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Science Dropouts

The high attrition rate among talented undergraduates planning careers in scientific research calls for reexamination of educational practices. The existence of a troublesome problem was delineated recently by Robert C. Nichols in an article appearing in this journal (*Science*, 12 June). Nichols is program director of the National Merit Scholarship Corporation, which each year tests as many as 596,000 juniors from high schools which enroll about 90 percent of all high school students. About 10,000 semifinalists are selected, representing approximately the 1 percent of high school seniors who rank highest in scholastic aptitude. Since 1956 the successive groups have been carefully followed, and detailed statistics are now available on their career choices.

In his article Nichols presents two different studies. The first is a compilation of career choices of these talented students for the period 1957-63. The percentage of those selecting scientific research declined from a peak of 37.77 percent in 1958 (the first post-Sputnik year) to 28.87 percent in 1963. More serious was a high tendency (shown in the second study) to abandon, during college years, plans for a research career. Students entering college in 1957 were queried in 1961. Among those originally choosing scientific research, 55.2 percent of the males and 58.9 percent of the females had changed to other career choices. These trends came at a time when every kind of social pressure was being exerted to induce young people to choose careers in scientific research.

Science courses have won a deserved reputation for being difficult. In the past there has been substantial attrition among students choosing these fields, and this was to be expected among students of lesser intellectual ability. But the top 1 percent of high school graduates surely have the intelligence necessary to do well in science. In some instances special aptitude may be lacking, but in general, given sufficient motivation, this top group should have little difficulty in ranking high among their peers.

The high rate of science dropouts perhaps has many origins, but surely an important factor is motivation. High school training does not provide students with much basis for making judgments concerning their future careers. Given a climate of public opinion in which the value of research is emphasized, some students who are not highly motivated choose science. Once enrolled, they suddenly find, as freshmen, that college science courses are difficult. Too often the beginning instruction is mediocre, and science faculties seem to have little time for the young students. The talented student is likely to find better teaching and more warmth in various fields of the humanities.

If a large proportion of the college freshmen who decide on scientific research as their life's work are to hold to that decision, they must be given special motivation during this initial year. They should be taught by gifted lecturers and brought in contact with enthusiastic research men. Laboratory assistants should be chosen from among the best and most experienced of the graduate students. A special effort should be made to give freshmen better understanding of the challenges, disappointments, and rewards of a research career. Other steps can be taken, but even these simple measures should materially ease the dropout problem.—PHILIP H. ABELSON