

In as thorough a treatment of a subject as would be expected in these volumes, one is bemused at being able to delineate additional pertinent areas of research where coverage is almost totally lacking. The catabolism of corticoids is not dealt with, nor is corticoid transport in the blood. One could assume that the decision to exclude this information was based on "topographic" considerations—the adrenal cortex *sensu stricto* is the subject matter, rather than the fate of its products once they enter the systemic "field." However, the mechanisms of action of aldosterone and of glucocorticoids are included, as are some assessments of the physiological role of the secretory products. Inasmuch as the concentration of free corticoids, as opposed to conjugated and bound steroids, is of fundamental significance in comprehending the "control of hormone synthesis and secretion" (the stated emphasis of this series of monographs), one can only regret the exclusion of the missing topics (which are certainly of great biochemical and molecular interest). Comparative endocrinologists will note the lack of reference to the admittedly limited material available on corticosteroidogenesis in nonmammalian vertebrates.

Regardless of possible omissions—and an editor is entitled to his license in the selection of material for his 1176 pages—these two volumes are commendable for their sophistication and for their utility. It is hoped that this monograph and those that follow will result in the recognition by academic biochemists that biochemical endocrinology presents increasingly relevant subject matter which they could well afford to make available to today's biologists in the form of instructional offerings.

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Feed and Food

Comparative Nutrition of Wild Animals. Proceedings of a symposium, London, 1966. M. A. CRAWFORD, Ed. Published for the Zoological Society of London by Academic Press, New York, 1968. xxii + 430 pp., illus. \$19.50. Symposium of the Zoological Society of London, No. 21.

The 26 papers of this symposium fall more or less readily into three groups: nutrition and malnutrition in "captive environments," adaptations and maladaptations to native environ-

ments, and wild herbivore as food for man. Many of these are summaries of published work, some of which has been summarized earlier. For example, composite rations for zoos (Wackernagel) and laboratories (Short) have a considerable history. Use of these rations, especially for ruminants, is supported by balance studies on deer (Nordan *et al.* and Maloiy *et al.*) and, of course, on domesticated animals. Similarly, nutritional bone diseases of cebids and hapallids (du Boulay and Crawford), of felids (Scott), and of canids (Hime) also are well known, as are suggestions that atherosclerosis is a response to "essential fatty acid" deficiency (Sinclair). However, the scheme (Bilby) by which diets are to be determined from preferences exhibited by zoo animals for fruits, vegetables, and processed foods is, at best, novel, and the discussion of nutrition for captive wild herbivores (Adams) disappointingly vague.

Adaptations to native habitats presumably reflect many unknowns. Thus, Icelandic ptarmigan select a diet superior to that selected by ptarmigan from an equivalent flora in Scotland and have a higher reproductive rate (Moss). However, adaptive difficulties of other animals—for example, reindeer in Scandinavia (Gaare, Steen) and elephants in Africa (Sikes, Laws and Parker)—can be attributed to man. Laws and Parker also find that elephant populations respond to social pressures by reduced productivity and increased mortality, as has been described for other mammals.

African ruminants also receive considerable attention. Attempts to understand adaptations range from a study of stomachs in relation to feeding habits—as in grazers versus browsers (Hofmann)—to minimum water requirements (Taylor), and food selection (Field) and utilization (Rogerson, Crawford *et al.*). Lipid digestion in ruminants and nonruminants differs strikingly (Lough and Garton).

The papers on wild herbivore as food for man are more limited, but a report on wildlife management in the Scottish Highlands and Islands (Boyd) emphasizes the lack of basic information and the obstacles presented by the reluctance of peoples to alter their food patterns. Such inertia is, of course, characteristic of man and will interfere with the production of meat from any wild species: hippopotamus or buffalo (Ledger), manatee (Bertram and Bertram), or semidomesticated eland

(Treus and Kravchenko). At the same time, the formal papers and discussions of this symposium emphasize that an understanding of nutritional requirements of wild animals, how these are satisfied in native environments, and how wild animals may become a stable source of food for man is equally handicapped by sentimentality and unchanneled enthusiasm that are a result of current ignorance.

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Plant Group

The Algae. A Review. G. W. PRESCOTT. Houghton Mifflin, Boston, 1968. xii + 436 pp., illus. \$7.95. Riverside Studies in Biology.

The algae are a diverse assemblage comprising not only green plants but plants which are brown, red, blue, yellow, and even black. Each of the 9 to 11 divisions of the group corresponds in diversity to the spermatophytes. Thus to review them all, as Prescott has attempted to do in this volume, is a gigantic task. While the classification of algae is admittedly fluid, the scheme used here is startling to one accustomed to the arrangement made familiar by Papenfuss and Silva, who recognize the Bacillariophyta and Charophyta as separate divisions or phyla, but not the Chloromonadophyta. Then, too, some attempt is usually made to arrange the divisions in an evolutionary sequence.

How successful is this book in reviewing the algae in all their diversity? Are there good pictures? Line drawings of 263 different species are included, but there are very few photomicrographs, and none taken with the electron microscope. In a modern treatment of the algae, the absence of electron micrographs, of which spectacular examples are available from the work of Bouck, Gibbs, Manten, Reimann, Ringo, and others, is a serious omission, especially since whole groups of algae are small, many of them unicellular.

When organisms have been ordered to our satisfaction, we turn naturally to questions of where they live and how. The last third of *The Algae* is devoted to these matters, including a chapter on economics and one on culture techniques. Do not expect a rigorous discussion of algal physiology,