REVIEWS

THE WILD SPECIES OF *GOSSYPIMUM* AND THEIR EVOLUTIONARY HISTORY. By J. H. Saunders. Oxford University Press. 1961. 15s.

This small book gives an excellent summary of the advances in our knowledge of cotton taxonomy and relationships since 1947, the year of publication of Hutchinson, Silow and Stephens' classic monograph on cotton evolution. Although it is written largely in note form it is extremely readable. The beautiful and accurate line drawings of the wild species leave nothing to be desired. One wishes, however, that for the sake of completeness the author had included drawings of the cultivated species also. Since Hutchinson, Silow and Stephens' work is now out of print, and their drawings in any case do not reach Saunders' standard, this omission is doubly unfortunate. Indeed, a much more comprehensive presentation, possibly in collaboration with the authors of the earlier book, would have been of far more value.

Nevertheless, the author of this new book is to be congratulated on his presentation of the latest data bearing on *Gossypium* evolution. No further information is given on the possible method by which the Old World cultivated cottons arrived in the New World, and Hutchinson's hypothesis of trans-Pacific migrations is accepted. The author puts forward an alternative suggestion, involving a natural westward migration of the A genome from Africa before the separation of the Southern continents, but rightly considers this as a remote possibility.

The work is an excellent example of the synthetic method in plant taxonomy, where information from the spheres of phytogeography, plant ecology, genetics, cytology and phytopathology is brought to bear on problems of species divergence. Above all, it shows the valuable contribution that cyto-genetics can make to taxonomy as well as the value of modern taxonomic studies to geneticists and plant breeders. J. G. HAWKES.

AN INTRODUCTION TO QUANTITATIVE GENETICS. By D. S. Falconer. Oliver and Boyd. 1960. 35s.

A text book specifically designed to introduce the student to the concepts and theories of quantitative genetics has been needed for some time. Dr Falconer has had the courage and industry to meet the need. That courage was required is undoubted, for the need was for a book that squarely faced the fact that this is a subject making mathematical demands, but yet set the standard of mathematical treatment at a level with which the biological student can cope.

Starting with simpler questions of gene frequencies at a single locus the author takes his readers through the usual necessary steps to an understanding of the causes of change in gene frequency and the significance of population size and inbreeding. He then proceeds to discuss continuous variation, where the reader is expected to have some understanding of statistics, but is assisted with examples throughout. This leads to the theory and results of artificial selection, inbreeding and cross-breeding and the author ends with a discussion of metric characters under natural selection.

The treatment is so good that there is only one serious criticism, which, however, must be given some weight lest the student feel that quantitative genetics is better tied up than it really is. This criticism concerns the question of linkage, which is treated as if of negligible relevance. It is true that the author points out this is a matter of controversy and that the last chapter's contents are "to a large extent matters of personal opinion". Nevertheless the reader is likely to be misled.

The attitude to linkage is based on the conclusion, derived from Wright's mathematical treatment, that for linkage phase to be non-random "coefficients of the same order of magnitude as the recombination frequency would be required. . . . Loci with more than about 1 per cent. recombination between them would not be expected to depart significantly from a random arrangement, unless they carried major genes with large effects on the character". Is this not to fall into the error of assuming that such selection coefficients as Fisher, for example, postulated in order to demonstrate that small selection coefficients would be sufficient to keep relatively deleterious genes rare despite recurrent mutation, are normal selection coefficients? Are say 5 per cent. selection coefficients very unusual? If not then loci 5 map units apart may well be found in non-random linkage arrangement. Synthetic lethals occur and involve larger selection coefficients. It is to be hoped that some additional treatment of linkage will be added when the second edition of this book is called for.

Despite this criticism, however, this is an excellent book. Dr Falconer is to be congratulated on having produced just what was needed. It will have to be one of the standard textbooks for all students of genetics.

J. M. THODAY.

PRINCIPLES OF GENETICS. By Eldon J. Gardner. New York and London: John Wiley and Sons. 1960. Pp. 366, 192 figures. 60s.

The purpose of this book, according to the author, is to emphasise basic genetic principles and present a well-rounded view of modern genetics to the college student taking his first course in the subject. The words "basic" and "modern" should be noted. How far has he succeeded in his aims?

In his first chapter accounts are given of what the subject entails, why it is classified as a biological science, what organisms are commonly used in its study, and why; and lastly, the main contributions of the early pioneers of the subject are given. We can excuse the verbosity of this first chapter—no doubt it is meant to get the student interested. But, unfortunately, it continues at the expense of emphasising the fundamental principles of the subject and their relationship to one another. Perhaps the author is of the opinion that the more words he uses the simpler the subject is to understand.

Let us take the way that Mendelism is described. Independent assortment is illustrated by ample diagrams and chequerboards, and the actual numbers of progeny obtained by Mendel in his experiments are given. But any reference to the physical basis of inheritance must first await a chapter on probability which is introduced without a clue being given as to where chance operates in the process: not a word yet about fertilisation or meiosis. Eventually the author introduces us to chromosomes and