

REVIEWS

Chance and Choice by Cardpack and Chessboard. By Professor LANCELOT HOGGEN.

[Vol. II. Pp. 487. Max Parrish and Co. Limited, 1955. 70s.]

THE first volume of this work was reviewed in *J.I.A.* 77, 151. The second volume, now under review, carries straight on from the first and broadly speaking develops ideas similar to those in the second volume of Johnson and Tetley's *Statistics*. It is done, however, at somewhat greater length, and although there are nearly 500 pages in this volume the scope is not quite as wide.

The book opens with a discussion in Chapter XI of the question of individuals who are grouped according to more than one character, the meaning of cross classification and what is implied by the independence of two or more characters under such circumstances. Chapter XII deals with bivariate universes, the ideas of discreteness and continuity and the meaning of homoscedasticity, illustrated with such models as the Bernoulli or Lexis methods of variation. Chapter XIII discusses the basic ideas of the analysis of variance and Chapter XIV gives a very full account of moments including the idea of a moment generating function and the momental ratios, up to and including β_6 (which is defined as μ_6/μ_2^3), as descriptive measures of the form of distribution. This chapter leads quite naturally into Chapter XV, where there is a discussion of sampling distributions, particular emphasis being placed on the Pearson system of frequency curves. The Gram-Charlier and Edgeworth series and the Fisher-Cornish expansion are not included. The analysis of variance is taken up again in more detail in Chapter XVI and the variance ratio test introduced. In the next two chapters the analysis of variance is further elaborated by a consideration of regression and discriminant functions leading on to a discussion of co-variance and factor analysis. Chapter XIX delves into the moments of various sampling criteria when only a finite population is involved. The final chapter stands rather apart from the remainder of the two volumes and deals briefly with a very wide range of topics such as quality control, stratified sampling, confidence intervals, errors of the first and second kinds, power of a test and sequential test procedures.

Despite the length of the work it is easy to name subjects which one expects to find in a modern statistical text that have been omitted, examples being cumulants, time series, use of short-cut procedures such as range and elementary ideas of stochastic processes. However, all authors have to make awkward decisions as to what to include and what to omit if a book is to be kept down to a reasonable length. There are plenty of examples in the text for the student to work out, the answers to which are not given. A positive gain would have been made if more realism had been introduced into some of the examples; for instance on p. 782 an analysis of co-variance is worked out with some figures, but much more would be conveyed if the figures were, say, the yields of grain and straw in pounds per $\frac{1}{16}$ th acre at three different farms. The index to the book is very condensed, there is no bibliography and only few references in the text. Some papers are referred to by author and year only, no journal being given. There is an unusual distinction between μ and m for moments. Instead of using these symbols for population and sample values μ refers to moments about the origin (usually μ' or m') and m to moments about the mean (usually μ or m).

A slight confusion occurs in the chapter on moments since the author takes $q=mp$ for the binomial thus giving m yet another meaning. The first paragraph of Chapter XII on p. 475 consists of a sweeping condemnation of the correlation coefficient and it is only much later that an effort is made to appraise its usefulness. The student reading the opening of this chapter could be pardoned if he wondered whether there was any point in proceeding.

Now that both volumes of this work are available it is possible to view it as a whole and to discern the underlying threads. Leaving aside for the moment the last chapter, the work as a whole hangs together. The subject matter discussed is closely akin to what would be expected of a book written just prior to the last war with the heavy emphasis on attributes, moments and frequency curves. Comparing the book with some pre-war works one sees how Professor Hogben has tried to reinforce his argument with the diagrammatic representation of problems and set-ups. This representation of the problems is undoubtedly forceful but it is noteworthy that the volumes depend largely on heavy, though not unduly difficult, algebra which underlines the fact that in statistics there is no royal road to success save through mathematical theory followed by example. Diagrams may help the reader to appreciate what theory is applicable or needed but they do not eliminate entirely the need to understand the theory involved. Undoubtedly many students learn more easily from diagrams than from mathematics and this book will help them but they will not thereby avoid studying the mathematics necessary for a full understanding of the techniques. It is perhaps a pity that in the discussions on regression and discrimination there are few diagrams although these two topics are open to vivid portrayal with their aid. The author does not hesitate to use pungent words when he feels them necessary. Thus he talks on p. 559 of the 'hypnotic influence of Pearson's apothesis of measurement as an end in itself' when castigating other authors for the misuse of Latter's well-known data concerning cuckoos' eggs. Or again on p. 763 we find the author coming down severely on those who would use the mean and variance outside the Gaussian case, stating that they can claim no 'special semantic status in preference to other parameters more or less usefully invoked'. In view of this and other similar remarks it is unfortunate that there is not more discussion of appropriate estimators in non-normal cases.

The standard of the printing and the layout are good and a number of the diagrams are in two colours. The whole book is remarkably free from errors or misprints.

Summing up one may say that any would-be student of statistics who reads and digests the two volumes of this work would gain a really solid grounding of statistical theory, although he would not be an up-to-date practical statistician without a great deal more work of both a theoretical and a practical nature. He would probably find that even with these volumes there would still be difficulty in following the pages of modern statistical journals, but his groundwork would be sure and solid.

P.G.M.

A History of Industrial Life Assurance. By DERMOT MORRAH.

[Pp. 243. George Allen and Unwin Ltd. 1955. 15s.]

CHARLES MORGAN has said that an historian needs to be something of a poet, so that he can recreate imaginatively the spirit of his subject. Those associated with industrial assurance have felt that some of the industry's previous chroniclers

have carried this idea too far, allowing their imaginations to run riot and permitting themselves an excess of poetic licence in their efforts to justify preconceived notions of the industry. The author of the present book has skilfully avoided such temptations by carefully eschewing all imaginative flights of fancy and keeping strictly to the facts. His book is thus of the nature of a map of the territory rather than a painting of the landscape. Like all good maps it is both accurate and informative, making up in utility what it lacks in emotional appeal, yet at the same time not entirely lacking in excitement. It is, for example, fascinating to learn, in the first chapter on 'The Forerunners', that working men's burial colleges were not uncommon in the Roman Empire, and to read a summary of the rules of one of them which, allowing for differences of law and custom, bear a remarkable resemblance to the rules of any of the small friendly societies of the nineteenth century.

After a brief glance at the early stages the author conducts us on a tour of what might be called the public history of the industry, from the introduction of the Post Office scheme in 1865 up to the present day. He pauses occasionally to see what progress the offices have been making and, more frequently, to discuss the unfairness of much of the public criticism or the futility of state intervention, the last three chapters being devoted entirely to these matters. It is perhaps a pity that he has chosen as the main stages of the journey the various commissions, committees and Acts of Parliament which are scattered along the route. This tends to leave the reader with the impression that industrial assurance has no history apart from this succession of public enquiry and legislation, which is, of course, far from being the case.

In the preface the author states that the book is 'an attempt by a layman to explain to other laymen the purposes and processes of industrial assurance'. It seems doubtful whether many laymen will feel disposed to undertake the journey from cover to cover just for the fun of the thing; but at a time when the future of industrial assurance has become a political issue it is certainly important that those who wish to inform themselves of the facts should have a ready source of reference, and no doubt for this reason the industry will welcome the appearance of the book at this time. As a layman himself the author has done well to assimilate so readily the mass of facts and figures with which he must surely have been assailed by the expert advisers to whom he offers due thanks in the preface.

To the actuarial reader the book will probably be most useful as a convenient source of reference, and the sections on legislation should prove helpful to the student who is studying the subject for examination purposes.

N.E.C.