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Revitalizing the Mature Scientist

Those who seek to increase the nation's scientific competence usually concentrate attention on primary and secondary education. They hope that by exposing millions of students to science courses they will persuade many to elect a major in science at college. These efforts are supplemented by science fairs, talent searches, scholarships, and special brochures. Later, in college and graduate school, scholarships and solicitude are lavished on the embryonic scientist. Even in early postdoctoral years abundant fellowships are available. Unfortunately, insufficient attention has been paid to the needs of scientists of proved creativity. Finding better mechanisms for revitalizing mature scientists has been relatively neglected. When efforts are made to identify and encourage the potential scientist, the probability of nurturing a man of future creative capacity may be less than one in a hundred. In dealing with men of proved abilities, the probabilities of obtaining a favorable outcome are much greater. The major challenge is to devise means of extending the period of creativity of the mature scientist.

In the physical sciences and mathematics many workers make their best contributions within a few years after they receive the Ph.D. degree. In biology and the earth sciences this is not so often true, but in fast-moving fields an early peak is likely.

The slow decay which follows this early flowering probably is not due to lessening of potential mental ability. Of the many factors which combine to diminish creativity in the maturing scientist, perhaps the most important are decreased motivation and obsolescence of his personal store of knowledge. The period of peak creativity follows closely a period of intense intellectual growth in college and graduate school. Later, as his activities become devoted to a specific area of research, he is forced to focus sharply. He must be tough-minded in avoiding distractions. In order to maintain maximum self-discipline, it may be necessary for him to regard as trivial, all knowledge which is not immediately applicable to his field of inquiry. In so doing he becomes a victim of his own zeal. This narrowing of interest is useful while an area remains highly fruitful. However, it is inevitable that most of the important problems in any field of research are soon solved, leaving those which are trivial or intractable. When the important problems are solved, a scientist should seek new interests, often removed from his previous experience. He will realize, however, that his store of up-to-date knowledge may be smaller than that of graduate students. Moreover, by this time he may be one of the authorities in his field. If he is in a university he is likely to hold research grants and to be surrounded by students and staff who are dependent on him. In addition, he may have acquired heavy family responsibilities. He is caught in a web of circumstance. The usual outcome is abandonment of the attempt to be creative. This is often marked by readiness to accept additional administrative responsibilities. Many scientists would prefer not to follow this course, but rather to reestablish their creative potential. What they need is an intellectual renaissance. This might take the form of comprehensive refresher courses followed by a dignified apprenticeship.

Industry, government, and the academic world should recognize both the needs and the potential of the mature scientist and establish mechanisms to enable him to do what is necessary to extend his creative life.—P.H.A.