In the first Maxwell Knight describes and clarifies what the field naturalist is able to observe. This section, which covers the results of innumerable field observations and of experiments designed to clarify some of them, is arranged not by the types of animals but by the senses, and it brings together in logical cohesion a vast amount of data. In the second section, which is concerned with how the senses work, L. Harrison Matthews deals with the structural and functional bases for the sensory life of animals. The material is again arranged by the senses, although it includes two chapters on special topics—echolocation and monitors.

The volume should be a useful addition to the library of biologists interested in animal behavior. Its chief weakness as a source book is the lack of a bibliography and even of references in the text to the publications from which data have been extracted. It thereby falls short of providing the serious worker with what he needs, but for the amateur observer and the more superficial student it presents a readable and accurate presentation of the senses of animals.

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Stream and Lake Biology

Freshwater Ecology. T. T. Macan. Longmans, Green, London, 1963. x + 338 pp. Illus. $6.50.

Carpenter's small volume, *Life in Inland Waters* (1929), has been badly out of date for many years, and I have been searching fruitlessly for a modern volume that would replace it as required reading for university seniors and beginning graduate students who are thinking of doing work in freshwater biology. This book, at long last, fills such a need in admirable fashion. Macan is adept at weaving together such phases of freshwater ecology as communities, transport, behavior, interrelationships, physical factors (two chapters), chemical factors (four chapters), production, and methods. The whole treatment, however, is physiological, and the "integration" of many viewpoints has meaning far beyond the usual pedagogical implications of this word.

The style remains remarkably lucid and, in places, nearly conversational, despite the fact that Macan, carefully and in a scholarly fashion, has sifted a mass of data on stream and lake biology. Almost every page suggests further research problems, and for the receptive and perceptive student, this is perhaps the most valuable aspect of the book. To be sure, emphasis is on English and European aquatic ecology, but the principles discussed are common to aquatic habitats everywhere and most of the genera mentioned are also found in North America.

Much of Macan's own research interests have been in the ecology of freshwater insects, and an excellent summary of this field is appropriately placed in several chapters of *Freshwater Ecology*. There is a good summary of animal ecology through the Baltic Sea salinity gradient. The chapters on the ecological significance of temperature and dissolved oxygen are especially well done and free from the stilted qualities found in similar chapters in other texts. The 500 items in the list of references are well chosen.

The theme of *Freshwater Ecology* is perhaps best expressed by a sentence from the preface: "The only doctrine I wish to preach is toleration; the school that is brilliantly leading the world today may be nearing the end of its seam, whereas the school that has been plodding along an unprofitable road for years may be about to strike a rich vein."

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Note

African Natural Resources

A Review of the Natural Resources of the African Continent (UNESCO, Paris; Columbia University Press, New York, 1963. 437 pp. $15), a timely compendium of the natural resources of Africa, consists of 14 papers by as many authors. Each author catalogs the present sources of knowledge and suggests needed work with respect to a particular resource or field. An anonymous "outline" summarizes the volume as a whole. All except three of the papers include helpful bibliographies, several of them elaborately classified. Each paper also has a brief list of contents, but the volume suffers because it does not have an index, either general or to specific chapters. The group of contributors is cosmopolitan, but only the three specialists from the United Arab Republic now reside in Africa. One author, the director of a bureau, prepared his report "on the basis of notes provided by" five others. A review of such a collection of "reviews" cannot do justice to its subject in brief compass. Suffice it to say that the book touches on most aspects of its field and that it will be particularly useful to those who want to know where to find the available information, or to administrators or politicians who are seeking recommendations for action.

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New Books

Mathematics, Physical Science, and Engineering

Absorption Spectra in the Ultraviolet and Visible Region. vol. 4. L. Lang, Ed. Academic Press, New York, 1963. 414 pp. Illus. $20.

Acylation Reactions. Their applications and mechanisms. P. F. G. Praill. Pergamon, London; Macmillan, New York, 1964. 170 pp. Illus. Paper, $2.95.

Advances in Computers. vol. 4. Franz L. Alt, Morris Rubinoff, A. D. Booth, and R. E. Meagher, Eds. Academic Press, New York, 1963. 326 pp. Illus. $12. Five papers: "The formulation of data processing problems for computers," W. C. McGee; "All-magnetic circuit techniques," D. R. Bennion and H. D. Crane; "Computer education," H. E. Tompkins; "Digital fluid logic elements," H. H. Glaettli; "Multiple computer systems," W. A. Curtin.

Advances in Inorganic Chemistry and Radiochemistry. vol. 5. H. J. Emeléus and A. G. Sharpe, Eds. Academic Press, New York, 1963. 439 pp. Illus. $14.50. Eight papers: "The stabilization of oxidation states of the transition metals." R. S. Nyholm and M. L. Tobe; "Oxides and oxyfluorides of the halogens," M. Schmeisser and K. Brandle; "The chemistry of gallium," N. N. Greenwood; "Chemical effects of nuclear activation in gases and liquids," I. G. Campbell; "Gaseous hydroxides," O. Glemser and H. G. Wendlandt; "The borazines," E. K. Mellon, Jr. and J. J. Lagowski; "Decaborane-14 and its derivatives," M. F. Hawthorne; "The structure and reactivity of organophosphorus compounds," R. F. Hudson.

Analysis of Petroleum for Trace Elements. O. I. Milner. Pergamon, London; Macmillan, New York, 1963. 136 pp. Illus. $5.

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