collation of studies will be of considerable help to researchers in this field as well as to investigators in other areas of biological research who may be unfamiliar with the potential influence of prenatal and early experiential variables. According to the editor of the international series of monographs in which the book is included, the technical nature of the subject does not make for easy reading. It is, in fact, a difficult book to read—unnecessarily so, because many of the methodological details provided are irrelevant to the author's critical evaluation.

Although complete and critical, the review of the literature is not an especially constructive one. It will be left to the reader, for example, to distinguish between empirically founded criticisms and the author's unsubstantiated conjectures about sources of variability which tend to cast suspicion on what may be perfectly valid data. The author frequently adopts a negative rather than a positive phraseology, and he uses his own substantive interests in formulating criteria against which to evaluate the methodologies of other investigators. A more serious fallacy is his use of data from a study in which variables have been confounded (that is, one from which no definitive conclusions can be drawn) in order to criticize the procedures used by some other investigator.

Joffe does make a number of cogent remarks concerning the procedural conditions necessary in order to attribute behavioral effects to events occurring during fetal life. The uncritical acceptance of all his arguments, however, would foster a uniformity in design and orientation which, in this writer's view, would stifle creative research in this field. By being more selective and less exhaustive the author could have accomplished his aims in a more succinct, highly organized, and tightly reasoned review article. This would have been far more difficult for the author but far more rewarding for the reader. Although the serious student will find it helpful and convenient to begin with a careful reading of this book, he will find it essential to evaluate the literature in terms of the original authors' intentions and his own research interests.

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Interpersonal Processes

Interaction Concepts of Personality. ROBERT C. CARSON. Aldine, Chicago, 1969. xiv + 306 pp., illus. $7.50. Perspectives in Personality.

Among the little-understood aspects of human behavior perhaps none is so fascinating and complex as the most common of all: the way we relate to, influence, and are influenced by our next-door neighbor, our boss, our wife. The deceptiveness of our feeling of familiarity with these everyday situations is revealed when communication fails and we are at a loss for ways to reestablish it. And where pathological behavior is involved, our ignorance of interaction effects is dramatically exposed. This book constitutes a good stride forward in the study of this formidable problem.

Too often normal and pathological behavior are studied separately, as if it were possible to describe deviance without specifying what normality is. Carson, however, first analyzes normal interpersonal relations and then proceeds to apply the results to abnormal behavior. The picture of social interaction he obtains stems from the successful integration of two lines of research: structural analysis of interpersonal behavior and exchange theory. The first deals with the essential elements of our behavior toward another person. Exchange theory relates what A does toward B to what B does toward A.

In classifying interpersonal behavior, language is not particularly helpful. In the English language there are thousands of interpersonal verbs; and even so, as Carson notes, certain kinds of behavior are underrepresented. Yet an impressive array of evidence converges on the conclusion that, behind the bewildering variety of interpersonal behavior, there is a simple order. Through a progression of findings from factor analysis to order and facet analysis, we are shown that a good deal of interpersonal behavior consists of giving and taking away two basic resources: love (affect, warmth) and status (prestige, esteem). Each type of interpersonal behavior is not only a communication regarding a particular resource, but also a bid for a specific class of response: dominance invites submission; hostility invites hostility. Interaction balance is achieved when proaction and reaction are alike in love but different in status. This formulation of interpersonal balance provides a natural bridge to exchange theory, and from that to the relation between unbalanced states and psychopathology.

The interaction outcome can be represented by a payoff matrix showing the gains and losses of each participant for every possible pair of behavior types in proaction and reaction. Ideally such a matrix would tend toward symmetry. Some conditions modifying this tendency are discussed by the author. One is the generalized interpersonal style of each actor, that is, his preference for certain types of behavior regardless of the particular dyadic situation, a preference probably rooted in early childhood experiences. A second modifying factor is the relative power of one actor over the other. A third consists of the social norms regulating role relationships. These factors constitute constraints on the possible outcomes while affording considerable opportunity for maneuvers to increase one's payoff.

Mutual adjustment of payoffs rests on the assumption that each partner is likely to modify his goals in the direction demanded by the other. It may, however, happen that one tricks the other to move in a certain direction and then reveals a sudden change in his aims. A classical case is constituted by the lady who entices a suitor to propose intimate relations and then expresses indignation at the proposal. These games are entertaining to read about, as the popularity of Berne's book describing several of them attests. They are, of course, not nearly so amusing for the victim. Carson analyzes several of these situations showing how they deviate from less interesting but more satisfying interpersonal relations. As the author points out, the "victim" of the maladjusted behavior may have his own difficulties in coping with a change toward normality: the husband of a frigid wife, for example, became impotent when she was cured. The analysis of these borderline cases leads to a discussion of personality disorders. For Carson they are basically problems in social behavior, often due to the inability of the individual to differentiate among situations and roles and to choose the behavior appropriate to each one of them. By reducing the range of his behavioral responses the disturbed individual is able to avoid the ones which are incongruent with his self-image. Anxiety, in turn, arises from the perception of incongruence between

the interpersonal situation and the self-image. Thus rigidity of behavior becomes a technique for warding off anxiety. Inappropriate behavior often brings punitive response. If this response is consistent with the subject's self-image, it will reinforce his behaving in that way. In consequence, behavior disorders of the hostile-submissive variety are often considered chronic, difficult to cure. From Carson's analysis, however, it is apparent that a change in reinforcement contingencies could break the pattern.

The beginning of maladaptive responses is sometimes traced to childhood in a disturbed family, where the subject was exposed to reinforcement contingencies which differ from those of the culture at large. More generally some personality disorders may result from adaptation to a social system which deviates from society. Prisons and some mental hospitals may constitute such systems. If so, they will tend to increase the inability of the inmate or patient to interact effectively outside, a cruel paradox for supposedly rehabilitating institutions. In contrast, psychotherapy, discussed in the last chapter of the book, is seen as an interpersonal relationship designed to induce adjustive changes in the patient's interpersonal behavior.

Far from being parochial, this book brings together notions and findings from a variety of approaches in social and clinical psychology, sociology, and psychiatry. The attempt to integrate them in a consistent framework is brilliant, original, and attractive. The style is clear and plain, remarkably free from the professional jargon which often only masks our ignorance. The abundance of examples, some amusing, some tragic, and the liberal use of titles and subtitles enable the reader to proceed at a brisk pace.

The plan of the book is straightforward, yet it would have been helpful to provide a more detailed overview of it in the introduction. Likewise this reviewer would have appreciated a summary at the end of every chapter and a final chapter of conclusions. The second chapter, on Sullivan's theory, although quite good in itself, could have been integrated into the treatment of pathology in the latter part of the book, if not omitted altogether. The discussion of social learning, in the third chapter, is too general and sounds shallow; since the payoff matrix does lend itself to interpretation as a learning phenomenon, it would have been profitable to deal with social learning in the specific interactional framework developed in subsequent chapters. The matrix presentation of interpersonal patterns becomes rarer and then ceases altogether as the discussion becomes more concerned with deviant behavior. Stricter faithfulness to formal theory in dealing with pathology would have enhanced the scientific significance of this volume, which is nevertheless quite remarkable even in its present form.

In an era plagued by fragmentation and specialization in the behavioral sciences this book aiming at integration should be warmly welcomed.

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Membrane Transport in Plants

Transport and Distributon of Matter in Cells of Higher Plants. An international symposium, Schloss Reinhardsbrunn, G.D.R., Oct. 1968. KURT MOTHES, EBERHARD MÜLLER, AXEL NELLES, and DIETER NEUMANN, Eds. Akademie-Verlag, Berlin, 1968. vi + 218 pp., illus. Paper, 24 M. Abhandlungen der Deutschen Akademie der Wissenschaften zu Berlin, Klasse für Medizin, 1968, No. 4a.

The conference of which this book is the proceedings was somewhat unusual in that it was devoted largely to membrane transport problems in plant cells and tissues; the organizers of the frequent conferences on the problems of membrane transport barely recognize the existence of plants. Perhaps this neglect is justified in some respects, for perusal of the proceedings of this symposium demonstrates that in general plant physiologists lag far behind animal physiologists in this field. In the so-called developed countries the biological talent, manpower, and money go into the medical and animal sciences; we are all afraid of illness and death, not of malnutrition and starvation. And since plant cells are manifestly more complex, the relatively primitive nature of this field of plant physiology is not surprising.

The 22 contributions in this volume, all but one of which are in English, give a fairly accurate picture of the state of the subject today. In the light of what I said in the first paragraph, some of the papers are excellent; for instance Anderson on water permeabilities of cells of corn roots, Schnepf on transport by vesicles, Müller on regulation of transport, Lüttge and Cram on compartmentation analysis, Jeschke on the connection between electron transport and ion transport, Raven and MacRobbie on giant algal cells, Higinbotham on electropotentials and ion transport in higher plant cells. All these papers show how difficult it is to work with plants; the cells have thick layers of concentrated weak-acid ion exchangers—cell walls—around them and have only thin layers of cytoplasm packed with organelles; they are not well organized into tissues, and long-distance transport to and from tissues is not well understood.

Some of the papers are not very good and illustrate the backwardness of this area of plant physiology rather than the difficulties of the problems themselves. They seem to me to demonstrate, among other things, the self-isolation of many botanists, their poor training in the physical sciences, and their complete lack of knowledge of the work done by animal physiologists in membrane transport.

The volume, I'm afraid, is not well edited. The papers must have been printed as they were received, and in some the English is very poor indeed. I found the volume of value, however, partly because it is an accurate statement of the subject as it is—in its best and worst aspects—and partly because it gave me many ideas as to where progress can and should be made.

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Comparative Pharmacology

Use of Nonhuman Primates in Drug Evaluation. A symposium, San Antonio, Texas, May 1967. HAROLD VAGTBORG, Ed. Published for the Southwest Foundation for Research and Education by the University of Texas Press, Austin, 1969. xii + 644 pp., illus. $15.

Collections of symposium papers are all too often verbose "overviews" of the subject; this volume is a distinct departure from the generalized, dataless, philosophical analysis. Vagtborg has compiled—evidently from tapes as well as written submissions—a record of a conference the success of which rests