own, it is because of the freedom this authority brings, and to a considerable extent this freedom is a freedom from fear.

However, Colson is as compelling in explaining the reservations people have regarding the rise of centralized authority and what accompanies it as she is in her discussion of why it is welcomed. She views the very general rise of what is often called "tribalism" (and that includes the increase in ethnically based politics in the United States) as closely related to the growth of states and the intrusion of their officials into provinces of life which were formerly understood as being subject only to individual control. As centralized authority grows and becomes more pervasive, people find more and more of what happens to them determined by decisions made in offices and councils where they themselves cannot be present to try to ensure the consideration they believe they deserve. Their only recourse is to representatives with whom they can identify, with spokesmen who are "like them" and who understand their special problems and desires. Since the beginnings of widespread urbanization in Africa and elsewhere, townsmen have divided the otherwise confusing mass of humanity around them according to a few easily learned and applied ethnic categories. By supporting politicians and other officials on the basis of their being in one's own ethnic category, one can hope to achieve the consideration and treatment one desires from the central authorities and thereby limit the baneful consequences of their decisions. Intellectuals and politicians may oppose "tribalism," but for ordinary people it is an attractive means by which to protect themselves from the excesses of central authorities.

Colson's slim volume provides an unbiased and well-supported view of the problem of order in modern societies. It is one of those rare books that can profitably be read by both specialists and laymen. Its businesslike prose and refreshing freedom from jargon make its powerful arguments and interesting data easily accessible. It is a pity it could not have been proofread more carefully, since there are a plethora of typographical errors to mar an otherwise wholly praiseworthy effort.

MARC J. SWARTZ
Department of Anthropology, University of California, San Diego

Material Culture

The Human Mirror. Material and Spatial Images of Man. MILES RICHARDSON, Ed. Louisiana State University Press, Baton Rouge, 1974. xxiv, 366 pp., illus. $15.

The Human Mirror is a rather self-conscious, almost defensive demonstration that studies of material culture are still alive and kicking, or reflecting, and that such descriptions of artifacts, techniques, and settlement patterns not only constitute the basis for traditional archeological inference and historical reconstruction, but also provide the framework for approaching more recent behavioral concerns in cultural ecology, culture change, and persistence.

To prove the point, Richardson assembled a wide variety of studies: a biography of an expert Kwakiutl wood carver, a verbal description of Teotihuacan mural paintings, an inventory of clocks, radios, and bicycles among rural Bugandans, and a description of different techniques of Timbira hammock weaving. But the major themes of this disparate collection are settlement patterns, techniques of archeological reconstruction, and cultural ecology.

Continuing interest in archeological deduction is seen in "The material expression of Neanderthal child care" by Rowlett and Schneider; in Augustus Sordinas's excellent reconstruction of a "monstrous" olive press on the Island of Corfu, Greece; and in George Carter's "Domesticates as artifacts." Readers will find themselves silently arguing with these authors and their interpretations. For example, there is enough controversy about the plant and animal similarities found in the New World and Asia to keep academicians busy for years.

Changing patterns of settlement and architecture are approached historically by Donald Brown, who observed among the Picuris how with increased secularization the dispersed summer field houses were abandoned and the old integrative structure associated with the cacique was replaced with a modern cement-block community center. Similarly, the cultural geographers Kniffen and Newton document the changes in villages, in community life, and in architecture in their state of Louisiana. All these authors employ the unfortunate distinction between physical form and nonmaterial culture; all are historical in approach, and all see the natural environment as a constant. Each study is aimed toward a better understanding of local history, but the more general scientific theory awaits to be developed by someone else.

More clearly problem-centered are the two cultural-ecological studies by Thomas Schorr and Pearl Katz. Katz recounts her observations of how the people of Taos adapted to situations of crowding. They avoided involvement in the affairs of others, they maintained personal privacy, and they took frequent trips away. Schorr, however, has noted an omnipresent and institutional aggression in the behavior, the architecture, and settlement patterns of people living in the Cauca Valley of Colombia. Roughly put, it seems that the natural environment had something to do with scarcity of food and sex; competition and aggression became functional and for that reason were perpetuated from generation to generation.

Physically, *The Human Mirror* is done well: it is amply illustrated, is arranged in sections and subchapters, and includes an abstract for each article. Even though there is little theoretical underpinning to justify the assemblage and the metaphorical use of "mirror" and "reflection" is overdone, I am pleased to have such studies easily found together and readily available for comparison.

RICHARD D. JONES
Office of Environmental Management, County of San Diego, California

The Experience of Odor

Human Responses to Environmental Odors. AMOS TURK, JAMES W. JOHNSTON, JR., and DAVID G. MOULTON, Eds. Academic Press, New York, 1974. xii, 346 pp., illus. $19.50.

The unifying theme of the disparate contributions to this book is the subjective experience of odor. Techniques are devised to measure this type of psychological experience in a variety of ways, and the goals of the research range from theoretical to highly applied. The methods range from instrumental through psychophysical to public opinion sampling, with some ingenious combinations, but always with the endeavor to relate odorant properties to some aspect of odor experience. One is likely to gain the unfortunate impression that odor is bad, although the psychologists emphasize the importance of the hedonic aspect of olfaction. Ab-

sence of odor would cancel the preoccupation with this type of pollution, but life would certainly be much drearier. Those who lose their sense of smell tend to complain bitterly. They can expect little sympathy, however, for clinicians commonly do not regard them as handicapped.

The contribution on vapor pressures and deviations from Raoult's law is most useful. The common practice of blithely assuming the validity of Raoult's law for any solvent-solute pair must be stamped out. The contribution on sampling in airborne odorant analysis is an excellent review, with illustrations. Here, the stress is placed on organoleptic testing, that is, smelling, to follow the progress of instrumental manipulations of such variables as vapor pressure, dissolution, and sorption.

The title of the short article "The stability of emitted odorous compounds in the atmosphere" should have been amended to read "reduced sulfur compounds." The very long paper on laser Raman spectroscopy does not belong (a justification is attempted in the epilog). It may be as prophetic as papers written two decades ago on the combination of gas-liquid chromatography and mass spectrometry, however.

The blurb on the dust jacket loosely states that the book "describes the latest techniques of sampling ambient odors: transmission and scanning electron microscopy, autoradiography, anatomical techniques for tracing central connections, and electrophysiological recording from the olfactory bulb." The items after the colon are not in the book, even if they could be construed as ancillary methods of odor sampling.

Olfactory theories have clearly not been very productive. The inclusion of four odor qualities in the Public Health Service quality/intensity series for use in characterizing diesel exhaust odor, the Turk kit, is interesting, and one wishes that the compositions of the standard solutions had been tabulated here. The relation between intensity and stimulus strength is studied most. The more applications-oriented contributors hew to the classical notion that odor intensity is a logarithmic function of odorant concentration. The psychologists, instead, embrace the Stevens power law concept. All agree, however, on the capriciousness of human subjects and the difficulty of obtaining suitably quantitative data.

DON TUCKER
Department of Biological Science, Florida State University, Tallahassee

Variables in Sexuality

Reproductive Behavior. Proceedings of a conference, Beaverton, Ore., July 1973. WILLIAM MONTAGNA and WILLIAM A. SADLER, Eds. Plenum, New York, 1974. viii, 376 pp., illus. $26. Advances in Behavioral Biology, vol. 11.

An impatient reader of a mystery novel reads the last chapter first to see how the story ends. This volume should be approached in the same way. In the last chapter Frank Beach claims that human sexuality has only a distant relationship to mating behavior of other species. The important concept presented by Beach is that the development of male and female reproductive characteristics should be considered separately from masculine-feminine differences. The point being made which sets the scene for the remainder of the volume is that, although a great deal about the biology of reproduction in terms of anatomy, physiology, and behavior can be learned by studying nonhuman species and much of this information is transferable to man, when the epigenesis of masculinity and femininity is examined the complex cultural and developmental history of each sex or each individual must be considered.

The material that precedes Beach's chapter focuses on the description and explanation of physiological and behavioral interactions and does not deal directly with human masculinity and femininity. Little attempt is made to interpret research findings. Perhaps discoveries are being made more quickly than they can be synthesized to provide a more complete understanding of the physiological bases and ecological significance of reproductive behavior.

Most authors describe research findings from their own laboratories and only to a minor degree integrate their research with previous work. Owing to the excellent selection of authors, many of the significant findings during the past five years in reproductive behavior are presented. We learn, for example, that development of male and female fetuses in close proximity in the uterus of the rat can result in increased masculine traits in the females. When only one fetus at a time is gestated, as in the rhesus monkey, the development of sexual behavior may be influenced by endogenous levels of gonadal hormones, particularly the ratio between testosterone and progesterone in the fetal circulation. Recent advances in knowledge about internal and external chemical signals influencing reproductive behavior of the adult are described with a wealth of tabular and graphic material, some of it presented for the first time. The treatment of this material is uneven. A few chapters are brief and almost breezy, and others present a thorough description of a body of research. Two of the authors, Howard Moltz and Norman Adler, broke from the pack and attempted to more thoroughly integrate their research with other developments. Both succeeded. Their chapters reveal a dominant theme in recent research on reproductive behavior, namely, the interrelatedness of environmental, hormonal, neural, and behavioral events. Moltz shows how coordination between the mother and infant rat is achieved largely through chemical signals, and Adler in a superb chapter reveals how behavior can influence many parameters of reproductive physiology.

This volume is not an encyclopedic review of reproductive behavior, but, as a volume in a series reporting on advances should, it presents the important findings of the past few years in the field. In addition, many of the findings reported in the volume suggest new research leads, and perhaps the next "Advances" volume on this topic will be able to integrate research on reproductive behavior more effectively.

JOHN G. VANDENBERGH
Division of Research, North Carolina Department of Mental Health, Raleigh

Pesticide Biochemistry

The Biochemical Mode of Action of Pesticides. J. R. CORBETT. Academic Press, New York, 1974. x, 330 pp., illus. $18.50.

This book evaluates the current knowledge of how pesticides act, arbitrarily excluding some agents, such as fumigants, bactericides, and rodenticides. It runs counter to the tendency to write separate books on insecticides, fungicides, and herbicides, a tendency that is based on the different roots of those studies and has been reinforced by the fast growth in knowledge that has encouraged parochialism.

As the author writes, because "all living things have an underlying biochemical similarity" it is more logical, in principle, to treat all pesticides together. This proposition is excellently supported in the two of the nine chapters that deal with inhibitors of respiration and of biosynthesis, which include