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SCIENCE

Blow-Hot, Blow-Cold Educational Policies

The phasing-out of the training grants and fellowship program at the National Institutes of Health will sharply curtail the government's direct support of predoctoral and postdoctoral education in the sciences. Some training will continue in connection with research grants, but the number of students supported will be a minor fraction of those who had received stipends earlier. The dismantling of the government's fellowship program liquidates some excesses but, on balance, is a destructive move, and it comes at a time when the need for some kinds of scientists and engineers is actually growing.

After Sputnik was launched, this nation engaged in a frantic effort to expand its scientific capabilities. For a number of years government funds available for research in the physical and biomedical sciences increased rapidly. At the same time, the Apollo program was implemented. These developments created a shortage of scientists and engineers. The government responded by initiating and expanding support of many kinds of fellowships and training programs. To meet the opportunities of the times, universities expanded their faculties, thus increasing opportunities for employment. Industry found it difficult to attract qualified personnel. Demand for scientists seemed insatiable. Help-wanted ads in the *New York Times* and other publications reached record numbers. An index of employment opportunities, based on such evidence, peaked in 1966 at 190 percent of 1961 levels. When government support ceased to grow, demand for scientists began to drop. Universities no longer needed to expand their faculties, industry began an era of retrenchment. The Apollo program entered its final phases. Suddenly there were unemployed scientists and engineers, and the index of employment opportunities dropped below 40 in 1971. During the peak years, it was common for top-quality graduates and Ph.D.'s to receive dozens of job offers. In 1971, the best students often had only two or three opportunities, and some graduates had no jobs for months.

The most dramatic unemployment problem was in the aerospace industry. When activities were cut back, severe local unemployment resulted. A picture of an engineer driving a taxi created a profound and lingering impression.

Those in government who wished to dismantle the fellowship programs had a useful excuse. Why train scientists when there were scientists unemployed? To a substantial extent, the unemployment argument is no longer valid. The index of employment opportunities has climbed above 100. In some regions there already are shortages of engineers.

Influenced by current antitechnology talk and by reports of unemployment, first-year college students have been shunning engineering. Beginning enrollment is down more than 30 percent from 2 years ago. Students often leave engineering courses; they rarely enter them after the freshman year. Thus, a severe shortage of young engineers may now be projected 4 years hence. This is likely to come at a time when this nation will be engaged in frantic "crash" programs to solve the energy crisis—an effort that will involve a tremendous construction program and large numbers of engineers.

In the years ahead, this nation will encounter many unexpected problems requiring the skills of scientists and engineers. We may well come to regret bitterly the fact that we have been unable to do better than follow destructive blow-hot, blow-cold educational policies. We should adopt the more realistic assumption that this nation must have good science, good medicine, and good engineering, and we should make it possible for the top students, regardless of financial ability, to participate.

—PHILIP H. ABELSON