Book Reviews

Progress of Science in the Southern States

Atomic Energy and Southern Science. WILLIAM G. POLLARD. Oak Ridge Associated Universities, Oak Ridge, Tenn., 1966. 147 pp., illus. Paper, $1.50.

Many of us were brought up to think of science as an international enterprise knowing no political or other boundaries. However, as science has become linked with economic growth and prestige, we perceive competition—or at least comparison—among nations and even among regions within the United States. Perhaps no event has brought this point home more forcefully than the recent vying of about a hundred groups from nearly every state for the location of the projected 200-Gev accelerator. Partisans for each proposed site were impelled to assess local strengths and weaknesses in science, among other factors, and the author of *Atomic Energy and Southern Science* acknowledges that his attention was drawn to his subject by those efforts.

Through his position as executive director of Oak Ridge Associated Universities, Pollard has had a good vantage point from which to observe and evaluate the progress of science in the American South, as well as to attempt systematic collection of data. "The image of Southern Universities held by academic people outside the South," he writes, "is still largely that of the prewar period. This report attempts to correct that image in . . . the sciences and engineering related to or stimulated by the national effort in atomic energy."

Perhaps it is because my own central location in the U.S. protects me to a degree from the myopia of either coast, but I certainly do not feel that I evaluate Southern academic science as it was evaluated before World War II. Most of us are aware of great progress and substantial accomplishment by scientists in the South. However, there has also been great progress in all of U.S. science, and the question which continually suggests itself as one reads the book is whether Southern science has gained in relation to the rest of U.S. science. This question is not really addressed by the book, nor, in fairness, does the author claim that it is.

I rather suspect that science in the South *has* gained relative to the rest of U.S. science. In trying to understand why this might be, I was impressed by Pollard's mention of the large number of scientific or technological research installations which the federal government has placed in the South since World War II. These are largely Atomic Energy and NASA installations, although the National Science Foundation and the Department of Defense are also represented, as is the Public Health Service. Whether or not it is the seniority system in Congress which is responsible, certainly the long list of these installations ought to be borne in mind by those who feel that the North, with its prestigious universities of acknowledged high competence in science, has made off with perhaps too large a share of the federal science dollar. It could not have been the initial competence of Southern science which led to so many of these federally supported installations in the South, and charges that the U.S. does not distribute science resources geographically seem not to take such facts adequately into account. Therein lies a really significant socioeconomic question: To what extent can location of major federal research installations, in regions that are culturally, educationally, or scientifically less well developed, be an effective means of bringing such regions along so that they share in and contribute effectively to the overall advance of the nation? Pollard's book does not treat that question but may well be an important resource for those who will deal with it.

A book of this kind is, inherently, hard to read in places. In listing specific accomplishments in various scientific disciplines, the author is, as he concedes, plagued by difficulties with areas of science which are not his specialty, and the reader's similar problems are superimposed. For the parts of science in which I am somewhat knowledgeable, it went well and interestingly. The fact that the book describes a list of scientific efforts and advances leads, inevitably, to some discontinuities and unevenness of treatment. The author has coped with these problems more effectively than most of us could.

G. E. PAKE

Washington University, St. Louis, Missouri

A Scientist Enjoying Science

Of Scientists and Salamanders. VICTOR CHANDLER TWITTY, Freeman, San Francisco, 1966. 190 pp., illus. $4.50.

This delightful little book, at once scientific and autobiographical, traces the development of a distinguished man of science and his research. We are taken from Butler College in Indiana to Yale, to Berlin, and then to Stanford, through embryology, pharmacology, ecology, and the study of behavior. These subjects may be diverse, but they are shown here as logical extensions of the author's original interest, embryology.

The book puts life into a subject which, in many textbooks, seems like sheer drudgery. In the 1920's and early 1930's Twitty studied embryology under R. G. Harrison at Yale and came under the influence of Spemann in Berlin. From these experiences he gives a fascinating account of the development of the use of tissue culture and of the origin and growth of the "organizer" theory in embryology. This is succinctly carried through to the present day, and we gather that the reins have now been handed over to the chemical embryologists.

When Twitty returned to California in 1932 he was impressed by the toxic effects of grafts from the embryos of local newts on those of salamanders imported from the east. In classic pharmacological manner saline extracts were made and were found to be toxic to many other species, including frogs, turtles, and mice. These observations were published in 1937, and recent