quate, but not altogether satisfactory, manner.

The book is profusely illustrated, almost half of the total page area being devoted to photographs and diagrams. The quality of reproduction is variable. Some of the electron micrographs are quite good, though they lack the crispness of the original publications. A few of the electron micrographs and a larger proportion of the light micrographs appear to have been originally of mediocre quality and are nearly unreadable in reproduction. The problem with light-microscope preparations, as opposed to electron micrographs, is that the material often relies for contrast on differential staining, and this contrast does not carry over well into black-and-white reproduction. Some of the most effective illustrations in this volume are diagrams drawn from electron micrographs. Perhaps more extensive use of the excellent drawings and engravings of light-microscope observations in the older literature might replace the inferior micrographs without increasing the cost of publication. The diagrams produced specifically for the book are generally clear and concise, though a bit pedestrian in execution.

The text quite reasonably uses evolution as the general organizing framework and follows this scheme in a manner consistent with the purposes of the book. Each chapter begins with a general description of the function of the tissue or organ treated and then moves on to more specific details of form and function in different vertebrate groups. Occasionally the exposition seems a bit anecdotal, and more careful editing might have improved the flow of the text and corrected a tendency to bring up a topic, drop it arbitrarily, and then resume the discussion several paragraphs later. It might also be useful to shift the emphasis even more to comparative aspects, spending more time on the lower vertebrates and less on mammalian systems, which have been covered extensively in other texts. Most of the discussion of cellular biochemistry and cytology in the first two chapters is not as well organized as it might be and by misplacing the emphasis presents a rather distorted picture. These chapters would be more valuable if the discussion of the problems of tissue preparation and observation were expanded, and the "molecular biology" omitted.

General references at the end of each chapter refer to literature in books and journals that are likely to be available to most students. It would be helpful to have specific bibliographic references for many of the intriguing statements in the text.

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Water

The Structure and Properties of Water. D. EISENBERG and W. KAUZMANN. Oxford University Press, New York, 1969. xiv + 300 pp., illus. Cloth, $10; paper, $4.50.

Eisenberg and Kauzmann's *The Structure and Properties of Water* is an excellent monograph serving an important need. The aim and scope of the book are outlined in the preface: "Our purpose . . . is to summarize from the voluminous literature on water, some of the most important and reliable data . . . and to present the theories that are most effective in correlating these data. We have made no attempt to produce a compendium of data, . . . but we have tried instead to relate the properties of water to its structure." Furthermore, "Though some data on both electrolytes and non-electrolyte solutions are undoubtedly helpful in understanding the structure of water, we have not ventured into the vast literature concerning aqueous solutions."

The language is clear, concise, and stimulating, if not eloquent. The presentation is complemented by an excellent compilation of tables of pertinent information, as well as by good illustrations. In addition, the book contains excellent subject and author indices and an impressive list of references. It is remarkable, however, that no reference is made to Gmelin's *Handbuch der Anorganische Chemie,* for this multivolume treatise presents (in the sections on oxygen) what is probably the most comprehensive summary available of the known properties of water.

The first four chapters of Eisenberg and Kauzmann's book—"The water molecule," "The real vapour," "Ice," and "Properties of liquid water"—present with clarity the known properties one must consider in seeking an understanding of the structure of water. Some introductory remarks are made regarding the general physical chemistry underlying the discussion in each section, a feature that will undoubtedly prove useful to those who are not trained in physical chemistry.

The last sections of the book, on the structure of water and the various models that have been proposed, are somewhat anticlimactic. In a monograph entitled *The Structure and Properties of Water* a discussion of structural models might be expected to be the most important contribution, yet these portions constitute less than 10 percent of the book. The disappointment one feels is, of course, not to be blamed on the authors: understanding of the structure of water is at present very limited. Because of this the authors have chosen merely to enumerate and to discuss rather briefly some of the more interesting current models and the theories underlying them. The analysis offered is neither profound nor critical. Although the authors are not committed to a particular model, they do imply a slight preference for a suitably modified continuum model—an inclination which probably by now represents a minority opinion. Apparently, the leaning toward the continuum model is based almost exclusively on the analysis of the infrared and Raman spectra, but with no attention paid to the structural properties of aqueous solutions of electrolytes and nonelectrolytes. Thus the authors have deprived themselves and their readers of some important, if indirect, clues to the structure of water, not to mention that the ultimate test of the structural models of water must, in part, be the prediction of the properties of aqueous systems in general.

While the book may certainly be recommended to any scientist who needs to know something about water —from the physical chemist to the biophysicist, or molecular biochemist or any other person required to deal with aqueous systems—it may be a disappointment to, say, the general biologist or cell physiologist. By choice, the authors have completely avoided the discussion of water near interfaces as well as consideration of aqueous solutions. Yet the book will prove indispensable to anyone interested in the more fundamental aspects of the structure of bulk water and will likely remain a valuable reference volume for many years to come.

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