(never specified) if their power is taken away or diluted.

One other observation is stimulated by this generally provocative discussion. The symposium may be epitomized by noting that government and industry say that government standards in this field safeguard the public on the basis of our best present knowledge, and that industry is achieving performance considerably better than government standards in terms of minimizing pollution by radionuclides and thermal wastes. Critics of government action say that government standards are based on ignorance or unrealistically optimistic assumptions and that industrial performance must be several orders of magnitude better than government standards in order truly to protect the population and the environment. It is a currently popular thesis that technology is advancing much more rapidly than social attitudes, and this psychological maladjustment has been called "future shock," at least in one best-selling book. In the field of nuclear power the problem may be the converse of future shock. It appears that public opposition to environmental pollution has progressed considerably faster in recent years than technology in the field. Not only have technology and industry failed to produce a controlled fusion reactor to date, but of about 100 applications to the AEC for authority to construct commercial nuclear power plants only one has been for a breeder reactor, which is what we are obviously going to need and which may be "cleaner" than the reactors now being built, and the one breeder reactor built has been plagued by accidents and has operated poorly. In any event, the standards proposed by Minnesota and urged, explicitly or implicitly, by several participants are not impossible of achievement but simply uneconomic at worst.

Perhaps the malaise that we sense in much contemporary life arises not from the difficulty public attitudes have in keeping pace with the advances of science and technology but from the inability of science and technology to fulfill the demands of advancing public attitudes. In some fields our problem may be not future shock but technological lag. The evidence offered by the contributors to this volume suggests that conclusion.

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Aristocracy and Cultural Evolution

Ancient Polynesian Society. IRVING GOLDMAN. University of Chicago Press, Chicago, 1970. xxxii, 624 pp., illus. $17.50.

At a time when much importance is being attached to theoretical models and computerized sociological analysis, it is a welcome relief to encounter an author like Goldman. He does not try to fool himself or his reader by implying the existence of a "hard science" exactness in the social sciences. Of his own book he says in the opening pages, "At bottom this is a work of interpretation. Its findings are to be regarded as hypotheses. I have used methodology to inform my judgments, and not to present Q.E.D. 'laws.'" His judgments appear well honed and are presented in a wholly readable, jargon-free style.

Noting that aristocracies have existed in simple as well as in early civilized societies, Goldman has developed the thesis that status rivalries developing within the aristocratic cadre have been a factor in the evolutionary movement from simple societies toward early civilizations. Since all Polynesian societies were aristocracy-based, he has used this oceanic culture area as his source of data for analysis. His approach is refreshingly historical using, whenever possible, the findings from archeology, glottochronology, ethnohistory, legend, and modern ethnology. Although the manuscript, completed in 1966, later underwent rewriting, Goldman admits that the literature employed in the development of his thesis does not go beyond 1966. However, except for the more recent publication of a few early radiocarbon dates for western Polynesia, and a more generally accepted updating of the probable periods of settlement for the Marquesas and Hawaiian Islands, the basic data pertinent to his work have not changed fundamentally. In fact, even the more recent radiocarbon dates do little harm, since Goldman is interested primarily in the sequence of events and this has not been disturbed.

The opening chapter discusses the principles of status and the various Polynesian concepts of power, such as *mana, tohunga,* and *toa,* that may combine in different ways to modify one another and thus give rise to variants in the status systems of the islands. Goldman groups these variants into three basic status systems. The simplest is called the "Traditional" and is essentially a religious system headed by a sacred chief. The second he calls "Open" and is strongly military and political rather than religious. Finally, there is the "Stratified" system combining the respect and reverence of hereditary rank through seniority with concessions to political and economic power. Whereas the distinction between Traditional and Open is one of gradation, the Stratified type represents a sharp break in that only in this system do the high-ranking hold the ruling power and possess the land, the commoners being landless subjects.

The body of the volume, two-thirds of it in fact, is devoted to descriptions and, where possible, historical interpretations of the societies of 18 Polynesian islands or island groups. Each of these, ranging from coral atolls to high islands, is given a chapter. These descriptions are by no means tightly encapsulated summaries, but neither are they verbose. Each chapter has a short introduction followed by whatever historical data exist that might throw light on the social organizations of the past. The meat, however, is to be found in the discussions of the status system and descent group organization of each island as revealed by the studies of ethnologists. To this reviewer, who was employed as an archeologist on the Norwegian Archaeological Expedition to Easter Island, Goldman's interpretation of the archeological findings on that remote bit of land is a gem of writing. I might not agree with all of his interpretations, but he has added flesh and life to our essentially dead descriptions and analysis of artifacts and stratigraphy. In fact, one might hazard the observation that, given the knowledge and ability of a Goldman, the results of traditional archeological methodology might offer as much for the interpretative reconstruction of prehistoric societies as the "new" archeology is attempting to provide.

Having given ample illustrations of the variety of Polynesian societies, Goldman finishes his study with a series of chapters discussing the various aspects of status. Of these, the chapters on the economics of status and on status and evolution will probably cause a stir among those Polynesianists who hold that the degree of social stratification is largely the result of the interaction of technology with the local island environment. Goldman does not deny the gross effects of poor environment as

against rich environment on Polynesian societies; in fact, he specifically notes that no Open or Stratified societies were formed on atolls, thus indicating that these ecologically undifferentiated islands do not support notable social and cultural changes. However, granting that such atoll environments are culturally limiting, Goldman would challenge present abilities to specify exactly what kinds of social and cultural limits they impose.

Generally speaking, one gathers from reading this volume that Goldman is not environmentally, or ecologically, oriented. That he is aware of environmental factors is obvious, but the mere fact that in his appendix 8 he would include under a heading of "Ecological Character" of islands only island type, area, estimated population and density, and presence or absence of irrigation suggests that his view of ecology is rather limited. However, no man can be master of all things, and one of the important features of this volume is that its author recognizes that status systems' being constantly involved in change, as well as in conservation, does not make them prime movers or first causes in cultural change. As he so aptly puts it, "There seems little advantage to reducing the overwhelming complexity of historical development to a simple set of 'causes,' even for the sake of manageableness."

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Ph.D.'s in the Outside World

The Social Scientist in American Industry. Self-Perception of Role, Motivation, and Career. MATTHEW RADOM. Rutgers University Press, New Brunswick, N.J., 1970. xii, 210 pp., illus. $7.50.

With academic positions becoming scarcer, young social scientists may be more than usually interested to learn how their colleagues in industry feel about their positions. Radom's book consists of factual and simply presented information, as of 1968, to answer this question. He found that although fewer than a third of the Ph.D.-level social scientists in industry had been aiming for industrial work at the time they received their doctorates, most were well satisfied and thought they were making substantial contributions; that a large majority enjoyed the satisfactions and rewards they had earlier expected; that professional achievement was the most gratifying aspect of their work; and that very few wished to leave industry.

There are approximately 3000 social science Ph.D.'s in industry, a number that equals approximately a sixth of all of the industrial Ph.D.'s. By personal interview and questionnaire, Radom obtained information from a sample of 231 of the 3000. Included were 90 economists, 95 psychologists, 22 sociologists, and 24 statisticians.

Among his questions, Radom included several that Donald C. Pelz and Frank M. Andrews (*Scientists in Organizations*, Wiley, 1966) had earlier asked of physical scientists employed by industry. In general, social scientists answered these questions as had physical scientists, but there were some differences. Social scientists, in comparison with physical scientists, appeared to be more fully absorbed in their work and reported that they had more autonomy in determining their own work and the work of others directly responsible to them. These differences were related to differences in the nature and level of positions held. Most studies of physical scientists in industry have concentrated on men and women in research laboratories. Only 10 percent of Radom's sample—and those mostly statisticians and psychologists—were so employed. The majority were in top and middle management positions.

The data challenge several stereotypes about industrial scientists: that they feel they do not have sufficient autonomy; that they feel exploited as wage slaves, merely doing the bidding of their employers; and that they are chiefly concerned about their reputations among their nonindustrial colleagues. None of these beliefs was supported. Despite some irritation at administrative detail and some frustration caused by reluctance of superiors to accept their new ideas, the picture Radom paints is of a group of professional men and women working at a good professional level, obtaining the satisfactions that come from such work, and planning on continuing to build their careers in industry.

The author himself is one of the few who left industry. After a career with the Standard Oil Company of New Jersey, he retired early, in 1961, to become professor of management at Rutgers University.

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Endocrinology of Insects

Insect Hormones. V. B. WIGGLESWORTH. Oliver and Boyd, Edinburgh, 1970. x, 160 pp., + plates. Cloth, $6.20; paper, $3.20. University Reviews in Biology.

In the publication of his sixth book Sir Vincent Wigglesworth continues the high standards he set in his earlier publications. Volumes such as *The Physiology of Insect Metamorphosis* (Cambridge University Press, 1954) and *The Principles of Insect Physiology* (Methuen, 1965) have proven to be mainstays in the literature of insect physiology and endocrinology. But unlike these previous works, this volume is written not for the specialist but rather for a more general audience. The result is a clear, interesting account of insect hormones which presents the main outlines without becoming bogged down in minute detail. To illustrate these major points Wigglesworth draws extensively on his experiments with the blood-sucking bug, *Rhodnius prolixus.* Pertinent data gathered from other insects are integrated as the need arises, and species deviating from the general trend are given special consideration.

From its inception the field of insect physiology has been dominated by investigations of the hormonal regulation of growth and metamorphosis. It is inevitable that this should be reflected in any treatment of insect hormones. From his position as an early pioneer in this work, Wigglesworth presents a historical account of the unraveling of this hormonal control. The three hormones involved—the activation hormone, juvenile hormone, and ecdysone —are considered with respect to their production, chemistry, and physiological effects.

In view of the extensive use of insect systems in the study of developmental biology, ecdysone and juvenile hormone have special relevance for those who are interested in this field. Consequently, emphasis is given to the cellular action of these hormones. The application of ecdysone to the salivary glands of certain dipteran larvae provokes a sequential pattern of puffing, indicating a sequential read-off of genetic information. Also, ecdysone causes the selective synthesis of certain enzymes in the full-grown maggot, although the significance of these results is not clear. Juvenile hormone is considered, first, in its capacity to direct the character of cuticle deposited by the epidermal cells and, second, in its