

efficient in the long run that every characteristic is functional. The standard arguments, that the effect of the early steps towards cryptic marking would be too trivial to matter, and that beneficial effects of crypsis have seldom been demonstrated, are countered reasonably enough by the argument that the experiments have been brief and small effects require vast numbers of test organisms. He goes on to argue that a camouflaged organism is seen but not recognised, and that there is no basic distinction between being seen, and rejected as inedible, and being camouflaged. That left me unconvinced.

Eye-spots on butterfly wings probably alarm predators for long enough to permit escape, and they may divert attack to a point less vital than the insect's body. Hinton's suggestion that a chrysalis resembling a monkey's face, and a bug with its head distorted to look like a crocodile, get protection from these resemblances in spite of the difference in size between mimic and model, is intriguing. Insects have a long evolutionary history; it is therefore understandable that effects such as this should be commonest among them. Hinton extends the palaeontological argument by pointing out that a poisonous plant would gain little by using coloured flowers to warn colour-blind herbivorous mammals; he therefore invokes selection during the period when the environment was dominated by lizards with colour vision. Discussing flower colour as an insect lure, he points out that insects see in the ultraviolet; we therefore reach misleading conclusions when we consider the appearance of a flower in visible light only.

The book is handsomely got up and inevitably expensive because of the illustrations. It is a pity that a little more trouble was not taken with it. There are far too many typographical mistakes, some misnumbered pictures and an incompletely labelled graph.

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## Water

*Water: A Comprehensive Treatise.* Edited by Felix Franks. Vol. 2 (Water in Crystalline Hydrates; Aqueous Solutions of Simple Nonelectrolytes). Pp. xix+684. Vol. 3 (Aqueous Solutions of Simple Electrolytes). Pp. xvii+472. (Plenum: New York and London, 1973.) \$43.

In these two volumes Dr Franks has assembled an impressive array of authors and has in the main allowed them complete freedom in dealing with their allocated topics. Since most of them have already made major contributions in their field, the result is a series of expert review articles, some more idiosyncratic than others, which

together provide a mine of valuable information. Everyone working in the field of aqueous solutions should have access to these volumes and they should grace the shelves of most libraries for years to come.

Volume 2 begins with an excellent critical essay, by the editor himself, on the solvent properties of water. Chapters 2 and 3 are concerned respectively with water in stoichiometric hydrates (Falk and Knap) and with clathrates (Davidson). Both these are comprehensive and provide useful background material for an understanding of solutions. Chapter 4 (Luck) is mainly concerned with hydrogen bonding in general rather than with aqueous solutions in particular. Chapter 5 (Franks and Reid) is a valuable and detailed account of the thermodynamic properties of non-electrolyte solutions. This, together with the first two chapters of Volume 3 ("Thermodynamics of Ion Hydration", Friedman and Krishnan; "Thermodynamics of Aqueous Mixed Electrolytes", Anderson and Wood) could form the basis of an excellent text on the thermodynamics of solutions. Volume 2 continues with a factual study on the phase behaviour of aqueous solutions at high pressures (Schneider) and with a group of articles on techniques. Hasted (Chapter 7) contributes a detailed review on dielectric properties with some emphasis on experimental techniques, Blandamer and Fox review spectroscopic properties (Chapter 8) mainly concentrating on ESR evidence, and, in Chapter 9, Blandamer gives a welcome account of a rather less familiar topic, acoustic properties. Zeidler (Chapter 10) deals with NMR studies on aqueous non-electrolytes, and the volume ends with an interesting evaluation of the part played by models in the understanding of water and aqueous solutions (Ben-Naim, Chapter 11). In the course of this, some commonly held beliefs about the interpretation of partial molal heat capacities are drastically undermined.

The first chapter of Volume 3, already mentioned, is an extremely clear and complete account of the thermodynamics of ion hydration, the second a factual study of the application of thermodynamic measurements to mixed aqueous electrolytes. Hepler and Woolley (Chapter 3, "Hydration Effects and Acid-Base Equilibria") discuss the best values of thermodynamic functions for the ionisation of water, and review the reviews on acid-base equilibria. "Ionic Transport in Water and Mixed Aqueous Solutions" (Chapter 4, Kay) describes some modern conductance and transference number equipment particularly suitable for work at high pressures, and reviews work, mainly from his own laboratory, showing how solvent-solute interactions affect these

transport properties. Verrall (Chapter 5) contributes a splendidly critical account of the use of infrared spectroscopy in the study of aqueous electrolyte solutions, the related subject of Raman spectroscopic techniques and their results being entrusted to another author (Lilley, Chapter 6). Herz gives an extended account of the principles of nuclear magnetic relaxation spectroscopy and its applications to electrolyte solutions (Chapter 7). Finally, Pottel extends the theory and practice of dielectric measurements to electrolyte solutions.

No review can do justice to a work which ranges over so wide an area and is written by such authoritative authors. Possibly the editor chose rather too many. There seems little reason, for example, why the main non-thermodynamic techniques should have been cut into sections, one dealing with non-electrolyte, and the other with electrolyte solutions, as in Chapter 7, Volume 2, and Chapter 8, Volume 3. It could be argued that this type of split increases the bulk of the work and makes it more difficult for the reader without gaining anything significant. One should, however, be grateful for large mercies. These volumes with the others in the series will collectively act as a major source of information on almost all conceivable aspects of aqueous chemistry, and, individually, some of the chapters are small masterpieces. One could hardly ask for more.

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## Brief Lives

*Aldous Huxley: A Biography. Volume 1 1894-1939.* By Sybille Bedford. Pp. xv+400 (11 plates). (Chatto and Windus (Collins): London, October 1973.) £3.95.

BIOGRAPHY has clearly established itself as the No. 1 literary art form of the present era. One has only to scan the literary pages of newspapers and periodicals or glance into the windows of booksellers' shops to notice the difference between now and, say, thirty years ago. In establishing itself as the No. 1 literary art form, biography has driven out the novel. The phenomenon is interesting, and to my mind pretty dismaying: it raises a row of interesting questions which have dismaying answers not just for novelists.

To begin with: did biography drive out the novel or was it the novel that abdicated? Then: is biography more in keeping with the general cultural climate of the times; or is the novel in keeping with the artistic climate of the times but the artistic climate itself thought less of? Has the artistic climate hived off from the general cultural climate, falling victim in its separation and remoteness to arcaneity and silliness, to shallowness and sensation?