

as the social-cultural background of the aging individual, including a review of Greek and Roman views of aging; a detailed analysis of human mortality curves; the influence of age on work and occupational skills; and psychopathology. Some chapters in this section include materials that appear in other chapters—for example, on aspects of perception.

Although this section presumes to deal with aging in an environmental setting, the only chapters that seem to me to be concerned primarily with environment are those on the social and cultural background (von Mering and Weniger), the discussion and evaluation of human mortality curves (Hardin B. Jones), and, to some degree, the chapter on work and occupational skills (McFarland and O'Doherty). If one takes the position that psychopathology is primarily the result of environmental stresses, then its inclusion in this section may be warranted. Since Busse, in the chapter on psychopathology, deals with both organic and functional disturbances in a straightforward and lucid fashion, the question may be raised as to its pertinence in this section in preference to its inclusion in section 4.

The most comprehensive section of the *Handbook*, part 4, is concerned with the psychological characteristics of aging. It is especially in the treatment of formulations of learning theory and aging (Harry Kay) and personality theory and aging (Klaus Riegel) that this volume makes a notable contribution to the field of gerontology. Under the impetus of the current trend toward theoretical formulation of the various psychological domains, as presented by Helson, by Melvin Marx and by Estes, Koch, MacCorquodale, and others (and most recently in the three volumes edited by Koch), the extension of psychological theory to studies of aging, especially as suggested in the chapters by Kay and Riegel, might be applied in other areas as well. The review by Jerome of the experimental studies of age and learning and Kuhlen's discussion of aging and life-adjustment are both enhanced by the development of the theoretical issues in the immediately preceding chapters. By utilizing a consistent developmental treatment in which theories of emotion and the nature of intelligence provide a framework for interpreting research in those areas, the graduate student will gain perspective and the instructor an invaluable teaching device.

The application of Hull's theory of learning in the conceptual framework of aging research, according to the issues raised by Kay, will challenge the experimenter to more precise investigation of the differences in the nature of the learning process for various age groups. Furthermore, Kay's evaluation of the many theoretical concepts particularly relevant to aging should stimulate much research in this area. On the other hand, in the chapter by Riegel, elementary constructs—for example, the three major systems (the id, ego, and superego) of Freud—are included and explained; surely the sophisticated graduate student of psychology toward whom this volume is directed will have mastered these concepts earlier in his training.

Unfortunately a dearth of research in many of the areas covered in this volume limits the documentation to studies that are suggestive rather than definitive. Lengthy descriptions of research, based on such small and potentially biased samples that the results cannot be considered conclusive evidence for a general phenomenon, are reviewed by several authors who wish to confirm or support a contention. For example, in his chapter on perceptual processes, Braun discusses at length the Korchin and Basowitz study concerning the perception of ambiguous stimuli, and he notes that decision (reaction time) patterns for early and middle stimuli in a series were not appreciably different between an old group (age range 65 to 85 and older) and a young group (age range 22 to 33), although the young subjects shifted their responses earlier in the stimulus series than did the old. In this study there were 24 subjects in the young group and 36 in the old group. Botwinick also refers to the same study to illustrate group differences in ego organization. Again the research is described in detail with emphasis on the point made by Korchin and Basowitz that their data are a reflection of "less adequate ego organization of older subjects." In the chapter on intelligence and problem solving, Harold E. Jones refers to the study again to point out speed and power differences between young and old subjects in performing many kinds of tasks. To the reader, constant referral by several authors to a single study places undue emphasis on the importance of that study to the field, especially when its conclusions merely are suggestive, as the investigators themselves have stated. On the

other hand, one of the earliest studies in aging was the thorough and scholarly investigation by Jones and Conrad, which Jones modestly discusses quite briefly and which is barely mentioned by other authors in the *Handbook*.

One of the most lucid chapters, that by Welford on psychomotor performance, describes and interprets ingenious experiments, within the framework of information theory.

The volume highlights the scarcity of experimental data on which superstructures of theory about aging have been built and offers a challenge for future research. There are areas of overlap and a degree of repetitiveness that should not occur in a handbook. In other areas—for example, information theory—not enough background material is given to permit evaluation of the psychological theories developed. Many theoretical issues are raised, but they are not always in the context of aging. Individual authors vary widely in the extent to which a critical evaluation is made of the data included.

In general, the book makes a significant contribution to the psychological aspects of aging and summarizes age changes in the nervous system. The inclusion of "and biological aspects" in the subtitle is a misnomer for the volume fails to cover large areas of biology and physiology. A large amount of material scattered through the literature is brought together in some semblance of structure, along with extensive bibliographic material. The detailed subject and author index is valuable for locating specific information.

James Birren is to be congratulated for this contribution to the future of gerontology.

N. W. SHOCK
*Gerontology Branch, Baltimore City
Hospitals, Baltimore, Maryland*

High-Energy Electron Scattering Tables.

Robert Herman and Robert Hofstadter. Stanford University Press, Stanford, Calif., 1960. 278 pp. \$8.50.

This book contains a great deal of information useful in analyzing high-energy electron scattering experiments. The numerical tables which are given include: trigonometric functions for evaluation scattering cross sections; charge density distributions and form-factors for 13 nuclear models; the

Rosenbluth cross section for protons and neutrons; deuteron form-factors and wave functions for three models; inelastic scattering cross sections for deuterons composed of point nucleons and extended nucleons; scattered electron energies for elastic scattering from light nuclei; the Møller cross section and kinematical factors for electron-electron scattering. In addition to extensive tables and instructions for their use, the book contains a brief review of the subject of electron scattering, an exhaustive list of references, a summary of experimental nuclear size parameters, and many useful graphs.

The authors are careful to state that comparison of experiments with the given form-factors requires the validity of the Born approximation and, for this reason, the tables are most applicable for light nuclei, high electron energies, and small scattering angles. However, under typical experimental conditions, errors due to using the Born approximation are usually comparable to, and sometimes much larger than, the differences between cross sections predicted by the various nuclear models. Thus, the inclusion in the tables of form-factors for many very similar nuclear models is of doubtful merit.

On the other hand, the deuteron inelastic scattering tables for the extended nucleon case are presented for just one value of the charge and magnetic moment radii of the proton, and three values of the neutron magnetic moment radius. Clearly, tabulations for many more sets of radii would be necessary in order to obtain accurate, best-fit values for these important nucleon parameters.

In conclusion, although the tables in this book do not eliminate the need for difficult and tedious hand (or digital computer) calculations in analyzing electron scattering experiments, they serve a very useful purpose as an aid in designing experiments and as a guide to more precise analysis of results.

SAMUEL PENNER
Radiation Physics Division,
National Bureau of Standards

Elements of Ion Exchange. Robert Kunin. Reinhold, New York, 1960. viii + 164 pp. Illus. \$5.75.

This small volume provides a basic understanding of ion exchange techniques for those with a limited theoretical background.

Up to now most works on this subject have been of the advanced theoretical type, of little use to executives or operating personnel. The use of ion exchange methods has now become so widespread in the laboratory and in industry that few are the individuals not affected by this technique. The biochemist and the nuclear researcher will find this book useful and interesting reading, while the industrial chemist and agronomist will find that the book gives them a broad view of ion exchange.

A. EDWARD A. HUDSON
Goldsboro, North Carolina

The Open and Closed Mind. Investigations into the nature of belief systems and personality systems. Milton Rokeach. Basic Books, New York, 1960. xv + 447 pp. \$7.50.

Ten years ago, *The Authoritarian Personality* traced anti-Semitism and ethnocentrism to a proto-Fascist personal world view that the California authors interpreted as a defensive maneuver to shore up a precarious facade of strength against inner weakness and unrecognized, but threatening, impulses. The combination of fertile hypothesis and technical laxity which characterized this work stimulated a decade of research checking its results and criticizing or refining its methods. Now Milton Rokeach, a student of the late Else Frenkel-Brunswik (of all the authors who contributed to *The Authoritarian Personality*, she extended its principles farthest in the study of cognitive functioning), has come forth with a volume that takes a fresh start, employs new methods, and arrives at a different but partially congruent appraisal of much the same ground—the intersection of personality, ideology, cognition, and attitude. It is an impressive performance.

Although 22 collaborators are listed, mostly former students of the author, the book is essentially a solo performance, a monograph reporting an imaginative program of integrated, small-scale studies initiated in 1951. In an era of large projects, Rokeach shows what an ingenious and single-minded social psychologist can still accomplish with modest support.

Taking seriously the criticism that the F (Fascism) scale developed in *The Authoritarian Personality* tapped right-wing rather than general authoritarian-

ism, Rokeach develops a conception of *dogmatism* as a characterization of people's belief systems, and he constructs a scale for measuring dogmatism which is intended to be free of content bias toward the ideological left or right. Items on his scale are phrased to identify the dogmatic or closed-minded person as one who tends to accentuate the differences between his beliefs and the belief systems that he rejects; to regard man as isolated and helpless and the future uncertain; to be concerned with power and status; to be, as a "true believer," intolerant of renegades and disbelievers; and to discount the present for a utopian view of the past or future. Validation studies of the dogmatism scale and of a companion scale of *opinionation* (the tendency to accept or reject others depending on whether they agree or disagree with one's views) lend support to Rokeach's contention that he has arrived at more general variables that are free of the ideological bias limiting the utility of the scales developed in *The Authoritarian Personality*.

With considerable experimental ingenuity, Rokeach shows how dogmatism hampers problem-solving within the framework of novel belief-systems. Other sections deal with *disbelief*-systems, and with the role of threat and anxiety in the genesis of dogmatism. A wide variety of methods and of types of data are called upon.

The author anticipates certain formal criticisms that must be made of the book. Like the measures employed in *The Authoritarian Personality*, Rokeach's similarly constructed scales are surely not unidimensional. They are also not free of probable response-set effects, since agreement with an item always yields a score in the direction of dogmatism (or opinionation). While differences in acquiescence will not account for his impressive differential effects, a good many of the positive interscale correlations must be discounted to some degree, and some of the features that Rokeach ascribes to dogmatism, as such, may rather go with the "yea-saying" personality. Further, many of the data are based on comparisons of extreme groups, yielding sizable differences that would correspond to much less impressive correlation coefficients.

The treatment of dogmatism in relation to cognitive processes would benefit from intellectual contact with G. S. Klein's research on cognitive style, which would seem to offer alternative possibilities for conceptualization. Miss-