withdraw from the relationship. More important, they proposed the use of "outcome matrices" (derived from game theory) for the study of social psychological processes.

The normative approach (used by game theorists) assumes that the only incentives operating in the bargaining situation are those based on the payoff matrix. Other motivational processes, such as guilt, benevolence, and the sense of justice and equity, are assumed to be incorporated in the payoff values. In direct contrast to that approach, the emphasis of this book is on exactly those motives which game theorists "sweep away" into the payoff matrix. In describing one of their own studies, for example, the authors postulate that the mere presence of an audience motivates the bargainer to seek positive (and avoid negative) evaluations from the audience. This hypothesis is based on the finding that a bargainer who has been publicly humiliated is more likely to save face by retaliating against the other bargainer than to maximize tangible outcomes.

In the preface, the authors note that there have been more than 1000 articles and books devoted to their subject since 1960 alone. Hence, an integrated review of theory and research in bargaining is certainly appropriate. To that end, this work gives a selective review of studies based primarily in the "social psychology laboratory" and covers over 500 studies reported in over 40 journals through the period 1960 through 1974. Additional books and articles are included in a comprehensive bibliography.

The first three chapters introduce the reader to a variety of bargaining situations, provide a theoretical perspective for the remaining chapters, and describe the major research paradigms that have been used in the study of bargaining. Bargaining is defined (in keeping with dictionary definitions) as "the process whereby two or more parties attempt to settle what each shall give and take, or perform and receive, in a transaction between them" (p. 2). Though the terms "bargaining" and "negotiation" are used in different types of contexts, the authors treat them as interchangeable and use "bargaining" to refer to both types of transactions. This is a very broad definition, and as a consequence of adopting it the authors include a variety of research paradigms under the category of "bargaining": the two-person prisoner's dilemma game, the Siegel-Fouraker "bilateral monopoly" paradigm, the Deutsch-Krauss "trucking" game, and the Vinacke-Arkoff coalition game. Though definitions are arbitrary, many investigators (including the reviewer) would prefer to restrict the term to a situation in which offers and counteroffers are made prior to any transaction. This would be consistent with the distinction made in game theory between cooperative and noncooperative games. In the former case, communication and side payments are allowed, whereas in the latter they are not.

The remaining chapters are devoted to a review of empirical studies classified according to the following scheme: (i) effects of the structural context of bargaining (for example, restricted versus unrestricted communication and availability of information, availability of threats, types of outcomes and incentives, the number of parties involved, third parties [mediators]); (ii) effects of the behavioral dispositions of the bargainers (personality and ability); (iii) effects of interdependence of the bargainers (power imbalance and motivational orientation); and (iv) effects of tactics and strategies. This classification scheme is quite exhaustive, and considering the wide variety of studies reviewed (and the emphasis on nontangible incentives), it is not unreasonable. Yet the categories are not mutually exclusive—many studies suggest that there are likely to be complex interactions among the effects of many independent variables—and there seems to be no cohesive theme connecting the various chapters. What this suggests is that a taxonomy of bargaining situations is sorely needed.

The need for a taxonomy, moreover, points to one of the major problems in current bargaining research: the lack of a general theoretical model to integrate and organize the results of a large number of studies. This makes it extremely difficult to review the bargaining literature in a coherent and systematic fashion. There are, however, several theories the authors could have used to integrate at least part of the literature—for example, Siegel and Fouraker's "Level of Aspiration" model of bargaining, Osgood's GRIT hypothesis for the reduction of tensions, and studies that attempt to test the two apparently opposing theories. There are, in addition, many studies that are directed toward the effects of the reward structure (payoff values) of the situation, and the development of theoretical models based on tangible outcomes. In this connection, the emphasis of the book on nontangible motivational processes, to the exclusion of tangible incentives in the bargaining situation, is probably its main weakness. Rubin and Brown's review is likely to give the false impression that social psychologists are not concerned with the effects of reward structure. Rewards are one of the main reasons for bargaining in the first place, and, subtle as the distinction may be, it is important to distinguish between research directed toward the major variables that affect the process and outcomes of bargaining and research that uses a bargaining paradigm to study other social psychological phenomena (personality, sex differences, and so on).

Despite its limitations this is a highly commendable effort. It is the most comprehensive review available of the empirical literature on "bargaining" and deserves serious attention from social scientists interested in the social psychological factors underlying the process and outcomes of bargaining.

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Thin Surfaces

Monolayers. Papers from a symposium, Atlantic City, N.J., Sept. 1974. E. D. GODDARD, Ed. American Chemical Society, Washington, D.C., 1975. xii, 372 pp., illus. $23.95. Advances in Chemistry Series, 144.

The book under review is a collection of papers presented at a memorial symposium for N. K. Adam. Reminiscences of their association with Adam by James F. Danielli and by M. C. Phillips give the book a personal touch and some historical perspective: "He took up the study of monolayers following the remarkable contribution made by Irving Langmuir. The field at that time needed a first class experimentalist who could work with rigour and dispassionate exactness." Through the years, theory and experiment in the field have become more and more sophisticated, and a great deal of impetus has come from the students of the structure and properties of biological membranes.

A symposium proceedings usually provides an instant picture of the state of the art. Considering the constraints set by symposium logistics, the 25 papers on work originating in six countries present a rather rounded picture, although one does miss some authors and some aspects, for example, transport through monolayers. Appropriately, some 40 percent of the papers are on monolayers of biological interest, those on lipids, proteins, glycosides, and enzymes. On the theoretical side, there are papers presenting refinements in the measurement and analysis of thermodynamic properties of monolayers, for example, one on entropies of compression and one on equations of state. There are also papers on refinements in the analysis of electrical double layer properties of monolayers, for example, a discussion of the discreteness of charge effects and a pa-

per on the interpretation of electrical potential measurements across the monolayer.

Coverage of novel experimental techniques includes a discussion of a dynamic technique for obtaining surface-elasticity-versus-surface-pressure curves, which can be transformed into accurate pressure-area curves for soluble monolayers. Three papers cover spin labeling for probing molecular motion in monomolecular arrays, and one paper presents electron microscopic observations of transferred films. Two studies of monolayers of macromolecules are presented, and one of these has provided the picture on the cover of the book.

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Accelerated Ion Beams

New Uses of Ion Accelerators. JAMES F. ZIEGLER, Ed. Plenum, New York, 1975. xiv, 482 pp., illus. $28.

The casual reader may be a little surprised that there are enough "new uses" of ion accelerators to fill a book, since ion accelerators have been around such a long time. Scientists familiar with some of the recent applications of accelerated ion beams, on the other hand, may marvel at an attempt to address this rapidly expanding field in only one book. At the present time there are at least four continuing international conferences and one series of Gordon Conferences devoted just to the research activities in these areas; many established disciplines are including symposiums on ion beams in their own meetings because of their relevance in their fields; roughly a score of books, conference proceedings, and review articles have been published on the subject in recent years; and ion implantation, sputtering, and ion bombardment have achieved such acceptance in industrial processing that most low energy accelerators are now sold to industry. Obviously, in the face of such odds, one must concede from the outset that thorough coverage in a single volume is not possible and look instead to the quality of selection.

Considering the magnitude of the task, *New Uses of Ion Accelerators* does a creditable job of illustrating the remarkable versatility of accelerated ion beams as tools for altering materials properties and for fundamental analysis. The book is a collaborative effort with contributions from 13 authors, so it inevitably lacks continuity. Concomitantly, it is the diversity of expertise that is largely responsible for the success of the book. Almost without exception, the authors have treated their various specialties with the cognizance that their readers are likely to come from a wide range of disciplines. The subjects covered are ion-induced x-rays in gases and solids, materials analysis by nuclear backscattering and nuclear reactions, lattice location of impurity atoms in metals and semiconductors utilizing the channeling technique, and ion implantation in metals and superconductors (which is misprinted as "semiconductors" in the book).

The most frequent criticism of recent articles treating materials analysis by nuclear backscattering and nuclear reactions has been that these are among the oldest and best understood effects in physics and efforts in this direction are a little like rediscovering the wheel. In defense of this book's sections on backscattering and nuclear reactions, it may be said that the authors have imparted an orderliness and convenience to the utilization of these effects for materials analysis that is elegant in its completeness. All the pertinent physical considerations, pitfalls, and sensitivities of the technique are brought into focus in two concise chapters. This treatment makes utilization painless for either the beginner or the veteran. The three chapters on ion-induced x-rays are excellent. The chapter on lattice locations of impurities in metals and semiconductors is probably the clearest review of this field to date. The two chapters on ion implantation in metals and superconductors are good, complementary additions to this huge field because they provide coverage of areas not emphasized in previous books.

The main thing that recommends this book is that it is timely; it deals with a type of research that is on the rise. In a sense this is a tribute to the years of basic research and development in low energy nuclear physics. It is the low energy accelerators, ion sources, electronics, improved particle and x-ray detectors, and high vacuum technology pioneered in nuclear physics that make the uses discussed above possible. The most obvious impact of these advances so far has been on the field of ion implantation. Early basic investigations in radiation damage and channeling provided the impetus for ion implantation investigations, which in turn had a revolutionary effect on device fabrication in the semiconductor industry. Similarly, many of the applications of ion beams discussed in this book are certain to expand and some to spawn other fields.

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