helpful but also is adequate to convince the microbiologist that he has company in his nomenclatural miseries. Chapters on the chemistry, preparation, and analysis of inorganic and selected organic sulfur compounds follow. These accomplish the intent of warning the neophyte and initiated alike of the pitfalls to be avoided in exploring sulfur biochemistry and of providing usable introductions to methodology.

The biochemical coverage encompasses more than the title of the book might suggest. The sulfotransferases and sulfatases which catalyze reactions of sulfate esters are discussed in the same detail as rhodanese and the sulfate activation enzymes. Likewise, cysteine oxidation is included in considering the metabolism of inorganic sulfur compounds by animals. Apart from these, the reader can expect only incidental mention of organic sulfur metabolism but relatively complete coverage of the oxidation and reduction of inorganic sulfur compounds by microorganisms, plants, and animals. Two brief chapters on the clinical chemistry of inorganic sulfur compounds and economic aspects of inorganic sulfur metabolism are included in the interest of relevance. Both are short, the first probably of necessity and the second by choice.

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Mechanisms of Food Choice

Insect and Host Plant. Proceedings of the second international symposium, Wageningen, the Netherlands, June 1969. J. DE WILDE and L. M. SCHOONHOVEN, Eds. North-Holland, Amsterdam, 1969. Illus. Paper, $15. Reprinted from *Entomologia Experimentalis et Applicata*, vol. 12, pp. 471–810 (1969).

Probably all plant species are attacked by insects, at least to some extent, yet most phytophagous insect species exploit relatively narrow ranges of food plants in nature. Explanation for this specificity of feeding habits may be sought at two levels. Ecologists are interested chiefly in understanding the ultimate factors (nutrition, energy, habitat, competition, counteradaptations to plant defenses, and so on) that determine the evolution and maintenance of particular feeding strategies. Ethologists and many physiologists, on the other hand, are concerned primarily with the various proximate behavioral mechanisms by which an insect has come to be able to recognize the particular range of plants to which it is adapted. This symposium volume, containing 28 articles, is devoted largely to the second level of enquiry and serves as an admirable review of the very considerable recent advances in our understanding of the behavioral and electrophysiological mechanisms whereby insects are able to recognize their food plants.

Although there is general agreement that olfactory and gustatory responses to various plant chemicals play a major role in food-plant selection, there remains a lingering controversy (reflected and substantially resolved in this book) about the relative importance as "sign stimuli" of nutrient chemicals and the diverse "secondary substances." G. Fraenkel, a pioneer in this subject, here reviews the evidence for believing that secondary substances, acting as attractants or repellents, are of paramount importance. Articles by H. L. House and J. L. Auclair, however, emphasize the vital significance to insects of an appropriate balance of nutrients and the ability of several species to recognize nutritionally superior diets without reference to secondary substances. The most valuable feature of this symposium is a series of articles (V. G. Dethier and L. M. Schoonhoven; P. T. Haskell and A. J. Mordue; T. H. Hsiao; S. Ishikawa, T. Hirao, and N. Arai; C. J. C. Rees; L. M. Schoonhoven; W.-C. Ma) which provide a broad view of insect chemoreception and demonstrate beyond doubt that host-plant recognition involves responses to both nutrients and secondary substances. Many different chemoreceptor cells are now known, in a variety of insect species. Some are highly specific, some are "generalists"; some respond to nutrients, others to secondary chemicals. A single cell may respond in a variety of ways to different chemical stimuli or to different concentrations of the same chemical. The overall pattern of responses is modified by synergism or antagonism at the peripheral level and final integration in the central nervous system, and an insect thus obtains considerable information about the chemical composition of a plant from a relatively small number of chemoreceptors. The sensitivity of some receptors has been shown to change after prolonged stimulation (Schoonhoven), a phenomenon that may account for "larval conditioning" such as that reviewed here for *Pieris* caterpillars (Hovanitz).

Other topics discussed in this volume include anemotaxis in locusts (Kennedy and Moorhouse), a termite pheromone-food-attractant (Ritter and Coenen-Saraber), artificial diets (Vanderzant), hormone analogs in plants (Sláma), influence of nutrition on aphid polymorphism (Mittler and Sutherland), a phenol-phenolase system secreted by sucking bugs (Miles), and the pattern of interactions leading to susceptibility or resistance of plants to the red cotton bug (Saxena). This book is diverse, informative, and up to date. Though by no means comprehensive it can nevertheless be strongly recommended to all who are interested in the feeding diversity of phytophagous insects and the more general problems of ecology, behavior, physiology, and biochemistry upon which this sort of research is shedding so much light.

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Reptilian Anatomy

Traité de Zoologie. Anatomie, Systématique, Biologie. Published under the direction of PIERRE-P. GRASSÉ. Tome 14, Reptiles: Caractères Généraux et Anatomie. Fascicule 2. Masson, Paris, 1970, xii, 712 pp., illus., + plates. 225 F.

Biology of the Reptilia. CARL GANS, Ed. Vol. 1, Morphology A. ANGUS D'A. BELLAIRS and THOMAS S. PARSONS, Ed. xvi, 376 pp., illus. $11.50. Vol. 2, Morphology B. THOMAS S. PARSONS, Ed. xiv, 374 pp., illus. $16.50. Academic Press, New York, 1969-70.

These two encyclopedic works on reptilian anatomy are the products of distinctly different objectives. The *Traité de Zoologie* provides a general survey of reptilian anatomy, whereas *Biology of the Reptilia* treats the subject in detail. Because of these different goals, the *Traité* volume suffers from contrast with the first two volumes of *Biology of the Reptilia.*

The *Traité* chapters follow the classical anatomical divisions. This broad approach and the obvious space restrictions placed upon the authors result in a superficial coverage of many of the