

the Age." Too frequently the voter's "cognitive map of national politics" is a compound of myth and metaphor resulting from inadequate, inaccurate, or even deliberately deceptive reports which are gathered from gossip and rumor filtered through imagination, wishful thinking, and fantasy. As Rebecca West has said, "If people do not have the face of the age set clear before them, they begin to imagine it; and fantasy, if not disciplined by intellect and kept in faith with reality, . . . dwells among the wishes and fears of childhood and so sees life either as simply answering any prayer or as endlessly emitting nightmare monsters from a womb-like cave." In Freudian terms, when the ego function is starved or tranquilized, political behavior degenerates into an expression of mass anxieties, fears, and hates which turn to some *totemic* father image for relief.

No review can do justice to this volume. It represents a major contribution to the literature of American politics. Moreover by restoring *politics* to the study of voting behavior, it should help to bridge the gap that, unfortunately, seemed to be developing between political and behavioral science.

Eagle-eyed "old school" readers of *The American Voter* can, of course, find plenty to criticize. They can, for example, question whether so elaborate an apparatus is necessary to "prove" the most obvious of political truisms or clichés. Surely, they might say, it is no great scientific revelation to learn that "whenever a group holds distinctive beliefs about some issue, then within the group a differentiation appears between members according to the strength of their group identification." Or that "group cohesiveness is one determinant of the influence a group can wield over its membership." Or, again, that "a lower-class grouping comes to have significance as an entity because there is an upper-class grouping that is perceived as opposed to it." When told that "people do not as a rule come to choose . . . [their] occupations in order to implement prior political involvement," most readers may well ask, "whoever said they did?" Nor will they gasp in astonishment to learn that voters in "high status" occupations are less "worried" economically than "blue-collar workers." Or that "members of farm organizations . . . tend to be more politically involved than non-members . . ." Or that "various social categories are differentiated in their be-

havior because they receive different stimuli." Or that "the more meaning an individual can find in the flow of political events, the more likely it is that these events will maintain his interest."

The "old school" critic may also complain about the somewhat turgid style of writing that the authors employ and the polysyllabism to which they seem addicted. But these faults are minor ones when set against the rich harvest of knowledge and insight that awaits the careful reader of this book.

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Handbook of Aging and the Individual.

Psychological and biological aspects. James E. Birren, Ed. University of Chicago Press, Chicago, Ill., 1959. xii + 939 pp. \$12.50.

One of the difficult problems confronting research workers in the field of gerontology is the lack of source materials that bring together the experimental studies published in a wide range of scientific journals. This book makes a valuable contribution toward resolving the problem, at least with respect to psychological research.

This volume is the first of three handbooks to stem from grants provided by the National Institutes of Health to the University of Michigan; the university, in turn, acted as the administrative center for a "multi-university sponsored training program for university personnel in the field of social gerontology." In the words of the editor, "The purpose was to prepare a handbook which would be an authoritative technical summary of the scientific and professional literature on the individual or behavioral aspects of human aging with supporting information from infra-human species. . . . It is primarily intended for use by graduate students and professional scientific specialists as a reference work." A total of 30 authors prepared chapters of the book.

There are four main divisions of the volume: "Foundations of research on aging"; "Biological bases of aging"; "Aging in environmental settings"; and "Psychological characteristics of aging." As must be true of any volume with multiple authors, there is a wide range in the degree of excellence of the various chapters.

The limitations of space will not permit detailed examination of individual

chapters, but comments will be made about selected areas. In the first section Birren outlines the general principles of research on aging, describing research in the field as "the systematic inquiry into the regularities in the structures and functions of living organisms as they move forward in time in the latter part of the life span." Actually, most of the observational data reported in the volume deal with comparison of differences between young and old organisms, and very few indicate progression changes during adult life. The chapter concludes with a research-evaluation outline which formalizes the critical issues in experimental design. Birren made a unique departure in choosing a pair of philosophers, Maria Reichenbach and Ruth Anna Mathers, to deal with the general scientific philosophy of time. Landahl develops mathematical models of survival curves, mortality, population growth, tissue regeneration, as well as psychological processes such as conditioning and other functions of the central nervous system.

The major emphasis of the section, "Biological bases of aging," is on the morphological, biochemical, and physiological changes in the nervous system. The biology of senescence in lower forms of animals is presented by Lansing, and the genetic aspects of aging in human beings are discussed by Kallman and Jarvik. Although no one can deny the importance of the nervous system in determining behavior, the influence of the internal environment on the functioning of the cells of the nervous system is not adequately stressed. Other organ systems, essential for maintaining the adequacy of the internal environment (heart, lungs, blood vessels, and kidney), are not considered. Although many organs of the body (including muscles, glands, and even the brain) can fail to function for varying periods of time without threat to our existence, even temporary failure of the heart, the respiratory system, or the kidneys can terminate life. Consequently, it is imperative that students of behavior be cognizant of some of the basic physiological changes that occur with advancing age in these vital organs. It seems that at least one chapter should have been devoted to this general topic.

The content of Part 3, "Aging in environmental settings," is difficult to appraise critically in terms of the rationale of the organization. Individual chapters deal with such diverse topics

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.

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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