

**Sampling Methods for Censuses and Surveys**

By Frank Yates. Second edition, revised and enlarged. Pp. xvi+401. (London: Charles Griffin and Co., Ltd., 1953.) 38s. net.

THIS book, first reviewed in *Nature* (166, 245; 1950), has an established place as an authoritative manual on the general subject of sampling. The author now has more to say, sometimes by way of commentary on or expansion of what was in the first edition, but mostly by way of new material and developments. He has chosen to leave the eight chapters of the first edition unaltered, except for the insertion of references to the added material, and to add two new chapters. Chapter 9 consists of a series of further notes on the critical analysis of survey data. Broadly, these deal with general questions such as contrasts between domains, or the relative precision of different methods of sampling, especially when domains of study cut across strata; but the opportunity is taken to supplement an earlier treatment of simple regression by describing briefly the multiple regression procedure, and by showing how this concept is to be interpreted in terms of causative systems. Chapter 10 deals with a number of miscellaneous developments. Modern machines for use in computation and census work are referred to, but so briefly that legitimate curiosity is not satisfied; most of the remainder concerns varied methods of sampling, of which lattice sampling may be singled out as an ingenious way of incorporating the same sort of advantages into sampling that are gained by designing agricultural and other experiments on such patterns. The book is brought up to date by a description of the sampling method used for speeding up the reporting of the results of the 1951 Census.

The author is to be commended on his industry in coping with a very intricate subject in such painstaking detail. The result, however, is a book that is by no means a delight to read, for the style is heavy and, in places, obscure. A most complicated notation means that the reader must not allow his attention to wander. For his sake it is a pity that the author has at times forgotten the rigours of his own notation, for example, on p. 298 in quoting a formula in words in the text, while he might have avoided adding to the confusion by using the first two letters of the alphabet in different senses in the same formulæ, as he does on pp. 318-19.

J. WISHART

**Cambridge Elementary Statistical Tables**

By D. V. Lindley and J. C. P. Miller. Pp. 36. (Cambridge: At the University Press, 1953.) 5s. net.

THE statistical material in this set of tables consists of the normal,  $t$ ,  $\chi^2$  and variance ratio distributions, the  $r$ - $z$  transformation, factors for converting range to standard deviation, and random numbers, occupying in all ten pages. The remaining twenty-two pages are taken up by tabulations of  $x^2$ ,  $\sqrt{x}$ ,  $1/x$ ,  $1/\sqrt{x}$ ,  $\log x$ , antilog  $x$ ,  $\sin^{-1}\sqrt{x}$ ,  $\sinh^{-1}\sqrt{x}$ ,  $\log n!$  and a one-page table of proportional parts from 2-99 (surely unnecessary).

The printing, binding and layout reach that high standard which one would expect from collaboration between the authors and the Cambridge University Press, and the price is such that the tables should, as the authors hope, be useful for students in schools and universities, and for the research worker who requires a handy set of tables for the occasional normal,  $t$ ,  $\chi^2$  or  $F$  test. But one could have wished

that the statistical material had been treated a little more generously to the exclusion of material adequately covered by ordinary four-figure mathematical tables. Fisher's original tables of  $t$  and  $\chi^2$  covered the whole range of  $P$ , and  $z$  has since been extended in a similar manner. The central values have their uses, both for the student and research worker. The table of percentage points of the normal distribution might well be fuller, and possibly that of the ordinates also, and one misses a table of significance levels of  $r$ , which gives a quick test of association between two variates. Random permutations also have a claim to inclusion. The preface is confused on the relation between one- and two-tail tests, and this, perhaps, has led to a rather curious choice of significance levels. Finally, the reviewer, at least, is left wondering why the non-statistical functions are all presented together instead of separately on pairs of pages.

F. YATES

**The First Fifty Years, 1903-1953**

Edited by F. I. G. Rawlins. Pp. xv+86+11 plates. (London: The Faraday Society, 1953.) Cloth 10s. 6d.; Leather 21s.

THIS little book is not a set piece; it is more in the nature of a birthday book in which people have been good enough to write interesting things about the Society, now on the threshold of its fiftieth anniversary; in these words, the editor, Mr. F. I. G. Rawlins, describes the purpose of the volume under review.

The Faraday Society occupies a unique position in the chemical world; it has fostered the study of physical chemistry in all its branches, first, by providing, in its *Transactions*, a medium for the publication of physico-chemical research, and secondly, and perhaps this has been its most important, as it has certainly been its unique, contribution, by organizing the famous 'General Discussions'. These symposia on current topics have been characterized by timeliness, and few of them have not been followed by a real reorientation of thinking on the subject under discussion. In addition, these discussion meetings have been notable social occasions; the editor says that he and the other contributors to the present volume have been "trying to enjoy ourselves"—not a difficult task for regular attenders of the Society's discussions.

It is most fitting that the first article in the book is a chapter of personal reminiscences by Prof. F. G. Donnan, since he has probably done more than any other single man to guide the Society along the right paths during its first fifty fruitful years; the other thirteen chapters give the reader a valuable and interesting bird's-eye view of the development of physical chemistry between 1903 and 1953. Mr. Rawlins need have no doubt that this book does indeed "demonstrate that the Faraday Society is a living organism, continually emitting and receiving new knowledge on its way towards equifinality"; long may it remain so.

H. N. RYDON

**The Art of Scientific Investigation**

By Prof. W. I. B. Beveridge. Second Edition. Pp. xii+176+5 plates. (London: William Heinemann, Ltd., 1953.) 10s. 6d. net.

PROF. BEVERIDGE, in preparing the second edition of his book on the methods and results of scientific investigation, has made some minor revisions and partly re-written the chapter on reason. Essentially, however, the book remains as reviewed in our columns on March 3, 1951.

A. S. PARKES