Book Reviews

Kinghorn, A.D. (ed.): Toxic Plants.
New York: Columbia University Press 1979. 195 pp., 39 figs. 13 tabs. Hard bound $ 25.00

This book is not intended to be a comprehensive treatise on all substances known presently to be either lethal or injurious to human beings or livestock. It concentrates on recent advances made in the understanding of the chemical nature of toxic principles. The eight chapters were originally presented as lectures at the 18th Annual Meeting of the Society for Economic Botany, which was devoted to 'Toxic Plants', and held in 1977 at the University of Miami, Florida. Fortunately, several chapters have been updated since the symposium. Four main aspects of toxic chemistry are discussed. These are: the problems affecting the generation of accurate scientific and clinical data on poisonous plants, studies on some plants with severe toxic and lethal effects, a review of harmful domestic plants, and a report on contact hypersensitivity and photodermatitis. The plant groups included comprise mushrooms, Solanaceae, Liliaceae, Euphorbiaceae, Anacardiaceae and Compositae. We greatly missed some hints on the increasing importance of toxic substances in plant breeding. The continuing use of wild plants in order to improve, for example, the resistance of cultured plants, increases the possibility of introducing genes for toxic compounds into varieties for human consumption. A close cooperation between breeders and phytochemists is therefore urgently needed, especially in problems of toxic proteins in crops. For this point to have not been included is a deficiency in an otherwise very valuable book. H.F. Linskens, Nijmegen

Kuckuck, H.: Gartenbauliche Pflanzenzüchtung. 2. Aufl.
Berlin, Hamburg: P. Parey 1979. 194 pp., 45 figs., 15 tabs. DM 39,–

From about 1940 onwards, the enormous succes of molecular genetics in broadening our knowledge of the structure and function of living cells has been achieved mostly through work with bacteria and viruses. Nevertheless, it would be wrong to assert that the genetics of higher plants has been neglected during that time. The second edition of 'Gartenbauliche Pflanzenzüchtung' (Plant Breeding in Horticulture) clearly shows the enormous progress which has been achieved through the scientific breeding of horticultural crops. Most of the progress was made after the first edition was published 1957. This is especially clear in those parts of the book dealing with applications of male sterility in hybrid breeding. Success in this work should continue for a long time. Progress is also evident in the insights achieved into the biosynthesis of colouring substances in flowers. New perceptions of developmental physiology will help in fruit-breeding: eg. the breeding of root stocks for fruit quality, and more importantly in the fight against parasites by using genetically based resistance.

There are several reasons why this edition of 'Gartenbauliche Pflanzenzüchtung' elucidates these matters so clearly. First, the editor, Prof. Kuckuck, developed the basis of the book in his lectures at the Institute of Applied Genetics in Hannover. These lectures were broadly-based and dealt with the subjects in considerable depth. Kuckuck was ably supported by younger co-workers in the midst of their scientific careers. Among them were Hanna Schmidt, in fruit-breeding, and Wolfgang Horn, in ornamental plant breeding. Both were able to demonstrate the success of the last two decades of plant breeding in all its' important details. Support of a third scientist, Hans Buttenschön, had a very pleasant effect – he has vast experience with the practical side of plant breeding. His knowledge of the peculiarities of single varieties, and of the newest and best varieties, were of special benefit in writing the vegetable section. For the same reason, maintenance breeding, seed-production, testing of varieties and variety protection were discussed in an expert manner.

At the special request of the editor, all chapters also deal with the origin of horticultural plants. Seen from this point of view, it is easy to understand why certain breeding methods have withstood the test of time. They are the best, and therefore the most frequently used.

Undoubtedly, 'Plant Breeding in Horticulture' is a very valuable book. Through it anyone can learn how to breed horticultural crops. The reader need only understand the basic laws of heredity and development of flowering plants. Numerous schemes explain breeding methods for special cases. Perhaps some of these would be more transparent if (as is also the case in other parts of the book) the number of years needed for different generations were added to the schemes introduced from other textbooks. Anyone with an interest in plant breeding will hope that this book will find a large market. Additionally, this reviewer is of the opinion that translation into other languages should be considered. Surely, a Kuckuck in English could win a place at the front of international competition.

Everyone interested in applied genetics will be grateful to the editor and his co-workers for this instructive, comprehensive and modern exhibition of the latest in plant breeding. It is my feeling, though, that some colour-photographs would have been preferable to the black and white ones used throughout. Naturally they would not have enhanced the scientific value of the book but they would have given it additional splendour and thereby won for it still further friends. J. Straub, Köln-Vogelsang