Book Reviews

Chromosome atlas of cultivated plants. C. D. Darlington and E. K. Janaki Ammal. London: Allen and Unwin, 1946. Pp. 397. $2.75.

The major portion of this volume is devoted to a catalogue of the chromosome numbers of some 10,000 species of cultivated plants—a work which should prove of inestimable value to investigators in many fields of the plant sciences. It is the most comprehensive contribution of its kind to have appeared since Gaiser's compilation in 1930 and brings well up to date the results of several hundred investigators throughout the world. By applying the term "cultivated" in a liberal sense the authors have included not only crop plants, drug plants, and ornamentals but also such groups as parasites, carnivorous plants, stocks used for fruit and flowering trees, latex plants, plants used for tools, weapons, etc., as well as those which furnish cork, herbicides, resins, and the like.

The families, genera, and species are arranged in systematic order according to the Bentham and Hooker system, which has the advantage of bringing together groups with related chromosome ratios. Beside each species is given its common name (when it has one), its somatic chromosome count, a reference to the literature, a symbol indicative of the use of the plant, and a statement of its geographic origin.

An introductory section contains a stimulating discussion of the origin of cultivated plants based in part upon the work of Vavilov and in part upon conclusions to which the authors' work has led them. Emphasis is placed on the fact that the center of diversity of many crop plants has shifted and that in many cases there has been not one region of hybridization and selection but several. The "snowball" effect of migration on variety is discussed, and some of the guiding principles of plant breeding, as determined by chromosome behavior, are elucidated.

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Die Methoden der Fermentforschung. (Vols. I–IV.) Eugen Bamann and Karl Myrbäck. New York: Academic Press, 1945. Pp. xx + 3388. (Illustrated.) $65.00.

Until one really digs into this set of volumes he cannot truly appreciate the tremendous task which the authors undertook and accomplished. The only word which can adequately describe the work is "encyclopedic." It is encyclopedic in the sense that it covers every field that in any way pertains to research in enzyme chemistry. One almost feels, while perusing the volumes, that they were written from the viewpoint of making them the only books necessary on the shelf of the enzyme chemist.

These volumes are photo-offset reproductions of the originals, published and distributed by authority of the Alien Property Custodian. The paper and bindings are excellent. The work is essentially European in origin, the various sections (all written by authorities in their respective fields) coming largely from western Europe. A small proportion was written by English authors, with less than 3 per cent emanating from the United States. It is unfortunate for those who might have wished to purchase certain volumes separately not only that the breaks between volumes come at illogical points, but that all of the literature references and indexes are collected together in Volume IV, thus making this volume essential to the value of all of the others.

Volume I begins with a short introduction, in which the definitions, nomenclature, and classification of enzymes are discussed. Approximately 400 pages are then devoted to the chemistry of the substrates, intermediates, and end products of enzyme actions. Each section of this portion discusses the synthesis (where possible), isolation from natural sources, some of the chemical reactions, and, finally, certain of the physical properties of the substances in question. These substances range from glycerides, starch, cellulose, and proteins to nucleic acids, tannins, chlorophyll, acetylcholine, and acceptor dyes. While the chemistry is not as complete as one would find in monographs, it gives a very satisfactory background to the nonspecialist. Six pages, for instance, are devoted to a discussion of the structural chemistry of the proteins.

The next phase of the subject to be taken up is that of methods—largely those of a physicochemical nature. Nearly 60 pages are devoted to a discussion of the use of X-rays in the determination of the structure of organic substances. There follows a series of sections devoted, among other subjects, to absorption spectra, Raman spectra, fluorescence, polarography, dielectric constants, ultracentrifugation, diffusion, sublimation, and the determinations of melting points and molecular weights. These chapters are not in the least superficial. They delve into the underlying physical principles and develop the fundamental mathematical equations where such are germane to the subject.

The second section of Volume I goes into the subject of catalysis and reaction rates, with discussions of all of the various means of measuring the latter, including polarimetry, refractometry, spectroscopy, and the use of the interferometer. Theories of buffers, pH, and redox potentials are developed. These even go into such detail as to describe, with illustrations, how to platinize an electrode. Finally, there is a lengthy discussion of the free energy of reactions, and several sections devoted to the microanalytical procedures used for the quantitative assay of many of the participants in enzyme reactions.

Volume II is devoted largely to the preparation, isolation, and characterization of enzymes and includes sections on the preparation of enzymes from bacteria, algae, yeasts, molds, and protozoa, as well as from more conventional animal and plant materials. The major por-