Crowding Together

Behavior and Environment. The Use of Space by Animals and Men. Proceedings of an AAAS symposium, Dallas, Texas, Dec. 1968. ARISTIDE H. ESSER, Ed. Plenum, New York, 1971. xviii, 412 pp., illus. $17.50.

"The implications of many papers which have been read here are of great significance for architects and city planners," said one of the participants in this symposium on the use of terrestrial space. "I only regret that there are few architects and planners in this audience." Absent architects and planners can now see what they missed; they are unlikely to feel badly about it. This dimmer view of the proceedings, I hasten to add, is at variance with laudatory comments that crop up throughout these pages; but cold print has perhaps failed to convey the "amazement and pleasure" of a mixed bag of people finding they got along well together. From their apparent amazement one must infer that, prior to the meeting, ecologists regarded psychiatrists as charlatans and psychiatrists regarded ecologists as emotionally unstable; learning that these strictures were only partly correct must have been an eye-opener. In fact, if this symposium was like others, its real value lay in the exchanging of ideas among the participants while eating together, or better still while drinking together—at which time man's "minimum distance apart," as in the nonbreeding galah (p. 75), approaches zero.

The attempt to provide "a frame of reference which could open avenues of communication between behavioral scientists, the design community, and the decision makers in our society" is, of course, admirable; so is the attempt to develop a "scientific terminology for spatial behavioral research." Also, a bare century after *The Descent of Man*, it has become popular to blame our animal ancestors for some of the distressing things we do to each other. Gratifying as it is to have their work acclaimed, zoologists would nevertheless be wiser to put their own house in order before allowing conclusions whose truth is at present arguable even within their proper contexts to act as props for still more arguable interpretations of human conduct.

No damage was done at this conference, however, since few people got beyond doing for mankind what Beatrix Potter has done for the Flopsy Bunnies and Jemima Puddleduck—that is, describing the behavior of one group of organisms in language appropriate to another. But whereas Miss Potter had an ear for language, the speakers at the conference did not, and one can only hope that practitioners of spatial behavioral research, instead of regarding their present terminology as a promising development toward scientific respectability, will learn to express themselves in plain English.

The chief failing of this conference seems to have been the usual one: the attempt to cram too much into too short a time. If you invite distinguished speakers you usually have to let them speak; but being distinguished does not always prevent them from talking nonsense. Audiences recognize this occupational hazard but expect to be able to combat it, a function that the crowded program prevented this audience from fulfilling. Three massive papers in each of the four sessions were followed by "Prepared Contributions for Discussion" sent in by absent friends, who seldom knew what had gone before. Then came "Discussions" by a panel that contributed further new material, as in the opening remarks of one of the chairmen, which, with added references, ran to about 2500 words. The more spontaneous remarks also consisted of unrelated space stories—about fur seals, wood rats, yellow baboons, lemmings, Parsees, and ambystomatid salamanders—of which, for reasons not always apparent, the speakers were irresistibly reminded.

If there was any cut-and-thrust of debate, no ungentlemanly comments survive to spoil the harmony of the published record by revealing it. Apparently no one questioned the significance of such statements as, in a paper on the animal path, "The subtlety of the first change of place or dislocation with the first step springs from the fact that, in walking, each foot comes down on a different and specific point"; no one asked the mammalogists if events in their grossly overcrowded colonies of rats, mice, and rabbits bear any relation to events in unconfined populations in nature; no one was so irreverent as to ask if the doctrine of group selection does more toward explaining self-regulation of populations than put a label on ignorance; and no one protested when asked to view human "commitment to values and causes as the sublimated equivalent of fighting in mice."

In his Frontiers of Science Lecture, Calhoun must have had his listeners wondering if they were being spoofed. This would be the kindest interpretation. Descartes, it's true, managed to parlay a simple axiom into a conceptual scheme of cosmic proportions; but Calhoun is less impressive in arguing from the axiom that 12 is the basic group size in mammals to the conclusion that 9 billion is the optimum world population size; and his sketch of man's cultural revolutions over the course of 200-odd millennia, past and future, makes even the visions of Arnold Toynbee look academically respectable.

Several papers in this collection are admirable in their own right, but few were really suited to such a mixed audience. Watson and Moss, for example, gave an excellent paper on red grouse, but left the audience to draw its own moral from the story. Their results can have helped no one understand autistic children, redesign jails, build better high-rises, or otherwise improve the lot of mankind (Scottish landowners excepted). In fact, so far as this conference was concerned, what happens to red grouse was of secondary importance to the methods used to find out. The authors were careful first to quantify the phenomena as they actually occur in nature, next to eliminate some of the alternative ways of explaining them, and third to think up stringent experiments on the remainder. Thus if Watson, Moss, and colleagues are running true to form they will already have discarded some of the things they believed in 1968. Students of the human predicament who wish to profit from association with their zoological colleagues would do well to build on the rocks of their methods and avoid the sands of their current beliefs.

Let me try to finish on a constructive note. According to Emily Hahn (*New Yorker* 24 April 1971; *On the Side of the Apes*, Crowell, 1971, p. 73) H. F. Harlow was at a loss some years ago to know how to produce neurotic monkeys. It took a visiting psychiatrist to show him that he already had row upon row of them, but had failed to recognize the symptoms produced by isolation. If the organizers sparked even one or two such profitable contacts they achieved their most important objective; but it's a pity they or-

ganized things as though man had more to learn about himself from studying rats, mice, rabbits, cats, cows, parrots, and the like than from studying other primates.

DENNIS CHITTY
Department of Zoology, University of British Columbia, Vancouver

Pests

Flies and Disease. Vol. 1, Ecology, Classification and Biotic Associations. BERNARD GREENBERG. Princeton University Press, Princeton, N.J., 1971. xiv, 856 pp. + plates. $30.

This ambitious undertaking is the first volume of a two-volume compendium dealing with the relationships of flies and disease on a worldwide basis. The work is timely, for in spite of modern insect control practices flies and disease are still very much with us; it contains a wealth of information, thus filling a real need; and it should serve as a potent stimulus to additional research in this important field.

Four of the six contributors to volume 1 are European, and this is reflected in the coverage of the literature, which reverses the usual American practice of good coverage of American literature and poor coverage of some European and especially Russian literature. This one-sidedness is especially noticeable in the otherwise excellent chapter on synanthropy, which deals mainly with the Palearctic region. One hopes there will be a chapter in volume 2 on synanthropy in the extra-Palearctic regions. Also, the short chapter on bionomics seems to lack balance because some of the newer biological data are not included. On the other hand, the keys to both adult flies and larvae are excellent, and the line drawings illustrating the taxonomic characters are first-rate. The 15 color plates are among the finest representations of the metallic colors of calliphorids and the browns and grays of the muscids that this reviewer has ever seen. It is unfortunate that these plates are not referred to in the text.

The two most useful and unique chapters consist of extensive reciprocal listing of the biotic associations of flies with other organisms ranging from viruses to mammals. A total of 6500 recorded associations are listed, and the information is accessible both under the name of the associated organism and under that of the fly. If a running paragraph format had been used instead of the vertical listings, however, about 200 of the 533 pages devoted to these two sections could have been saved with little sacrifice in ease of use. Such savings might have resulted in a reduction in the price of the book.

This volume is a most welcome and valuable addition to the reference material available to the biologist. It is hoped that the companion volume will appear soon.

CLAUDE H. SCHMIDT
Entomology Research Division, Agricultural Research Service, Beltsville, Maryland

Emotional Processes

Physiological Correlates of Emotion. PERRY BLACK, Ed. Academic Press, New York, 1970. xviii, 310 pp., illus. $13.50.

Over the past few decades the study of emotional behavior has developed into a field that encompasses an extremely broad range of clinical and experimental data, as well as different sets of definitions and theoretical constructs.

This book is a timely and important publication for those investigating emotional behavior or working in related fields such as endocrinology, neurophysiology, psychophysiology, and pharmacology. The basic goal of the book is to present in a straightforward manner the major experimental approaches currently used in the study of emotion. The book is divided into several sections, each dealing with a specific approach: genetic and developmental, neurochemical and endocrinological, neurophysiological, and psychophysiological. There is a historical review, and in several places the pitfalls and hazards of research on emotional behavior are discussed.

The book is based in part on a conference held in Baltimore in 1968, and the list of contributors reads like a Who's Who in the field. Each chapter is concisely and clearly written. There is a complete author and subject index, and references are up to date.

The book will probably be most valuable as a general reference text. It will also be useful and will serve as a meeting ground, so to speak, for a broad range of medical and behavioral scientists. It is difficult, if not impossible, to present a coordinated, comprehensive overview of all the research efforts involved in furthering the understanding of emotional processes. I believe, however, that the book could have profited from a final chapter to summarize and, if possible, to coordinate the messages of the individual contributions. The editor would have served a useful purpose if he could have provided for a senior figure in the field to overview the overviews. On the whole, however, the effort comes off very well, and many students and workers will find it a welcome addition to the reference shelf.

LEO V. DICARA
Rockefeller University, New York City

Mind and Molecules

Biochemistry of Brain and Behavior. Proceedings of a symposium, Kenosha, Wis., May 1970. ROBERT E. BOWMAN and SURINDER P. DATTA, Eds. Plenum, New York, 1970. xxvi, 364 pp., illus. $16.50.

Most people believe that mind and behavior are regulated by neuronal interactions. These interactions, like all cellular properties, may be contemplated in terms of big and little molecules. Although there are many molecular explanations of mind that have been proposed, most serious work now is being directed at fragments of the problem—perhaps a special brain protein, perhaps an adaptive response to a drug, perhaps a biochemical correlate of behavior. Given this view, the diverse contributions in this book are related. Each tells something about a brain macromolecule or small molecule. Behavioral correlates are then boldly considered, cautiously entertained, or completely ignored. The macromolecules that are discussed range from nerve growth factor to neurotransmitter enzymes to steroid hormone binding proteins to S-100 protein to RNA. The small molecules include amines, amino acids, and lipids. The major classes of behavior that are considered are memory storage and schizophrenia.

In more advanced fields this would be a fantastic hodgepodge. But to those of us who concern ourselves with neurobiology and behavior, it seems an understandable, though less than admirable, conglomerate. At this stage of the game we thank God for anything at all interesting or relevant to the overall problem—since the productive directions for definitively solving the problem are only vaguely discerned. Even at the risk of our paying attention