong and pure flame that no storm of man or nature can extinguish. It is compounded of dream and desire, will and struggle, pride and humility; and in the end . . . it is the man's humility that stands out above all his other qualities. In his moment of triumph what he felt in his heart was gratitude to Everest. His prayer for his future life is that it may be worthy of Everest."

It is my hope that you can undergird your competence and specialization with this indefinable quality that shows itself in grace and strength and dignity and humility—qualities that can be achieved independently of education. I hope too that you may always have, so to speak, a sense of being worthy of Everest.

To these unabashed and personal good wishes I add two more arising out of your special interest and your plans to become scientists and engineers. The first is that you may come to serve as expositors and exemplars of the true spirit of science. In the face of the practical responsibilities which rest on science today for our military strength and for our material welfare, it is too easy for people to become convinced that science is limited to these important objectives, and for them to forget that science is also in its own right a field of excitement and adventure and one that provides its own special vision for man to interpret nature. It is one of our most powerful and noble means for searching out the truth and for augmenting man's dignity by augmenting his understanding.

When you become scientists you will have a special obligation to make this true character of science better understood, and to do so not by the arrogant advocacy of science and technology as the only means to increase our understanding and well-being, but by the balanced and tolerant explanation and exemplification of the scientific spirit as one of the great and powerful methods by which man can increase his knowledge and understanding and still stand humble before the wonder and majesty of what he does not understand. When thus understood and carried forward, science is a major means for present-day Athenians to make gentle the life of mankind. This benign nature of science has been eloquently personified by many of our great scientists. The late Albert Einstein possessed not only a transcendently brilliant intellect, but he also marshalled his powers and formed his personality to become a rare human being in his gentleness and his saintliness.

The concluding wish of my benison tonight is that you will couple with a resourceful career of achievement a moderating sense of the simple satisfaction of running the race. The late Gelett Burgess put into verse what I mean:

"Not the quarry, but the chase
Not the laurel, but the race
Not the hazard, but the play
Make me, Lord, enjoy away!"

In a day when mottoes are out of date and sentiments are inhibited, this verse seems good for those who, like yourselves, stand at the threshold of their professional careers.

With these sentiments of felicitation and admiration, I wish you continuing success and accomplishment.

Science News Letter, March 15, 1958

GEOPHYSICS

Explorer III Scheduled For Early Launching

➤ EXPLORER III, the third U. S. satellite, is scheduled for an early launching, Undersecretary of the Army Charles C. Finucane reported.

Work on the new satellite has been started at the Jet Propulsion Laboratory of California Institute of Technology where the two earlier satellites were made. It was also learned that Explorer III would be the first of a series of five new "moons" the Army plans to try to put into an orbit around the earth. Explorer III will carry out International Geophysical Year experiments, using two or more magnetic tape recorders to perform several experiments simultaneously.

The launching attempt will probably be made some time in early April, although no definite date was given except for "at least 10 days and probably more than a month" after the announcement on March 6.

The Army estimates that Explorer II, launched Wednesday afternoon, March 5, re-entered the earth's atmosphere and burned about 1,900 miles from Cape Canaveral at a point over the Atlantic Ocean north of the Guianas in South America. It was last heard from 20 minutes after it was launched, 530 miles beyond Antigua Island.

Science News Letter, March 15, 1958

TECHNOLOGY

New TV Tube Shown To STS Winners

➤ A NEW CATHODE-RAY tube that promises to give sharper television pictures, even in daylight, was demonstrated before the 40 winners of the Westinghouse Science Talent Search.

Dr. James H. Schulman and Robert J. Ginther of the Naval Research Laboratory, two of the scientists associated with the new development, explained that instead of using a phosphor coating on the inside face of the TV picture tube, an especially prepared glass screen is used. Because it is transparent, there are a number of reasons why the new tube would result in an improved image.

Light from the outside passes into the new transparent tube and becomes absorbed instead of being reflected back into the viewer's vision as happened with the phosphor coating of the ordinary tube.

No halo-of-light effect is produced since there are no phosphor particles. The phosphorescent light that originates in each grain of the coating had previously scattered into surrounding grains before the light emerged from the tube.

In contrast to the conventional tube, there are no grains to limit the sharpness of the image that can be produced on the transparent screen.

"Activating impurities" introduced into the pores of a high silica glass, 96% silicon dioxide, is what gives the new NRL tube its luminescence.

Glass screens that produce five different colors, deep blue, greenish-blue, green, yellow and orange-red, were shown to the visiting students. Cerium-activated glass gives the deep blue color, while the others are caused by copper, uranium, manganese and samarium.

A synthetic compound, norethandrolone, causes *weight gain* in elderly persons and in other "essentially healthy individuals" who have remained thin despite taking vitamins and tonics and eating special diets.



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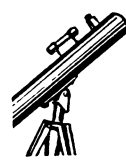
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