Book Reviews

Outside the Laboratory

The Politics of Pure Science. DANIEL S. GREENBERG. New American Library, New York, 1968. xiv + 303 pp. $7.95.

The dramatic success of the mobilization of science led by Vannevar Bush in World War II brought about a striking change in the status of science as a component of our culture. In the following two decades the investment of the federal government in the application of science to national needs bloomed, and the United States became the technological giant of the world. Concurrently, federal support for the general advancement of the sciences followed a corresponding pattern of growth. Through numerous agencies and various methods designed to protect the traditional freedom of the investigator, the federal government became the patron of "pure" scientific research on an unprecedented scale.

Few would question that this new relationship between the government and scientists in the private domain was responsible for the remarkable flowering of research in the United States and the consequent emergence of this country to a preeminent position in science. Nevertheless, the very success has brought with it some complex problems. What is a rational basis for dividing limited funds among the worthy disciplines? Which giant accelerator for modern particle physics should be built? Where should it be installed? How can definitive contracts be reconciled with flexibility to exploit unexpected opportunities? These are examples of questions which demand the highest statesmanship in their resolution.

As its title implies, *The Politics of Pure Science*, by Daniel S. Greenberg [news editor of *Science*], attempts to deal with the ways in which such questions have been addressed rather than with the substance of science itself.

The first chapter describes the makeup of the "scientific community" in this country. At the outset the author expresses his view that emphasis on the existence of an elite scientific "establishment" can mislead more than enlighten. Having offered this view, he thereafter adopts the contrary position. The transition is made quickly.

> Therefore let us begin with a paradox: There is no American Scientific Establishment. Yet Harvard, MIT, Caltech, and the University of California are its Oxbridge. Two World War II research centers, the MIT Radiation Laboratory and the Los Alamos Scientific Laboratory, of radar and atom bomb fame, respectively, are its Eton. The Cosmos Club in Washington is its Athenaeum, the physicists are its aristocracy. The National Academy of Sciences is its established church, and the President's Science Advisory Committee is its Privy Council.

The financial resources, personnel, and institutions making up the community are then enumerated.

All responsible professions seek to maintain their standards, protect their values from uninformed attack, and present their cases to the public. Journalism's spirited defense of the essential importance of the freedom of the press is an outstanding example. The second chapter of this book is devoted to these aspects of "pure" science. It is entitled "Chauvinism, xenophobia, and evangelism," words which the author uses liberally throughout the text. Such unfortunate hyperbole, which beclouds objectivity, tends to characterize the book.

The third chapter recalls the financial poverty of science and the lack of interest on the part of the government prior to World War II. Chapter 4 describes the embryogenesis of the Office of Scientific Research and Development and of research on the atomic bomb in the early days of the war. Next is a short chapter on the mobilization and activities of the OSRD. The author notes that, "Since the work of OSRD was climaxed by victory in the greatest of wars, events took on the effect of ratifying the wisdom of the manner in which OSRD operated. OSRD could look back over its incredible five-year history and pick out examples of brilliant performance and foresight." However, he accompanies this statement with this footnote:

> There were a few dissenters, but their voices were poorly heard and the validity of their plaints is difficult to assess. For example, two months after the war ended, a group of Minnesota researchers declared, "When the true record is written, the waste, inefficiency, ignorance, and obtuseness in utilizing scientific knowledge in the recent war will be apparent to all." (*Hearings on Science Legislation,* Subcommittee of the Senate Committee on Military Affairs, 1945, p. 963.) The record, as written so far, fails to substantiate this doleful prophecy; nevertheless, it is not unlikely that the official OSRD histories, as well as the memoirs of OSRD's figures, tend to pass over whatever blemishes did exist.

This technique of accompanying a statement with a contrary footnote is used frequently in the book. The purpose of this device is not clear, but if the goal was balance, it was not successfully achieved.

Chapter 6 reviews the efforts, during the transition to peace, to establish a central agency for government support of basic research. These foundered on the issue of control by scientists versus the accountability of the government for the management of public funds. The gap was filled by the military—most notably the Navy, through the Office of Naval Research. In the following chapter, the author discusses activities and events concerned with the development of the relationship between the government and the private scientific community in the decade following the war. The patterns established during that period have, by and large, continued to the present. The author refers to these patterns and mechanisms as the "government of science," and the next chapter is headed by that title. It is devoted almost exclusively to the plaint arising from the chemists in the early 1960's about the neglect of their field, which led to considerable activity within the National Academy of Sciences, culminating in the Westheimer report.

There follow three chapters devoted to what might be considered case studies selected to illuminate the operation of this "government of science." The first of these is entitled "Mohole: The anatomy of a fiasco." The project to drill a hole through the earth's crust was hardly a model of careful planning, wise decision-making, or good manage-

ment. The author devotes somewhat more than 10 percent of his book to a detailed revelation of the project from its whimsical beginning as an offshoot of the activities of the American Miscellaneous Society, through early progress, complex and contentious troubles, and final collapse. For one wishing to prove that the "government of science" is not without its imperfections, a more devastating story could not have been chosen, and no opportunity was lost in this telling.

The next two chapters, together making up just under 20 percent of the book, might have been one, since they really tell one story. Their titles, "High energy politics" and "MURA's last stand," indicate the subject. They examine how the questions of what and where have been resolved in the field of high energy physics in the past several years, presenting details of the story of the partnership of the Midwestern Universities Research Association and the Congressional delegations from its region, aimed at saving their plans for a very large installation. Included is a highly intimate and revealing scene in the White House.

The book ends with a chapter entitled "The new politics of science." Using as case studies the increasingly restrictive conditions being placed on recipients of NIH grants by pressure from Congress, and the events leading to the decision to place at Weston, Illinois, the 200-Bev accelerator designed by the Lawrence Radiation Laboratory at Berkeley, the author describes the new atmosphere developing in federal support of science. This climate is one in which emphasis is placed on greater relevance to national goals and practical needs, tighter controls by the government on detailed accountability of expenditures, more concentration in full-time government employees of the power of detailed selection of research activities and objectives, and increased attention to the distribution of the funds throughout the nation.

At the close Greenberg asks a question: "In a world plagued by misery, is it decent for fine minds and great wealth to be dedicated to the interior of the atom and the mysteries of the planets? Or, as the ideologists of pure science would contend, does the unfettered spirit of inquiry provide the surest way to knowledge and salvation?" The gist of the book is that a simple "yes" in response to both parts of this question would merely demonstrate the responder's "chauvinism, xenophobia, and evangelism."

The reviewer finds it difficult to give an overall description of the book. It is not a very careful history which avoids presumptive interpretation. Neither is it a deeply penetrating and constructive critical essay. Perhaps it might be best described as a historical novel, written in the reportorial style, with titillating tidbits liberally dispersed among important facts. The cast is drawn from the roster of prominent men in the councils of science. Not only are the actions of the characters chronicled, but they are given the opportunity, here and there, to place their wit before their wisdom. By implication they are also provided with emotions and motivations. All this lends the book a lively and interesting readability. But assessing motives on the basis of actions is a hazardous business at best, and the reviewer found himself disturbed by a style that seemed to suggest the least generous interpretation. For example, the author uses the term "machinations" repeatedly to describe the successful advocacy of a presumably worthy cause. It must be assumed that he is aware that the word connotes crafty planning of evil schemes. The overall effect is to demean, and few men or institutions went into this book but came out poorer.

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Pacific Anthropology

Polynesian Culture History. Essays in Honor of Kenneth P. Emory. GENEVIEVE A. HIGHLAND, ROLAND W. FORCE, ALAN HOWARD, MARION KELLY, and YOSIHIKO H. SINOTO, Eds. Bishop Museum Press, Honolulu, Hawaii, 1967. xx + 594 pp., illus. $16.50. Bernice P. Bishop Museum Special Publication No. 56.

The essays collected in this festschrift address a very wide variety of subjects in the general topical area of Polynesian anthropology and display a range of methodological approaches. There is a certain broad uniformity of outlook as a result of the fact that the contributors represent a kind of general grouping in Polynesianist circles, holding in common a collection of general attitudes on a number of points of theory and interpretation. Many distinguished academic Polynesianists are not to be found among the contributors.

The organizational scheme of the volume utilizes two major but not mutually exclusive principles: one set of papers is grouped according to anthropological subdisciplines (linguistics and archeology), and the remainder according to the geographical subdivision of Polynesia to which they refer (General, East, West, Hawaii, and Outliers). While this scheme reflects the disciplinary interests and the geographical areas in which K. P. Emory has worked, it does not facilitate use of the volume.

The majority of papers are of a descriptive or analytic nature, dealing with narrowly defined aspects of specific Polynesian cultures or pan-Polynesian traits. For example, there are a discussion of the bird-man motif in Polynesian material culture by Barrow, one of sea creatures and spirits in Tikopia by R. Firth, and a well-written survey of Polynesian-origin theories by Howard. These are contributions of the type normally found in the *Journal of the Polynesian Society* or similar regionally oriented publications.

Contributions possessing clear implications for anthropological method and theory are the all-too-brief paper by Finney on Polynesian navigation and the linguistic papers by Elbert, Grace, and White. Finney's field experiments on Polynesian navigation techniques are a welcome indication of unorthodox and highly practical thinking in an area of specialization not noted for innovation. His work has produced the best data yet on a subject that has suffered from repeated rehash of the same tired historical material. The test analyses presented by Elbert and Grace, and White's study of the word *tabu*, clearly illustrate the hazards involved in utilizing quantitative linguistic techniques.

Other contributions are light-weight, low-powered, or misleading. Mead's impressionistic piece on hypertrophy and heterogeneity in Polynesian culture might have been stimulating 30 years ago. Sinoto, perhaps Emory's closest associate, has contributed an archeological article on fishhooks that contains little information he has not presented in better form and detail elsewhere. Those familiar with the literature on Polynesian origins will note, in Green's article on that subject, that concepts and theories, initially anathematized, become suddenly attractive once they can be credited to the right people.