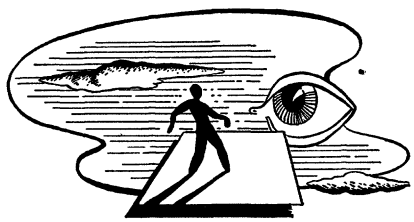
The all too brief index, characteristic of British publications, decreases the reference value of the book; many desired and essential entries are missing. The bibliographies would be more valuable if they included the initials of the authors and the titles of the articles.

One who undertakes the difficult task of reading, evaluating, selecting, organizing, and discussing the ophthalmic literature of the world deserves the highest praise. Commendations due to the innumerable excellent features of this volume would fill many pages, whereas all of the criticisms can be completed in a brief review. The book is a treasure and we should all be forever grateful to Sir Stewart Duke-Elder for its creation.

FRANK PAYNE

New York City



Frustration: The Study of Behavior without a Goal. Norman R. F. Maier. New York: McGraw-Hill, 1949. 264 pp. $3.50.

Prof. Maier has written a significant and exciting book. This is not to say that his book has "all the answers" or that this reviewer necessarily agrees with such putative answers as are given. But it raises the right problems, and the attempted solutions—whether right or wrong—are original and challenging.

Quite aside from its special content, this book is noteworthy for the fact that it is written by a man who, though primarily an experimental psychologist, is here concerned with clinical issues. The approach to these issues is sympathetic and by no means unsophisticated. The book is, indeed, a kind of model, both in terms of its objectives and its methods, for indicating how experimental and clinical psychology can interact, to the benefit and enrichment of both.

The author has picked out for major consideration what the reviewer regards as the absolutely central and most critical issue in clinical theory no less than in practice: It is the question as to why so-called neurotic behavior is at one and the same time *self-defeating and yet self-perpetuating,* instead of self-eliminating. This is the dilemma that prompted some of Freud's most brilliant speculations; and it is an issue which every serious student in the field must face. Maier attempts to deal with it as follows.

In ordinary trial-and-error learning, says the author, new responses are acquired or old ones eliminated on the basis of their consequences. But in other instances, responses persist despite continuously unfavorable consequences. Such an instance Maier and his students have been able to produce experimentally in rats by exposing them to discrimination problems, on a Lashley jumping stand, which are "insoluble." If the problem is soluble, the rats learn to jump to the right or the left on any given trial, according to the nature of the cue stimuli presented on that trial. But if the problem is insoluble, the rats tend to fall into rigidly fixed patterns, such as always jumping to the same side.

Maier uses this finding as a basis for postulating that under conditions of frustration there is often a breakdown of normal learning and the development of abnormal fixation. He thus evolves what might be called the *frustration-fixation hypothesis.* He rejects the Freudian hypothesis that fixated, or "symptomatic," behavior "may serve as a relief for the patient," in favor of the view that once the frustration-fixation mechanism has taken over, the usual principles governing adaptive behavior cease to operate and one sees the occurrence of "behavior without a goal."

The reviewer does not believe that this analysis is satisfactory (cf. Freud's equally *ad hoc* and circular concept, the "repetition compulsion"), but the author does a skillful job of illustrating and defending his thesis, which he states boldly and lucidly.

To many readers the most illuminating part of the book will be chapter 8, in which the author brings his earlier experimental work on reasoning to bear upon contemporary problems in the field of counseling and psychotherapy. Although he largely follows Rogers' analysis of the treatment process, clinical workers of other persuasions will find Maier's discussion of "reasoning as the combination of elements in experience that have not previously been combined" highly suggestive. This part of the book leads to a consideration of some of the most basic issues in the entire field of personality and behavior theory.

O. HOBART MOWRER

University of Illinois

Studies in Population: Proceedings of the Annual Meeting of the Population Association of America at Princeton, New Jersey, May 1949. George F. Mair, Ed. Princeton, N. J.: Princeton Univ. Press, 1949. 169 pp. $2.50.

This publication is described as "an experiment" in that it for the first time presents the collected proceedings of an annual meeting of the Population Association of America. It includes so much useful material that it is almost certain to be given a wide welcome and, it is to be hoped, continuation.

There are five sections: Application of Demographic Data to Current Problems; Tools for Demographic Research; Resources for the World's People; Value Systems and Human Fertility; and Future Course of Research in Fertility. A wide gamut of problems is considered, and sections III and IV, which had been presented more or less as organized symposia, are the subjects of penetrating evaluations by Warren S. Thompson and Kingsley Davis. Space permits only the briefest comment on a few papers.

Many will find most interest and significance in one contribution that, in a sense, does not belong here at all: "The Catholic Value System in Relation to Human Fertility," by the Rev. William J. Gibbons, S.J. Its

premises are frankly "supernatural" and therefore not susceptible of scientific examination; one believes them, or one doesn't. Yet it has scientific importance for the cultural anthropologist, and especially for the sociologist and medical man, who constantly meet defeat, through the political pressures exerted by the group Fr. Gibbons represents, as they attempt to solve some of the world's most critical problems by a rational approach to population control. Here is warfare of theology against science, on a level affecting the earthly lives of millions of people. What it may be doing to their lives in the next world, I do not consider myself competent to judge.

The discussion of resources by Profs. Black of Harvard and Bradfield of Cornell contains a great deal of useful material and sharpens their criticisms of a number of recent writers who have expressed concern over rapid population increases and reckless destruction of resources. It is unfortunate, it seems to me, that they elected to devote nearly all their attention to food, instead of looking at the total environments in which the food must be produced. Every physical environment consists of an extremely complex, four-dimensional system of dependent variables upon which is imposed a powerful human cultural complex that may include factors as deadly as any lethal gene. Until we begin to organize our thinking in such terms, it is going to be extremely difficult to understand that what is possible at Beltsville may be impossible for many decades in the so-called backward areas, plagued by exploding populations. Dr. Thompson, in his discussion, brings the problem into focus in more of its complexity.

One more point should be noted: a popular estimate of potential agricultural land is uncritically cited (p. 74). Many people consider this too high; E. S. Archibald, director of the Experimental Farms Service, Dominion of Canada, on a recent CBC broadcast, characterized the estimate of 300 million available acres of northern podsol as "fantastic," based on his experience in Canada. I should apply the same word to one billion acres of potential tropical agricultural land, based not on what American soils scientists *might* do with the land, but on what the people of the tropics are doing *to* it, and are likely to continue doing for decades.

WILLIAM VOGT

Washington, D. C.

Theory of Hearing. Ernest Glen Wever. New York: John Wiley; London: Chapman & Hall, 1949. 484 pp. $6.00.

Professor Wever's book is an important one for a variety of reasons. As a general source of information on theories of hearing it has no equal in English. The reader, whether expert or naive, will find here adequate summaries of old and new ideas on how we hear, and if he wishes to pursue these matters further, the bibliography will point the way.

A lucid synopsis of the present state of our knowledge on both cochlear anatomy and acoustic neurology is presented. The author shows how advances in understanding have followed "accretion to anatomical knowledge," and he describes for the first time certain of his own measurements on the cochlea of man. In view of this emphasis on anatomy it is strange to find no mention of the acoustic projection to the cerebellum which was convincingly demonstrated some eight years ago.

The author's current concept of the volley theory is expounded in detail, and experimental evidence of many kinds is impressively marshaled in its support. His selection of material from the literature of physiology and psychology, and his willingness, throughout, to take a positive stand on controversial matters will provide considerable stimulation for the initiated among his readers.

In this readable and scholarly work, the substantial advances of the past twenty years march past in orderly fashion. They are reviewed by one of the most prolific workers in the field, who makes here still another contribution to it. As seen through his eyes—and the expanded version of his views of auditory theory is well worth having—"The place and frequency principles have been assigned their respective roles as well as may be on a basis of the evidence now at hand, . . . and it will remain for further experimentation and discussion to determine how reasonable they are and to work out the revisions, large and small, that are found to be necessary."

ROBERT GALAMBOS

Harvard University

Adaptation. John Romano, Ed. Ithaca, N. Y.: Cornell Univ. Press, 1949. 113 pp. $2.00.

In dedicating a new department of psychiatry at Strong Memorial Hospital, University of Rochester, Dr. Romano, the psychiatrist-in-chief, called upon a group of distinguished scientists representing biology, physiology, psychology, psychiatry, and social anthropology to participate in a symposium on the general topic of adaptation. This book is a collection of their presentations.

Dr. Romano's modest hope was that with psychiatry setting the stage, his guests might, by a few well-chosen observations from their own special fields, help bridge the gap in scientific thinking between the physical and the social sciences. The present pocket-size volume thus offers a surprisingly rich fare of stimulating comments on the phenomena of adaptation to life on various levels from the protoplasmic molecule to group cultures.

The concept of adaptation is almost as immanent and provocative as was the subject of Rochester's earlier symposium on man's behavior, where love was summed up as the harmony of man with himself and with all things in heaven and earth. On this occasion the treatment is somewhat less speculative. In five concise interpretations it is shown that from the lowliest of bacteria to the highest of animals, individuals and social groups maintain their integrity against the stresses of the world by following the same general principles of change in structure or in pattern of behavior to achieve long or short term adaptations.

In his introduction, Dr. Romano states that modern psychiatry has the responsibility to provide firm ground, especially in methodology, for the development of the social sciences, much as physics and chemistry provide for the biological sciences. Application of strictly scientific methods to such urgent but sensitive problems as infant and