about evaluating the quality of the information he presents, the usefulness of the book would have been much enhanced. The data on home-range size of 25 African ungulates given in table 3, for example, are taken from studies that ranged in duration from a few weeks (as in the case of the bushbuck) to full annual cycles. The accompanying text warns of potential problems in the comparability of the data, but it would have been appropriate to include information on the duration of the studies as well as an assessment of the reliability of the data. Leuthold's firsthand knowledge of many of the studies he cites and his command of the literature clearly place him in a better position than the average reader to make such an assessment. This lack of interpretation is the book's only substantial weakness as a source of information.

In the chapter in which Leuthold attempts to deal with relationships between morphology, ecology, and social organization, and in occasional statements elsewhere that attempt to impose an evolutionary interpretation on the data, other shortcomings appear. The explanations presented for observed correlations are usually tautological, and alternative explanations are not offered for comparison. For example, the section on weapons and fighting techniques (pp. 111–116) considers the morphology of male horns and tusks in terms of their effectiveness as antipredator defenses and in fights with other males and ignores another major likely influence in their evolution, namely sexual selection. Another example (from p. 250) illustrates the nature of the arguments advanced:

> An important adaptation . . . is mobility, enabling animals to take advantage of irregularly distributed rainfall and associated grass growth. Mobility, in turn, requires relatively large body size, partly related to morphology (length of legs, etc.) and to energetics, partly to possibly increased risk of predation associated with high mobility and thus conspicuousness. In the latter context, gregariousness is also of advantage, particularly in open habitats, and as intragroup competition over food is less likely to be serious in grazers than in browsers, herd-formation will be favored. We may, therefore, expect the most pronounced grazers to be large, gregarious, and relatively mobile. This is indeed the case; examples are wildebeest, oryx and buffalo.

If this relationship illustrated an underlying principle, it could reasonably be expected to hold for ungulates other than bovids (which it does not) as well as for distant taxa.

The reader is cautioned to beware of other such explanations of adaptations. The more reasonable the argument appears the more one should be careful to consider whether new insights have actually been generated and what tests are proposed. Phrasing explanations of behavioral adaptations to ecological variables in the form of testable predictive hypotheses is rare among practitioners of behavioral ecology, and the author is no more to be faulted in this regard than are most advocates of this kind of socioecology and sociobiology.

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Regional Primatology

Primates of South Asia. Ecology, Sociobiology, and Behavior. M. L. ROONWAL and S. M. MOHNOT. Harvard University Press, Cambridge, Mass., 1977. xx, 422 pp., illus. $22.50.

The nonhuman primates of the Indian subcontinent have long occupied a prominent position in human affairs. The monkey god Hanuman is a major figure in the pantheon of Hindu gods and in the great works of Hindu religious literature. Much of our knowledge of human reproductive physiology came initially from studies of the rhesus macaque. This same Indian primate subsequently became important in the development of the polio vaccine in the early 1950's and has been the mainstay of biomedical and behavioral laboratory research ever since. More recently, field studies of the behavior of another Indian primate, the Hanuman langur, have provided the most elegant support for sociobiological interpretations of primate behavior. This volume by Roonwal and Mohnot is a compendium of published information about the 25 species of nonhuman primates that inhabit some parts of South Asia.

In organization and spirit the book resembles a mammalian field guide, giving information on distribution, vernacular names, external characters, and systematics for each species. It is set apart from other handbooks, however, by the extensive summaries it includes of the ecology, sociobiology, and behavior of the individual species. The authors, a distinguished mammalogist and a primate ethologist, have reviewed and faithfully recount the results of hundreds of laboratory and field studies. The strength of the book lies in these summaries. The coverage of such topics as anatomy and physiology is much less thorough. At the end of the book the authors provide a bibliography of nearly 1350 entries. Unfortunately, the bibliography is complete only through 1972 and includes only occasional papers from later years.

A stated purpose of the book is to provide a "consolidated picture" of research on South Asian primates that will also highlight the lacunae in our knowledge. In a summary book such as this it is the lacunae that are most conspicuous. While the rhesus macaque occupies more of the text than any other species, only two of the nearly 500 references cited for this animal describe long-term observations of forest populations in India. Likewise, despite a number of studies that have been carried out in recent years, our knowledge of the varied leaf-eating monkeys of Asia is still dominated by studies of the sacred hanuman langur of the Indian subcontinent, a species that is more terrestrial and omnivorous than most other colobines. Indeed, one species, *Rhinopithecus roxellanae*, the snub-nosed langur of China, is so poorly known that the authors could not even confirm its distribution in South Asia.

As a reference work and summary of earlier studies, this book should be a valuable addition to anthropology and zoology libraries throughout the world. One hopes that it will also serve a greater purpose by inspiring and facilitating more indigenous research on the many primates of this region.

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Estuaries

Estuarine Processes. Papers from a conference, Galveston, Texas, Oct. 1975. MARTIN WILEY, Ed. In two volumes. Vol. 1, Uses, Stresses, and Adaptation to the Estuary. xviii, 542 pp., illus. $22. Vol. 2, Circulation, Sediments, and Transfer of Material in the Estuary. xviii, 428 pp., illus. $19.50. Academic Press, New York, 1966–67.

These papers from the third International Estuarine Research Conference are representative of current research on estuaries in that they emphasize dynamic features. Estuarine research has in the past been concerned primarily with such structural features of estuaries as physical and chemical properties, standing crops, and the temporal and spatial dis-

tributions of organisms, but as information on those features has accumulated and as the importance of the management and preservation of estuaries has been recognized the emphasis has shifted. A comparison of these proceedings with those of the 1973 international conference indicates that the major advances in estuarine research have been an increased understanding of the physiological, biochemical, and behavioral adaptations of organisms to stress, of the population dynamics of important estuarine organisms, and of the processes that couple coastal wetlands with offshore areas. Efforts to model estuarine circulation numerically have also increased.

An understanding of the pathways and transfer mechanisms of important chemical, physical, and biological components of estuarine systems is essential if a holistic view of the ecosystem is to be taken and if models that can predict responses of estuarine systems to perturbation are to be constructed. Several contributors to the present volumes express the view that we are just beginning to quantify some of these processes and have a long way to go before we understand the complex dynamics of and relationships between biotic and abiotic factors in the estuarine environment. Also, there seems to be a deficiency of data for modeling, and most models have not been adequately tested with field data.

The present concern over perturbations in the estuarine environment induced by human activities is reflected in the volumes under review. Over half the papers presented in volume 1 are concerned directly or indirectly with estuarine perturbations. The studies include such diverse topics as the rehabilitation of estuaries, population dynamics, wetland uses, sublethal stresses and behavior, physiological adaptations, and pollutant cycling. Volume 2, which is devoted primarily to sediment transport and circulation, wetland and coastal interactions, and circulation models, contains a smaller percentage of papers explicitly concerned with environmental stress, but the information presented is indirectly important in understanding its effects.

Each of the 13 sections that make up the volumes has an introduction summarizing its major theme. The proceedings as a whole, however, suffers from the lack of a general summary or synthesis. Some of the papers on estuary rehabilitation, wetland uses, and coastal and wetland interactions that emphasize the importance and uniqueness of estuaries may be of interest to the general reader. The major value of the proceedings, however, may lie in helping to make the marine scientist aware of issues that require further study.

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Banning the Car Downtown. Selected American Cities. Roberto Brambilla and Gianni Longo. Institute for Environmental Action, New York, and Columbia University Center for Advanced Research in Urban and Environmental Affairs, New York, 1976 (available from the Superintendent of Documents, Washington, D.C.). xii, 150 pp., illus. Paper, $2. Footnotes Number Three. Stock No. 023-000-00375-9.

Basic Principles of Organic Chemistry. John D. Roberts and Marjorie C. Caserio. Benjamin, Menlo Park, Calif., ed. 2, 1977. xx, 1596 pp., illus. $24.95.

Biochemical Actions of Progesterone and Progestins. Papers from a meeting, New York, May 1976. Erlio Gurpide, Ed. New York Academy of Sciences, New York, 1977. vi, 450 pp., illus. Paper, $41. *Annals* of the New York Academy of Sciences, vol. 286.

Biochemical Engineering Fundamentals. James E. Bailey and David F. Ollis. McGraw-Hill, New York, 1977. xiv, 754 pp., illus. $25.50. McGraw-Hill Chemical Engineering Series. McGraw-Hill Series in Water Resources and Environmental Engineering. *To order this book circle No. 370 on Readers' Service Card*

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Environmental Health Criteria 1: Mercury. World Health Organization, Geneva, 1976 (U.S. distributor, WHO Publications Centre, Albany, N.Y.). 132 pp. Paper, $5.60.

Environmental Health Criteria 2: Polychlorinated Biphenyls and Terphenyls. World Health Organization, Geneva, 1976 (U.S. distributor, WHO Publications Centre, Albany, N.Y.). 88 pp. Paper, $4.

The Epidemiology of Drug Abuse. Current Issues. Louise G. Richards and Louise B. Blevens, Eds. National Institute on Drug Abuse, Rockville, Md., 1977 (available from the Superintendent of Documents, Washington, D.C.). x, 260 pp., illus. $2.60. National Institute on Drug Abuse Research Monograph, 10.

Food First. Beyond the Myth of Scarcity. Frances Moore Lappé and Joseph Collins with Cary Fowler. Houghton Mifflin, Boston, 1977. xii, 468 pp. $10.95.

Free Energy Transduction in Biology. The Steady-State Kinetic and Thermodynamic Formalism. Terrell L. Hill. Academic Press, New York, 1977. xii, 230 pp., illus. $21. *To order this book circle No. 379 on Readers' Service Card*

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Hematology. William S. Beck, Ed. MIT Press, Cambridge, Mass., ed. 2, 1977. xiv, 590 pp., illus. Paper, $9.95.

Historical Studies in the Physical Sciences. Eighth Annual Volume. Russell McCormmach and Lewis Pyenson, Eds. Johns Hopkins University Press, Baltimore, 1977. xii, 302 pp. $17.50.

Human Reproduction. Howard C. Taylor, Ed. MIT Press, Cambridge, Mass., 1976. Three volumes, illus. Vol. 1, Physiology. xviii + pp. 1–154 + index. Vol. 2, Population. xviii + pp. 155–316 + index. Vol. 3, Family Planning. xviii + pp. 317–588 + index. Paper, each volume, $9.95.

Human Response to Tall Buildings. Donald J. Conway, Ed. Dowden, Hutchinson and

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