Trends in Supply of Scientists and Engineers in the United States

THE number of scientists and engineers in the United States is increasing, but optimism in this respect is tempered by certain modifying trends.

The over-all number of young people attending institutions of higher learning is growing. In 1930, college and university enrollments were 12 percent of the population in the age group 18 to 21 yr; in 1940, they increased to 16 percent; and in 1953, after the G.I. bulge, they were 21 percent. In addition, higher birth rates will also result in greater numbers of young people going to college. In 1949 and 1953, there were about 2.5 million young people attending college. By 1960, an estimated 2.7 million may be enrolled, and if present trends continue the number may increase to 3.4 million by 1965. However, full mobilization would severely reduce these estimates.

High-school grades and standardized test scores indicate that careers in science are attracting many of our most competent college students. According to studies by Dael Wolfle, college students in the physical sciences average near the top in performance, both in high-school academic work and on intelligence tests, and biology students hold their own with students in all fields.

The proportion of professional, technical, and kindred persons in the labor force, as reported by the Census Bureau, almost doubled between 1910 and 1950. Numerically, the increase was even more spectacular—from 1.6 million to 5.1 million. The increase in the numbers of scientists and engineers has also been rapid. Between 1930 and 1953, the number of scientists increased from about 46,000 to about 200,000, and the number of engineers from approximately 215,000 to about 500,000.

Despite these increases, however, slightly less than 0.5 percent of our total population are scientists and engineers. One of the grave problems facing the nation, therefore, is how to use these crucial skills and, at the same time, preserve the freedom essential to the advancement of knowledge.

More important than the statistics on the number of scientists, however, is the quality of their training. Are the competent young people finishing high school adequately trained, and are the science students finishing our colleges and universities capable of creative research? Probably only time will tell, but the number of able young people in a particular field will certainly influence its direction and growth.

On the other side of the picture is the high number of promising young people who do not go on to higher learning. Although almost all students with intelligence higher than that of the average college graduate finish high school, nearly half of them do not enter institutions of higher education, and an appreciable number of those who enter do not finish. The increasing numbers of students going into science and engineering is not being matched by a proportionate increase in the number of qualified teachers. Teacher salary scales are below those for comparably trained people in industry and government, and sometimes below the scale for skilled labor. Increasing teaching loads leave many of our teachers little time for their own research and intellectual refreshment.

Comparing our own efforts with those of other nations, we note that apparently there are in the U.S.S.R. more than 400,000 engineers and 150,000 scientists, compared with 500,000 and 200,000 in the United States. Of greater moment, however, is the greater emphasis they put on training in science and technology. Their rate of production of well-trained scientists and engineers seems to be higher than ours. Soviet scientists are believed to be competent, and there is strong evidence that they are improving the quality of their specialized training. Their emphasis on technological training is at the expense of the humanities and the liberal arts, however, and we must guard against these dangers of overspecialization.

The complex problems facing the United States today cannot be solved by technical skills alone, important as these are, and it behooves us to give the best and broadest training to our young scientists and engineers.

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