REVIEWS

PRINCIPLES OF PLANT BREEDING. By R. W. Allard. London, New York: John Wiley. 1960. Pp. 485. 72s.

Professor Allard has presented a neatly integrated account of the scientific principles and practice of plant breeding. The main part of his book analyses the genetic architecture of self-fertilising and cross-fertilising populations and appropriately relates the breeding procedures adopted by man to the natural breeding habits of the plants. It is the first comprehensive textbook of plant breeding which gives this important relationship the emphasis it deserves. The apprentice may therefore learn to appraise the applicability, limitations and the reason underlying the various and sometimes devious methods of selection in plant improvement.

The special features of breeding for disease resistance are dealt with separately. Complementary gene systems conferring pathogenicity on the parasite and resistance on the host which permit such remarkable precision in the production of varieties with specific qualities of resistance are well illustrated. In this field at least the breeder can be forearmed against the exigencies of the grower.

Selection within the limits of naturally occurring variation is still the predominant means of plant improvement despite the fact that some of the main patterns of natural variation can now be copied at will by the breeder. Manipulation of numbers and associations of chromosomes and induced changes in the genes themselves have been accomplished. The more delicate adjustments which follow these radical alterations in nature and which restore balance to the changed systems can also be accumulated by artificial selection but much more slowly and with much less precision than the initial large changes. Professor Allard deals with problems of polyploidy, interspecific hybridisation and mutation in turn, reviewing some of the contributions they have made and cautiously summing up their value as general breeding tools. They have not perhaps achieved the over-riding success predicted at an earlier date by their more ambitious proponents; but, applied with understanding and ingenuity, these techniques undoubtedly lend versatility and increased scope to plant breeding.

In *Principles of Plant Breeding* we have a well balanced up to date book which is indeed based on sound principles backed up by suitable examples and well selected references. It is the best so far.

LESLIE K. CROWE.

THE CHROMOSOMES. By M. J. D. White. London: Methuen. 1961. 5th edn. Pp. 188, 26 text figs. 15s.

The fifth edition of this book appears a quarter of a century after the first and at a time, as White puts it, when we are more likely to speak of "the transfer of genetic information" than of "the functioning of the genes". Like the earlier editions, the present one is intended as "an elementary account" which can serve as an introduction to "larger works such as C. P. Swanson's *Cytology and Cytogenetics* and the author's *Animal Cytology and Evolution*".