Psychological Analysis

Uncertainty and Structure as Psychological Concepts. Wendell R. Garner. Wiley, New York, 1962. ix + 369 pp. Illus. $8.95.

In this book the information measure that was originally developed in communication engineering serves as the basic tool for a careful analysis of various psychological problems. Using such concepts as "quantity of information," "redundancy," "information transmission," "structure," and "channel capacity," Garner searchingly reexamines experimental data in the areas of perceptual recognition, reaction time, pattern perception, language structure, tracking behavior, and concept attainment. After justifying the utility of the information measure in terms of its ability to uniformly handle distributional and sequential constraints, its nonmetric properties, and its multivariate potentialities, Garner defines such additional concepts as "total constraint," "internal and external constraint," "contingent uncertainty," and "redundancy" and develops the equations relating these concepts. These concepts then become the major tools for gaining insight into a variety of problems—for example, the effect of response restriction upon stimulus and response uncertainty, the role of redundancy in pattern perception, and the effects of irrelevant information in concept attainment tasks. For each of the many problems that he examines, Garner's rigorous and penetrating analyses resolve previously contradictory results (such as those which sometimes reveal redundancy to be helpful and those which reveal it to be harmful).

Garner warns us against employing the informational measure for psychological problems where it is inappropriate. In particular, he emphasizes that informational measures become meaningless where we have an indefinite or an unknown set of possible alternatives. Thus, his approach applies to tasks in which the subject is required to select his response from a predetermined set of alternatives, but presumably it does not apply to open-ended situations in which the subject is free to generate his own response. Although Garner excludes open-ended situations from his analyses, social psychologists start from just such situations to develop their own concepts of structure. These latter workers have concentrated on ways to operationally specify the context of alternatives within which an individual responds (the "structure" of his "psychological space"). It is tempting to anticipate that these two approaches for dealing with the framework within which behavior occurs will converge. The social psychologists are progressing toward ways to specify the coordinates of a space within which responses occur. Garner, on the other hand, concentrates on ways to tease out the interrelationships among informational inputs for situations in which the coordinates have been determined or specified prior to the experiment.

Garner has written a wise and thoughtful book that has obvious value for psychologists who work in psychophysics and perceptual-motor behavior. To those investigators Garner suggests many provocative analyses of previously puzzling problems as well as several ideas for meaningful experiments. But Garner also has much to say to other psychologists, who, hopefully, will not be deterred by the use of problems from traditional experimental psychology. In reevaluating problems of experimental psychology in terms of structure and context, for example, Garner has transformed these problems into a form that may now suggest new problems and ideas to those social psychologists who are also struggling with ways of quantifying behavior in terms of the context in which it occurs.

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Paleoanthropology

History of the Primates. An introduction to the study of fossil man. Wilfrid LeGros Clark. British Museum (Natural History), London, ed. 8, 1962. vi + 119 pp. Illus. Paper, 5s.

This little volume first appeared in 1949. Subsequent revisions by the author, one of the foremost living authorities on Primates and human evolution, have kept it up-to-date. Although it is intended primarily as a museum guide, it actually represents the best available introduction to paleoanthropology. This is no small achievement, considering the number of new fossil discoveries that have been made in this field.

The first half of the book provides an excellent background for an understanding of fossil man. It contains brief but well-presented sections on animal classification, natural selection, geological time, and the major features of the primate skull and teeth; a survey of the living primate groups (anthropoid apes, Old World and New World monkeys, tarsiers, lemurs, tree-shrews); and a remarkably comprehensive account, in 15 pages, of fossil prosimians, monkeys, and anthropoid apes. The second half is devoted to the fossil remains of the Hominidae (man and his immediate forerunners). Successive sections deal with the australopithecines, the pithecanthropines, the origin of *Homo sapiens*, Neanderthal man, the Neanderthaloids of Africa and Asia, and late Paleolithic *Homo sapiens*.

There are 40 excellent illustrations and a literature list of 30 titles.

This new edition, like the earlier ones, will no doubt prove to be of considerable value to students in beginning courses in anthropology and in other courses, such as those in biology and geology, that deal with human evolution. It has the great virtue of not requiring any real knowledge of human or comparative anatomy.

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Introductory Treatment

Mechanisms of Organic and Enzymic Reactions. S. G. Waley. Oxford University Press, New York, 1962. xiv + 365 pp. Illus. Plates. $11.20.

This book, another attempt to effect a synthesis of organic and enzymic mechanisms, is written at a fairly elementary level and is intended for both chemists and biochemists. For this reason considerable space is given to an introductory treatment of molecular structure and to the principles and methods of the organic reaction mechanism studies. The various topics of mechanistic interest are selected and presented in a conventional way; this presentation begins with nucleophilic substitution and includes elimination and addition reactions, reactions of