An extremely useful feature of this book is the "Reaction index" in the back, where reactions are listed by compound under the individual metals involved. This serves as a useful cross reference to part 2, which is organized according to class of reagent. The regular index is somewhat brief, but the table of contents is detailed and extremely useful. Extensive literature references are given, with many as late as 1967, although the literature review does not pretend to be exhaustive. The text is well written and appears to be relatively free of errors. At times, however, it degenerates into a succession of one-sentence reviews which are generally uncritical in nature. A great many structural formulas are included which make for ready assimilation of the material by chemists not particularly familiar with transition-metal complexes. This book will serve as a valuable introduction to the substance of current research in the reactions of transition-metal compounds and as a useful source of references to specific reactions.

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Confronting Suicide

Essays in Self-Destruction. EDWIN S. SHNEIDMAN, Ed. Science House, New York, 1967. xx + 554 pp. $12.50.

It is estimated that at least one in every 100 Americans now living has tried to kill himself at one time or another. Suicide is a major public health problem in our country, ranking tenth among the causes of death of adults. It is condemned by the three great traditions of Roman law, English law, and Church law. Since a bent toward suicide exists in many of us, it may well be that the proscription mirrors an unconscious need to minimize its infectious aspects. Certainly it is one of those afflictions of man around which there has hung a curtain of fearful silence.

Essays in Self-Destruction is part of an encouraging trend in recent years to push aside that curtain. Its editor, one of the leading authorities on suicide, has assembled a worthy group of contributors, including not only psychologists, psychiatrists, and other clinicians but also philosophers, sociologists, and students of literature. The word "essays" in the title fairly characterizes the mode of contribution, which is primarily contemplative, expository, and discursive rather than empirical or experimental. The book does not pretend to offer a comprehensive or detailed sweep of the subject, but the essays are wide-ranging and encompass not only suicidal behavior per se but the broad realm of the self-destroying and self-negating facets of human conduct.

The book is organized in four major sections. Part 1, Literary and Philosophic Essays, contains, for example, papers on the suicidal equivalents in Melville, suicides in Shakespeare, the Buddhist view of suicide, and death as a motive of philosophic thought. Part 2 consists of Sociological and Ethnographic Essays, among them papers on patterns of orientation toward death in American culture, on the problems of certification of suicidal death, and on suicide in Japanese adolescents. Part 3, Psychological and Psychiatric Essays, comprises most of the praxis of the book. It includes a paper dealing with the clinical experiences that led Freud to his various theoretical conclusions concerning suicide, a clinical and epidemiological study of a group of self-poisoned persons, papers on the theory and therapy of suicide and on the relation between destructive urges and sexual deviation, and an early study of suicides among New York City policemen. Part 4, Taxonomic and Forensic Essays, is devoted mainly to the problems of classification and theory building and includes, *inter alia*, a paper exploring the possibility of infrahuman suicide and one calling attention to sleep as a possible avenue toward an understanding of suicidal behavior.

It is clear from these diverse contributions that we need to advance beyond the usual three-part taxonomy of threatened, attempted, and accomplished suicide. The fourfold categorization of death as natural, homicidal, accidental, and suicidal is also oversimplified. Why is shooting oneself to death "suicide," drinking oneself to death "natural," and provoking and accomplishing death by recklessness with an automobile "accidental"? Obviously to understand the dynamics of suicide requires a grasp of the individual's motivations and conceived role. In this regard the field is indebted to the editor and his colleagues Norman Farberow, Robert Litman, and Norman Tabachnick of the Los Angeles Suicide Prevention Center for developing the procedure of "psychological autopsy" to elucidate the *intention* of the dead person in relation to his own death.

Suicide represents a failure in social as well as individual growth. Society—family, school, church, industry—needs to examine its contributing role in self-chosen death. The *vis a tergo* for suicide cannot be completely explained within the framework of mental illness or intrapsychic loss of nerve. The prevention of self-annihilative tendencies will have to reckon not only with the individual's particular conflicts but also with the values of the culture in which he lives. We shall have to marshal social and philosophical resources along with those of medicine and psychology.

A major strength of the book is that in it suicide is perceived as part of the general realm of personality. This perspective provides us not only with increased insights for circumventing suicide but also with helpful clues to transforming "hollow men" into productive participants in society. The next steps forward in subjugating suicide will come when the stimulating questions and hypotheses emanating from these essays, clinical observations, and empirical beginnings are subjected to more systematic investigation. The Veterans Administration and the National Institute of Mental Health are to be commended for supporting many of the efforts reflected in the book.

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Success and Advantage

The Huxleys. RONALD W. CLARK. McGraw-Hill, New York, 1968. xvi + 398 pp., illus. $8.95.

The eminence of the Huxleys is widely appreciated, but probably few people are aware of how many competent members this family now has on the scene. Backed by a family tree in the appendix the author shows that the Huxley *élan* extends far beyond T. H., Julian, and Aldous (who dominate the book), including as it does one Nobel laureate and several promising beginners at the writing game, in which the Huxleys have so excelled.

It is not easy to create a sense of unity when retelling a family history that extends over a century and a half. Ronald Clark brings it off by what, for

the most part, seem legitimate devices: an emphasis on a family temperament, and on a similarity in problems attacked. Artistic considerations have no doubt caused some bias in the selection of subjects limned and anecdotes retold; but in a world overloaded with information-inputs some bias is defensible. As an introduction to further study of members of this remarkable family this book has no equal. It is thoroughly enjoyable to read.

To those of us who are—like many of the Huxleys themselves—interested in the heredity versus environment problem, the story of this family is fascinating, though inconclusive. The biographer understandably has come to see hereditary ability everywhere, though he recognizes that on a straight probability basis members of the present generation must inherit only about one-fourth to one-eighth of their genes from T. H. Huxley, depending on whether they are his grandchildren or his great-grandchildren. Selective mating has increased the proportion of hereditary excellence, no doubt: the mother of Aldous and Julian was an Arnold, for example. Even so, one must on a priori grounds grant considerable importance to environment, that is, to the microenvironment of a Huxley household permeated by traditions of independent thinking and witty conversation. There is much concern today about the necessity of enriching the lives of children raised in disadvantaged homes. The term "disadvantaged" is surely a relative one. Reading of the upbringing of the Huxleys one cannot help feeling that almost all children are raised in disadvantaged homes. To makers of Utopias (a truly Huxleyan occupation) this fact poses problems with no easy solutions.

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Biological Membranes

The Movement of Molecules across Cell Membranes. W. D. STEIN. Academic Press, New York, 1967. xviii + 369 pp., illus. $17.50. Theoretical and Experimental Biology, vol. 6.

In his foreword to the first edition of *The Permeability of Natural Membranes* by H. Davson and J. F. Danielli, E. Newton Harvey wrote, "It can truly be said of living cells, that by their membranes ye shall know them." A quarter of a century has elapsed since these words were written, and developments of this period have added validity to Harvey's prophetic insight. In the past decade numerous monographs, reviews, and symposia dealing with various aspects of membrane structure and function have appeared. However, there are relatively few published works that provide a comprehensive, sophisticated, and up-to-date account of the molecular aspects of membrane structure and function that is suitable as an introductory text at the graduate and postgraduate levels. Wilfred Stein's monograph goes a long way toward filling this need.

The central theme of the monograph is an analysis of the various physical and chemical processes that appear to be involved in the transport of molecules across biological membranes. Although data and examples are drawn from studies on a wide variety of cells and tissues, the emphasis is on the interaction between molecules and membranes rather than on the functional role of transport processes. The development of the central theme is logical and well organized, beginning with a brief presentation of current concepts of membrane composition and structure and concluding with a critical, albeit speculative, examination of several model systems for mediated transport processes. The inadequacies of a simple, passive barrier and the need to invoke more complex, carrier-like mechanisms and coupling with energy-yielding metabolic processes are expounded clearly and logically.

The highlights of this monograph are in those areas that have been the focus of much of Stein's research effort. These include: a critical analysis of the mechanism of diffusion of nonelectrolytes across biological membranes; a detailed kinetic treatment of carrier-mediated facilitated diffusion; and a comprehensive survey of the molecular properties of transport mechanisms that includes a discussion of the recent attempts to isolate components of carrier systems. The chapter on the molecular basis of diffusion across cell membranes is perhaps the most intriguing from the point of view of the research worker in this field. In this chapter, Stein extends Danielli's "potential energy barrier" model by incorporating the formal contributions from the theory of absolute reaction rates. By a process of data-fitting Stein arrives at a simple set of rules that adequately accounts for the permeability of several plant cells to a wide variety of nonelectrolytes. The alternative model, namely, that many small nonelectrolytes cross biological membranes by movement through aqueous channels or pores, is subjected to a critical analysis from which the author concludes that "No single value of the radius of the pore can adequately account for the data on the nonspecific systems . . . ." Since the data used by Stein to test the pore hypothesis are admittedly qualitative estimates of the true permeabilities, the rejection of the pore hypothesis is, in the opinion of this reviewer, at best premature. Nevertheless, Stein's provocative analysis brings the issue into sharp focus and points to the need for additional data that would permit an unequivocal evaluation of these alternative views.

Unfortunately, this monograph contains several shortcomings and errors that detract from its overall high quality and could prove to be sources of confusion for the student. For example, in section 2.8, the interpretations of deviations from the predictions of the Ussing flux-ratio equation are erroneous and the formulation of Kedem's general flow equation (equations 2.33 and 6.1) is formally incorrect. Further, in a chapter dealing with the interaction between sodium and the transport of sugars and amino acids, there are serious shortcomings related to the kinetic model for "co-transport" proposed by Stein. Stein's model makes no provision for the carrier-mediated transport of sugars or amino acids in the absence of sodium. The predictions of this model are, contrary to what is stated by the author, inconsistent with some of the "supporting data" (fig. 5.9) referred to. Finally, it is disappointing that the subject of ion transport across membranes, particularly excitable membranes, is not afforded the same incisive consideration given the transport of nonelectrolytes. It is hoped that these and other shortcomings will be remedied in future editions.

All in all, Stein's monograph is a well-written, remarkably current and provocative analysis of several aspects of membrane transport. It is not solely a factual account but is, in addition, a critical review containing many of the author's personal interpretations and speculations, which are worthy of serious consideration by students and researchers alike.

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