

an urgently needed stable natural higher classification for the group. Her assessment of these problems is certainly valid, but perhaps a stronger argument should be developed, on behalf of ecologists, geologists, and biochemists, for a stable, practical guide for identification of sponge genera. Bergquist's optimistic outlook for resolution of taxonomic confusion in the near future cannot be shared by this reviewer.

Though the book presents a very valuable synthesis of recent research results and thus provides a much-needed entry to the literature, it should not be expected to provide species or generic identifications. The reader is directed to the *Traité de Zoologie* (1973) for coverage of sponge distributions and their relationships to physical and chemical parameters.

The organization of the text and the quality of illustrations are excellent, but most of the figures lack magnification scales and many lack identification of the species shown. The placement of the illustrations with respect to references to them in the text is awkward, with page references included haphazardly.

The book is a necessity for all workers interested in sponge research and will be an excellent reference for general invertebrate zoology courses and a definitive textbook for advanced courses. Bergquist has pinpointed a number of persistent research problems which, through her stimulation, may now be addressed.

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Mesonic Nuclear Physics

Mesons in Nuclei. MANNQUE RHO and DENYS WILKINSON, Eds. North-Holland, Amsterdam, 1979 (U.S. distributor, Elsevier, New York). In three volumes, illus. Vol. 1. xviii pp. + pp. 1-434 + index. \$73.25. Vol. 2. x pp. + pp. 435-788 + index. \$66.75. Vol. 3. x pp. + pp. 789-1156 + index. \$66.75. The set, \$186.25.

The simple description of nuclei as ensembles of neutrons and protons is adequate to characterize most nuclear properties. This collection of papers aims at the deeper level of understanding achieved by studying the mesonic substructure of the nucleons. When a large amount of momentum or energy is transferred to the nucleus, or when the nuclear medium is compressed to a much

higher density, the mesonic degrees of freedom become too important to be ignored. Even static properties of nuclei, such as magnetic moments, are significantly affected by the mesons.

The first paper, by Blin-Stoyle, is a primer on pi-nucleon interactions that presents the basic interactions and perturbation formulas in sufficient detail to make the whole collection of papers self-contained. Neophytes should also find helpful the following two papers, by Kim and Primakoff and by Delorme, which discuss the so-called elementary particle formalism. This formalism emphasizes the matrix elements of relativistic operators, whereas the conventional formalism utilizes the ordinary wave functions.

A basic goal of meson theory is to derive the force between nucleons; this is the subject of the remainder of the first volume. Vinh Mau's paper documents the substantial progress made in the last decade in understanding the mesonic interaction between two nucleons. The two-meson exchange can be calculated by making use of the smoothness of the scattering functions, once the scattering between the two mesons is known. Unfortunately, the exposition leaves out essential details. The reader who wishes to recalculate the interaction, or to apply it to some other physical situation, will need to refer to decades-old preprints and unpublished reports. Other aspects of the interaction discussed in the first volume include many-body forces, in a paper by McKellar and Rajaraman, and the charge dependence of the force, in a paper by Henley and Miller.

The subject of the second volume is the effect of the mesons on the electromagnetic and weak interaction properties of nuclei. It has been known for a long time that the presence of charged mesons increases dipole absorption strength by about 50 percent over the strength for independent nucleons. These renormalization effects are usually calculated in a Fermi gas model, but a more detailed treatment was necessary to reveal the surprisingly large effects in the deuteron. There has also been progress in the accumulation of systematic data on renormalization effects, aided by accurate shell model calculations. These are among the topics reviewed in this volume.

The last volume considers the interesting possibility that phase transitions occur in nuclear matter. The chiral Lagrangian, which is thoroughly described in several papers, leads to a high-density phase transition under certain assumptions. As proposed in a paper by Lee and

Wick, nuclei could be compressed to this new state, releasing energy in the process. However, it appears difficult to reconcile this hypothetical phase transition with the properties of ordinary nuclei. In particular, the smallness of many-body forces may contradict the chiral assumptions. This and other uncertainties are discussed in Nyman's paper. A milder phase transition, pion condensation, is predicted more firmly by meson theory. Migdal and other leading proponents of pion condensation contribute papers on the subject. The phase transition might occur at densities reached in the centers of neutron stars or in nuclear collisions at high energy. However, only a small energy change is involved with pion condensation, and its effects might be hard to observe.

Possibly, an even deeper understanding of nuclei might be achieved by considering the quark constituents of nucleons and mesons. Until that happens, this collection of papers, with its encyclopedic coverage of mesonic nuclear physics, should replace many years of journal articles on library shelves. The only major omission is a paper on the phenomenological meson field theory of nuclei, but this simple and successful model is referenced in several places.

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Density and Human Behavior

Residential Crowding in Urban America. MARK BALDASSARE. University of California Press, Berkeley, 1979. xiv, 250 pp. \$12.95.

Concern with the relationship of human crowding and behavior has stimulated an immense number of studies in the past few years. Serious interest in the subject was precipitated in the early 1960's by the work of John Calhoun, who found that social patterns among rats were significantly affected by densities within caged pens. Various types of "aberrant" behavior such as homosexuality, aggression, lack of maternal care, and physical illness were more prevalent in the high-density situations. Implications of the studies for humans were drawn, and social scientists quickly discovered a new area for research.

Calhoun's studies had a certain inherent credibility in the eyes of many who had been preaching the horrors of rapid urbanization and population growth in

contemporary societies. This "demographic" view clearly contrasted with traditional social science explanations of social problems which were rooted in such factors as social inequality and the organization of the economic system.

By now, a large body of studies of crowding is available, characterized by widely varying approaches, findings, and quality of research design. Some studies have employed the small-group laboratory experiments of the psychologists; others have relied on field observations, often cross-cultural; still others have manipulated density and social characteristics of urban spatial units such as census tracts; and a relatively small number have made use of survey research, relating characteristics of the respondent's living environment to various reported attitudes and behaviors.

My overall impression of this research is not favorable. The studies with a strong data base have almost always found weak or trivial relationships between crowding and human behavior. The more impressionistic studies have sometimes produced more provocative results, but the strength of relationships or whether the results could be replicated has frequently been unclear.

Hypotheses have been generated at a high rate, but they rarely add up to any clear theories or established body of findings. At best, it seems, Calhoun's findings on rats either are not applicable to humans or are applicable only under very unusual social conditions. The main argument against such extrapolations seems to be that humans have social organizations that permit them to control their environments so the potential consequences of crowding are not experienced.

Baldassare's study, starting from that sociological perspective, uses survey research to assess the effects of crowding on human behavior. He reanalyzes two national surveys that were conducted for other purposes and thus do not always provide data on the specific variables that bear most directly on the matters he is concerned with. From these surveys, he is able to relate crowding, housing, and population characteristics of census tracts and households to individual responses on the surveys. Baldassare focuses on the consequences of two types of crowding: persons per room, and persons per urban residential area. He analyzes discontents with housing and housing environment, family relationships, neighborhood characteristics, and social-friendship patterns. As Baldassare

points out, his approach to the density issue has been infrequently taken, although such "secondary analysis" of survey data seems to be a developing specialty within sociology.

Baldassare's study works at what might be called the "middle level" of sociological research. No comprehensive theory of urban crowding is presented, but rather a large number of nontrivial hypotheses are formulated to organize the analysis of the data. These hypotheses are carefully and logically formulated and are generally related to previous research and theorizing by social scientists, particularly those concerned with urban phenomena.

Baldassare's book will probably have the most value for those who have not explored the literature in this area, for he has a nice summary of some of the major approaches to the subject. And his analysis and findings will be educational, and perhaps purgatorial, to those social practitioners, such as planners, architects, and environmentalists, who believe that crowding patterns are fundamental correlates of human behavior.

As has been the case with most previous work in this area, the relationships Baldassare finds tend to be weak at best. He frequently uses multiple indicators of the same social situation and often finds different results with similar indicators. Thus, some indicators of unsatisfactory marital relationships are found to be related to crowding within the household and others are not. Some measures of satisfaction with housing and its immediate environment are related to crowding and others are not. Baldassare admits puzzlement at some of these findings but does not satisfactorily account for them.

Some of the most interesting and useful analysis focuses on the relationship of areal density to neighborhood characteristics and social relationships. Baldassare finds that high-density neighborhoods in cities receive fairly negative evaluations from residents in terms of services, institutions, crime, and congestion. High-density neighborhoods seemed to have only a few redeeming qualities, such as public transportation and fire protection. Baldassare also continues and elaborates his previously published research on the relationship between neighborhood density and social exchange. As in his previous work, he finds that the number and quality of friendships do not differ much between high- and low-density neighborhoods. But high-density neighborhoods seem to be characterized by specialized withdrawal, in which a more generalized

sense of suspicion and impersonality exists regarding relationships that are not close.

While the findings about neighborhood qualities and social patterns are interesting, some caution is warranted in interpretation. Urban densities are correlated with distance from the center of most metropolitan areas, and complaints about neighborhoods may primarily be complaints about living near downtown areas. The major component of overall population per area in cities is the number of dwellings per area, or, to be more direct, the propensity for single- versus multiple-unit housing. The superficiality of personal relationships in areas of multiple dwellings has been previously documented. It may stem as much from the sociology of the housing market as from densities per se. Persons tend to view multiple-unit housing as transitory in their lives, as opposed to single-unit housing, in which they invest more, both financially and otherwise. Baldassare does control in his analysis for whether the respondent's housing unit is owned or rented, but this does not necessarily indicate the type of structural unit.

To some extent, the generally weak relationships found in Baldassare's study, like those in other such research, should not be surprising. The nature of survey data often forces researchers to investigate the cross-sectional effects of density on social behavior, once other social variables are controlled. But the real world is probably much more complicated. Approximately 20 percent of urbanites move each year, and about 50 percent move in five years. Many persons do not live long enough in an area to feel the consequences of density, or lack of it. As noted above, many persons have low expectations for their neighborhoods and homes, seeing them as just places to pass through on the way to some other event in their lives, and their lack of involvement probably reduces the consequences for their lives. While Baldassare is cognizant of some of these problems, a more direct development of ideas about the sociology of housing and neighborhoods would have been helpful for understanding the data.

Baldassare's evaluation of his results is modest. He recognizes the problems of secondary analysis, particularly the lack of information on all the relevant variables. His general approach at the end of each section is to suggest imaginatively what more we need to know and how we might go about finding it out.

The author, as do many others working in the field, views research on the so-

cial consequences of human density as being in a formative stage and perceives the greatest findings as yet to come. My view, probably somewhat idiosyncratic, is less sanguine. I see little future for the study of the consequences of density per se. I see a strong future for the sociology of community living, but I think the subject will have to be conceptualized and studied under fairly broad sociological frameworks in which density variables are conceived as components rather than being dominating interests.

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