Pelz began his examination of "the relationship between a scientist's performance and the organization of his laboratory" in 1951. By 1960 he had received answers to his questionnaires from over 1300 scientists and 11 different industry, government, and university laboratories. The next five years were spent in analyzing the answers, correlating measures of performance with measures of such behavior as communication, coordination, and creativity, such attributes as dedication, satisfactions, and motivations, and such conditions as freedom, diversity of work, and age. He sought "valid evidence" through "rigorous methods of research" to indicate "the best way to operate a laboratory." Considering the diversity of facilities possessed by different laboratories and the variety of purposes scientists in government, industry, and universities may serve, the assumption that there exists one best way to operate is bold, indeed.

The authors distinguish between facilities and environment (or atmosphere or climate), but they ignore the role and influence of facilities. A study which relied more upon direct observation of scientists at work in their laboratories and less upon responses to questionnaires might have led them to consider more seriously the ways in which the quantity, quality, and availability of facilities affect performance or attitudes. One might think that tools, equipment, and devices to which scientists have access would be a major determinant of performance; the researcher can ignore them only at the cost of abstracting the analysis and conclusions from the realities with which men have to deal.

Not only have Pelz and Andrews abstracted their study from material constraints upon behavior and attitudes, but they have also given it a misleading timelessness. For example, they assert that typically laboratory administrators follow "orthodox managerial theory" by keeping lines of authority and responsibility clear. They also assert that in performance reviews a single supervisor usually rates a scientist and recommends promotions. Such assertions reinforce the suspicion that the authors are more familiar with questionnaires than with lab practices in the '50's and early '60's. The rapidity with which laboratory staffs grew, the frequent promotion to supervisory positions of men inexperienced in management, and the swift change of techniques and research programs did not encourage and often did not allow the usual or orthodox managerial practices they describe.

The most serious limitation of the study, however, is the inability of the authors, or at least their unwillingness, to test the hypotheses their correlations suggest. They comment that "with survey data like ours you can never prove one causal hypothesis over another." Thus, when high performance and number of communicating contacts correlate well, they only guess that the latter might cause the former; admittedly the causal relationship might be just the reverse. In the correlation of performance and diversity of work, to take another example, they cannot tell whether scientists who perform well get pulled into a variety of kinds of work or they perform well because they engage in different kinds of work. Until Pelz and Andrews devise some theories that explain how performance is affected by the various characteristics and influences they have examined and then test the validity of those theories or support them with other data, their conclusions will not be very helpful.

JAMES W. KUHN
Graduate School of Business, Columbia University, New York City

Parasitology

The Physiology of Trematodes. J. D. SMYTH. Freeman, San Francisco, 1966. 270 pp., illus. Paper, $4.

During the last decade, there has been a surge of interest in the fundamental, as opposed to medical and paramedical, problems underlying parasitism. Investigators have attempted to examine and define host-parasite relationships from the experimental and quantitative viewpoints by employing biochemical, immunological, histochemical, and biophysical tools. Selection of host-parasite associations as experimental models is no longer governed solely by the economic or medical importance of the host or parasite. This revitalized approach to the study of parasites and parasitism represents a departure from classical taxonomic, life-history, and epidemiological or epizootiological studies, for it takes into account comparative physiology and physiological ecology. It has revealed numerous new frontiers hitherto camouflaged or considered too esoteric.

One of the most popular models being utilized in modern parasitology involves trematodes and their hosts. In this small monograph, J. D. Smyth has assembled and organized a wealth of information, mostly results reported during the past 20 years, on this group, including what is known about their functional morphology, physiology, and, to some extent, biochemistry. Moreover, he has efficiently summarized current knowledge relative to interactions between trematodes and their hosts, including the tissue and humoral reactions of the hosts. He has thoroughly searched the relevant literature (365 carefully selected references are cited) and in addition has pointed out where gaps in our knowledge exist. Illustrations, graphs, and tables are effectively used.

It is refreshing to see equal treatment given to the biology of the preadult stages of trematodes. As one would expect, more is known about adults, but during the past decade considerable work has been done on the larval stages, and much information of a type that is obscure or difficult to detect within the definitive host has been uncovered. Smyth has included the more salient findings of this nature. He has also brought into focus, although by necessity briefly, the now well-recognized fact that different "strains" of the same host species may manifest different degrees of innate resistance to parasites. Conversely, different "strains" of parasites may show differences in infectivity. In addition to strain differences, the physiological states of the host and parasite, as well as a variety of ambient factors, are now known to influence, or even prevent, the establishment of a parasite. Thus host-parasite compatibility and incompatibility are not "all or none" phenomena but reflect the dynamic aspects of the host-parasite interphase.

This is a stimulating book whose virtues far overshadow the few misleading statements it contains. Although it is primarily meant to be a teaching and review text, investigators in physiological parasitology and comparative physiology will undoubtedly find it useful. Despite its relatively small size, this is by far the most comprehensive volume yet available on the biology of trematodes in all respects other than taxonomy and life history.

THOMAS C. CHENG
Department of Zoology, University of Hawaii, Honolulu