World Naturalist Series—Entomology

The Natural History of Flies. Harold Oldroyd. Norton, New York, 1965. xiv + 324 pp. Illus. $8.50.

As stated on page 259 of this book, there are reasons to think that "the visits of adult *Drosophila* to grapes were essential in spreading the spores of the yeasts that make possible the fermentation of wine. If this is so, mankind owes an ancient debt to flies for giving us 'wine that maketh glad the heart of man.'" However important are drosophilid flies in wine making and in genetic research, they are only a small fraction, perhaps one percent, of the approximately 80,000 species of flies thus far described. The diversity of body structures, habits, and of the environments which flies inhabit is prodigious and far from adequately known. The extraordinary petroleum fly, *Psilopa petrolei*, lives as a larva in pools of crude oil in California oil fields, feeding on other insects which die from being caught in this inhospitable environment. The larva of *Dermatobia hominis* lives in abscesses under human skin. However, this fly does not deposit its eggs on man, but attaches them to mosquitoes or other biting flies which then deliver them onto their victims. *Arachnocampa luminosa* is found on the ceilings of caves in New Zealand, where it makes webs with hanging, sticky threads, in which are caught other insects attracted by the light which the predator produces. It can switch this light off when disturbed, and turn it on again. Among the flies are found some of the most harmful agricultural pests, as well as the carriers of some of the most serious human infectious diseases, especially in the tropics. Harold Oldroyd presents in this book, *The Natural History of Flies*, a great mass of diversified information, and does it very skillfully, with urbanity and charm. The book makes enjoyable reading, and it can be recommended to people who are neither specialists in, nor even particularly interested in, entomology or zoology. The illustrations, many of them photographs, are excellent and well chosen.

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International Encyclopedia of Physical Chemistry

Acid-Base Equilibria. Edward J. King. Pergamon, New York, 1965. xii + 341 pp. Illus. $17.50.

Acid-Base Equilibria, by Edward J. King, is a volume in the International Encyclopedia of Physical Chemistry and Chemical Physics Series edited by E. A. Guggenheim, J. E. Mayer, and F. C. Tomkins; in the series, it is the fourth volume, under the editorship of R. A. Robinson, in which the equilibrium properties of electrolyte solutions are developed. This volume gives an excellent account of current experimental studies and theoretical interpretations of acid-base equilibria; knowledge of the principles of thermodynamics and the Debye-Hückel-Onsager theory of electrolytes is assumed. Values of acidity constants are essential for quantitative treatment of acid-base equilibria. The methods for the determination of acidity constants—namely, electrical conductance, e.m.f., *p*H, optical and magnetic measurements, and others—are developed in the first part of this book; this development precedes discussion of their relation to molecular structure, temperature and pressure effects, and medium effects. The topics of polyprotic acids, acidity functions, and nonaqueous systems are also developed. Considerations have been restricted largely to proton-transfer equilibria, and the discussion of the Lewis acid-base equilibria is brief. Behavior of complexions as acids, and acid-base equilibria in melts, are not included, nor are the kinetics of acid-base processes. There is a useful list of the most frequently used symbols, and the author and subject indices are well prepared. In the exposition of the fundamental basis of acid-base equilibria, and in the development of the theoretical aspects of this subject, the author has developed an authoritative volume as befits the series in which it is published, but he has also prepared a book that, by itself, will be very useful to experts and nonexperts in the broad field of electrolytes.

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Spectacles in the Sky

Weather. Philip D. Thompson, Robert O'Brien, and the Editors of *Life*. Time Inc., New York, 1965. 200 pp. Illus. $3.95.

Weather Eyes in the Sky: America's Meteorological Satellites. J. Gordon Vaeth. Ronald, New York, 1965. viii + 124 pp. Illus. $5.

Both of these books are written mainly for the nonspecialist, but professional meteorologists should find each of them informative and useful.

It would be almost impossible to avoid use of the word "handsome" in reviewing any of the books in the Life Science Library Series in view of their always lavish photography and art work. However, in the case of *Weather*, it is the text and not the illustrations that I find the better half. Thompson and O'Brien have done an excellent job of describing past, current, and future developments in meteorology in a vivid and lucid manner; a wide range of readers should enjoy their efforts. The illustrative material, although it could by no means be criticized as generally poor or inadequate, seems to me to be less than superb. A few photographs are almost dull (pp. 28, 50, 55, 67, 80, 120, 122, and 123); some diagrammatic material seems inadequate (pp. 53, 71, 92, and 97). Additional efforts should have been made to locate more such dramatically beautiful illustrations as those on pages 23, 30, 72, 79, 103, 118 (see cover on this issue of *Science*), 119, and 125. Professional meteorologists will be interested in the historical illustrations (especially those on pp. 145 to 150) and the variety of well-chosen margin cuts of historical matters, but it is the text that they are likely to admire most.

The only technical errors that I was able to spot in *Weather* were concentrated within a half-dozen pages of chapter 4. The onset of condensation does not depend on slowdown of molecular speed or on molecular collision frequency as suggested on page 83. Sea-salt particles are now believed to comprise only a very small fraction (perhaps a tenth) of all atmospheric condensation nuclei, in contrast to the assertion on page 84 that they are of dominant importance. Most cloud physicists are today not as sure as the authors (p. 88) that the bulk of mid-latitude precipitation begins in the ice phase. Solid carbon dioxide (dry ice)