
Book Reviews

Walden, D.B. (ed.): **Maize Breeding and Genetics.**

New York, Chichester, Brisbane, Toronto: Wiley & Sons 1979. 794 pp., 82 figs., 57 tabs. Hard bound \$ 65.00.

In 1975, the 75th anniversary of Mendelism's rediscovery provided an occasion for bringing together the major contributors to maize (*Zea mays* L.) genetics. They provided this volume with a total of 44 chapters comprising a series of 8 sections, entitled History, Evolution, Breeding, Diseases and Insects, Endosperm, Tissues, Gene Action, Cytogenetics. (A ninth section includes abstracts of demonstration papers.) This is clearly a summary volume, intended to survey the development of maize breeding and genetics. It does this and much more. Because maize breeders have played so large a role in the development of plant breeding, this volume could well serve as a text for the principles of plant breeding. The section on Breeding is a particularly turgid one, providing an admirably lucid and thorough summary of breeding concepts, analyses, and even methods. The Breeding section is in effect anticipated by that on History which not only reviews early concepts and methods, but provides very timely and interesting surveys of maize breeding in Europe, the tropics, and the U.S.A. Completing what is conceptually the first portion of the volume is the section on Evolution and another on Diseases and Insects. Both of these provide excellent and thorough reviews of clear relevance. With maize, as with many other crop species, resistance to disease and insects may well come from hybridization with undomesticated relatives, and thus the evolution of crop species is of far more than academic interest.

The remaining four sections of this volume provide a greater emphasis on techniques and concepts which, although in many cases were developed by maize investigators, they represent analyses which could apply to many species. These contain the most forward looking chapters in the text (although the opportunity to present extensive reviews is almost invariably seized upon by each author). Each of the four sections contains authoritative and thorough reviews. Although they are too numerous to mention individually, the chapters in this second half of the volume, in themselves, provide such a wealth of information that no plant breeder and very few botanists should be without them. The tables and illustrations of this volume are done with such clarity and detail,

that reference to other literature is not necessary for a clear grasp of the material they present.

It will of course be criticized because its literature review does not go beyond 1975, the date of the symposium. (At least one author did add a later paper.) However, as a review and as a milestone, this volume is extremely valuable, carefully edited and nicely produced. It deserves, and will undoubtedly receive, wide acclaim.

D.L. Mulcahy, Amherst

Kämpfe, L.: **Evolution und Stammesgeschichte der Organismen.**

Jena: G. Fischer 1979. 400 pp., 131 figs., 12 tabs. Soft bound DM 28,-.

The theory of evolution represents the most comprehensive concept in biology. The analysis of evolutionary processes, originally restricted to comparative morphological studies of recent and ancient forms, has spread more and more to the fields of genetics, cell biology, physiology, biochemistry and, recently, to ethology. This universal character of evolutionary biology is well documented in the book written by Lothar Kämpfe in cooperation with Dieter Bernhardt, Franz Fukarek and Elisabeth Günther.

Two introductory chapters are devoted to evidence for evolution derived from various fields and to respective methods of research. Emphasis is then laid on the operating principles in evolution. This is the essential part of the book and deals with the properties of genetic material, genetic variability, changes of gene frequencies and population waves, selection, isolation and annihilation, and finally the criteria of anagenesis. The general discussion is followed by a treatise of evolutionary lineage in the course of time, presented in the chapters on biogenesis, molecular evolution, evolution of viruses and procaryotes, main pathways of phylogenesis in the plant kingdom, in the animal kingdom and of human beings.

This concentrated and clearly arranged survey on evolution and phylogenesis offers an abundance of detailed information and takes into consideration different hypotheses and interpretations. It will prove to be very valuable to all scientists and educated laymen with basic knowledge of, and an interest in, biology. Some readers might miss authors cited in the next among the bibliographic data.

L. Stange, Kassel