

THE LIVING PLANT

Botany of the Living Plant

By Prof. F. O. Bower. Fourth edition. Pp. xii + 700. (London: Macmillan and Co., Ltd., 1947.) 36s. net.

THE veteran author of this well-known book must be warmly congratulated on the publication of its fourth edition. He has been fortunate in the selection of those who have aided him, Prof. J. M. F. Drummond and Dr. G. Bond in the third edition, and now Prof. C. W. Wardlaw in the present one. When the book first appeared in 1919, Prof. Bower was one of the few persons competent in Great Britain to write, single-handed, a general treatise on botany at the university level of instruction; but the time is rapidly approaching when the single author must give place to a team of collaborators. This difficulty has been forestalled by Prof. Bower in his admirable choice of assistants, and fortunately the homogeneity of treatment characteristic of the first edition has been maintained.

The general plan of the book remains the same as in the third edition, which was reviewed in *Nature* (144, 400; 1939), but there are considerable alterations in the section on Thallophyta, in which the terminology has been modernized and the treatment of certain groups expanded. In the chapter on the Chlorophyceae it may be noted that the cause of red snow in high latitudes is *Chlamydomonas nivalis* and not *Sphaerella pluvialis*. Attention is rightly directed to the difficulty of drawing a line between the Flagellata and the Algae; there is an interesting new commentary on alternation of generations in the Algae, and also a fuller discussion of this in comparison with alternation in the higher plants.

Further information is given about the multifarious spore forms of the Fungi. Included in this section is a comprehensive account of the life-history of *Puccinia graminis* in the light of modern work, though an error still persists concerning the time of nuclear fusion, which occurs during the maturation of the teleospores and not on germination. It might have been pointed out that this fungus is now something of a rarity in Britain, although other cereal rusts occur frequently: so uncommon is it that many teachers of botany are at a loss for material. A mistake concerning *Phytophthora infestans* should be corrected: it is not true to say that the mycelium spreads through the tissues down the haulms to the tubers.

The stimulus which this book has always given to the study of plant morphology is further enhanced by a new discussion on the nature of the leaves of Dicotyledons and Monocotyledons, by insistence on the sporangia of the higher plants being organs *sui generis*, and by reference to the category of 'telome' introduced by Zimmermann. The chapter on "The Relation of Size and Form in Plants" has been elaborated, and it now contains a most interesting comparison of the apical growth of palms and ferns in relation to the vascular supply and nutritive requirements, which is contrasted with development in the Dicotyledons. This chapter also contains an illuminating statement on adaptation of form in submerged parts.

There are a few new illustrations, notably the frontispiece, which is a modern picture of the giant trees of California, replacing an older representation.

All teachers of botany will offer the heartiest welcome to this new edition, which will give the book a fresh lease of vigorous life. Among other noteworthy

features which have been maintained is the unsurpassed exposition of the biological significance of the development of heterospory and the seed habit.

F. T. BROOKS

SAMPLING PRACTICE IN THE UNITED STATES OF AMERICA

Méthodes statistiques modernes des administrations fédérales aux États-Unis

Par Pierre Thionet. (Actualités scientifiques et industrielles, 1011.) Pp. 117. (Paris: Masson et Cie., 1946.) 250 francs.

THIS book reviews recent American developments in the application of sampling to the collection of economic and demographic statistics. It is divided into two parts: the development of the mathematical theory, and the applications which have been made in recent years. On the practical side, chapters are devoted to the sampling methods applied to the 1940 Population Census, the methods adopted in the construction of monthly labour statistics, and the development of sampling methods, including the master sample, in agricultural statistics. On the theoretical side, an endeavour is made to cover the whole of the modern developments of sampling theory.

The book is useful in that it gives under one cover a summary of the very impressive progress that has been made in the United States. Accounts of most of this work have only been published after the outbreak of the Second World War, and are therefore likely to be less available, and less well known, than would otherwise have been the case. The importance of making these developments widely known in Europe, where the application of sampling has lagged behind that in the United States, cannot be too widely stressed.

On the other hand, the book must be regarded as a review of what is going on rather than as a satisfactory text-book from which to learn the new methods. Although half of the book is devoted to the theory of sampling, the presentation leaves much to be desired, and it is clear that the author has not fully digested the more modern developments. Thus, for example, he appears to have no understanding whatsoever of the analysis of variance, although he devotes a section to it, and later reproduces a schema for such an analysis. He also appears to be unaware of the connexion between the analysis of variance and intraclass correlation, a point which he could scarcely have overlooked had he studied Fisher's "Statistical Methods for Research Workers", which introduces the analysis of variance *via* intraclass correlation. Again, what is one to make of the recommendations in the chapter on basic theory that, in the absence of all information on the size of the different strata, the population mean should be estimated from the mean of the strata means, and that an equal number from each stratum should be included in the sample?

Whether the book will be of much value to English-speaking readers, who can easily refer to the original papers (most of which have been published in the *Journal of the American Statistical Association*), is therefore doubtful; but for those who require an introduction to the subject in the French language it will fulfil a useful purpose.

F. YATES