

Principles and Practice of Field Experimentation
By Dr. John Wishart and Dr. H. G. Sanders. Second edition. (Technical Communication 18 of the Commonwealth Bureau of Plant Breeding and Genetics, Cambridge.) Pp. vii+133. (Farnham Royal: Commonwealth Agricultural Bureaux, 1955.) 21s.

THE first edition of this book, published twenty years ago and for a long time out of print, was a landmark in so presenting the statistical outlook on field experimentation that it could be understood and used without advanced training in statistics. A new edition is therefore of considerable interest.

Dr. J. Wishart's section, on statistical principles and techniques, has been extensively revised; the result is an improved and up-to-date version, though the emphasis on expressing yields as percentages and the deletion of any graphical explanation of covariance analysis seem unfortunate. New chapters briefly discuss factorial design, confounding, and incomplete block designs. The author has met the difficulty that his subject has grown to a much greater extent than his few additional pages can contain, so that inevitably his account appears relatively less comprehensive than in the first edition. He is therefore the more to be congratulated on so well combining clear instructions for analysis of simple experiments with laying a sound foundation for further study. The contribution by Dr. H. G. Sanders is a general discussion of the practical aspects of field experiments, ranging from advice on when—and when not—to do experiments to rules for good recording. Changes from the first edition are slight; but the section remains perhaps one of the best published guides to experimental policy and details of field technique.

This book should be in the hands of all who conduct field experiments: they will learn from it much that will help their understanding of how statistical science can assist their work.

D. J. FINNEY

Le Microscope à Contraste de Phase et le Microscope Interférentiel

Par Maurice Françon. Pp. 150+1 plate. (Paris: Éditions du Centre National de la Recherche Scientifique, 1954.) 1,000 francs.

AFTER reading this book one is left wondering how it is possible to cover the subject so completely in only 125 pages. The answer is that the exposition is so clear and the selection of topics so excellent that scarcely a word is wasted. The only exception is the section on the applications of phase-contrast, which is too short and might be either omitted or expanded in future editions.

The first part of the book deals with general optical theory. After discussing the modification of the Airy disk pattern by aberrations and errors of focus, the formation of images of extended objects by coherent and incoherent light is examined. This is an excellent simple introduction to modern physical optics. The chapter on phase-contrast describes the main optical systems that have been used, including those for variable and coloured phase-contrast. Such questions as the effect of absorption in the phase plate and the resolving power are dealt with, but one could have wished for an account of the defects of the method, particularly the halo effect.

The final chapter is devoted to interference microscopy and is one of the best compilations so far available on this subject. Progress in this field is so

rapid that it is sometimes difficult to decide priority. British readers may feel that the work of F. H. Smith does not receive proper acknowledgment, and that some of his designs have been unwittingly re-invented by others. The diagrams are for the most part excellent and a useful bibliography is added. A few minor printing errors were noticed. This is a book which can be read with profit by many and with real pleasure by all interested in optics.

An Introduction to the Calculus of Finite Differences
By Prof. C. H. Richardson. Pp. vi+142. (New York: D. Van Nostrand Company, Inc.; London: Macmillan and Co., Ltd., 1954.) 28s. net.

THIRTY years ago, the student of numerical analysis had no English text readily available save the brilliant pioneer work by Whittaker and Robinson, "Calculus of Observations" (1924). Since then the rapid growth of the subject, and the widening field of its applications, have produced many good books in English, some covering the whole field, some with a view to special applications. Prof. Richardson has based his book on a short course for actuaries and statisticians, but the course has also proved of value to electrical engineers and other technicians. The elements of finite differences, on a somewhat formal basis, are expounded in 120 pages: the operators E and Δ ; the finite sum, with special reference to the Stirling numbers; the Euler and Bernoulli polynomials; interpolation and numerical integration; the gamma function; and simple difference equations. Only the simplest elements of the infinitesimal calculus are assumed to be known, and arguments are often plausible rather than strictly logical. The book should therefore serve as an outline of methods and problems, preparing the novice for the further study of more substantial treatises on the numerical or theoretical aspects of the difference calculus.

Some Beautiful Indian Trees

By Ethelbert Blatter and Walter Samuel Millard. Second edition, revised by William T. Stearn. Pp. xv+165+78 plates. (Bombay: Bombay Natural History Society; London: Wheldon and Wesley, Ltd., 1954.) Rs. 20; 30s. net.

THIS well-known book has been out of print for some considerable time, so now the second edition, edited by Mr. W. T. Stearn, is assured of a hearty welcome. Both the authors of the original book have died; but I feel sure that they would have approved of the way Mr. Stearn has carried out his part of the work, for this is not a mere reprint but an amended, corrected and enlarged account of the beautiful trees to be found in any large city in India. I am particularly glad to see that he has adopted the correct botanical name for the species where a change has become necessary.

The original plates were printed in England by a well-known firm of colour printers and were very well executed. It is not stated where the plates for the second edition were produced; but they are most unworthy of the book—cold, lifeless and falsely coloured.

The statement that there is a live specimen of *Amherstia nebilis* in one of the hot-houses at Kew is, alas, not true. The specimen referred to was lost during the War.

This book can be recommended to anyone who is visiting India.

N. L. BOR