Rapid Statistical Calculations

A Collection of Distribution-free and Easy Methods of Estimation and Testing. By M. H. Quenouille. Pp. xv+81. (London : Charles Griffin and Co., Ltd., 1959). 10s.

ORTHODOX statistical techniques usually involve a fair amount of computation. Particularly when data are cheap, there is a need for rapid methods that can be applied with no more than pencil and paper. Some of these methods have the added advantage of being 'robust'—they remain valid (at least approximately) over a wider range of assumptions than do the more usual techniques.

The advantage of speed is lost if the user of a rapid method has to spend time looking up the details in a journal. Mr. Quenouille has accordingly collected together a selection of the most useful techniques and has had them published in a genuine pocket-book, measuring only 16 cm. × 11 cm. Each method is presented with comments and an example on a pair of facing pages. The topics covered include the estimation of means, standard deviations and regression coefficients and tests for inequality of means, differences between means of groups, differences between proportions and association. In the index, the methods are marked "faster than usual", "quick" or "very quick", and tests that are distribution-free are indicated. The list of references shows that several of the tests are new.

Rapid Statistical Calculations is well produced at a reasonable price ; those for whom the ordinary statistical techniques are too cumbersome should find that it meets their requirements.

M. J. R. HEALY

Theory of Detonation

By Ia. B. Zeldovich and A. S. Kompaneets. Pp. i+284. (New York: Academic Press, Inc.; London: Academic Press, Inc. (London), Ltd., 1960.) 10 dollars.

THIS book, based mainly on papers written at the Chemical Physics Institute of the Academy of Sciences of the U.S.S.R., gives a systematic account of the theory of detonation. The first chapter considers the relevant fundamental concepts of gas dynamics, and includes a discussion of shock waves, the flow equations, and 'characteristics', for one-dimensional and centrally symmetric flow.

Most of the book is concerned with gas explosions, and throughout the authors are at pains to explain the physical and chemical concepts underlying their reasoning and not merely to manipulate mathematical symbols. For example, in the hydrodynamic theory of detonation, the complex argument required to show that the Chapman–Jouguet plane coincides with the end of the reaction zone in a plane, stable, lossless wave is carefully detailed. Deflagration is discussed, and there is a useful contribution on non-detonative explosions. The effect of thermal and fluid-mechanical losses in smooth pipes, and spin detonation are treated, and so also are detonation in roughened pipes and the transition from combustion to detonation.

Less space is devoted to detonation in condensed explosives. The authors point out that, generally, the density of the gaseous products is so high that the full hydrodynamic theory is inapplicable; they obtain useful results by combining the appropriate hydrodynamic equations with observed empirical relations. The final chapter discusses the motion of the detonation products.

It would have been helpful if reference had been made to a wider range of original papers, but, nevertheless, this is a valuable text-book which should be widely appreciated. The English translation reads well. W. L. MURRAY

Thermodynamics with Quantum Statistical Illustrations

By Prof. P. T. Landsberg. (Monographs in Statistical Physics and Thermodynamics, Vol. 2.) Pp. x+499. (New York : Interscience Publishers, Inc. ; London ; Interscience Publishers, Ltd., 1961.) 109s.

IN an appendix to this book Prof. Landsberg tells us that a common misconception about thermodynamics is that, since the subject is mathematically simple, it is also intrinsically simple. That this is indeed a misconception is demonstrated by the hidden, and sometimes unnecessary, assumptions made in the usual treatments of the subject. In order to avoid these, the author has used some mathematical tools which, sadly, will be unknown to many physicists. However, the reader is carefully introduced to them, and the usual claim, that no previous knowledge of these subjects is necessary, is probably in this case justified.

The first three chapters consist of a discussion, couched in the language of elementary topology, of the three laws of thermodynamics, and the fourth chapter of some rather formal applications. The fifth and final chapter, probably the best in the book, deals with statistical mechanics from the point of view of probability distributions rather than ensembles. Finally, there are seven useful appendixes and a rather brief bibliography.

The book is written throughout in a most readable style. Prof. Landsberg is particularly to be praised for his excellent and unusual selection of examples, and for his references to many little-known parts of the literature. It would be a mistake to use this book as a standard text at any level, but it can be recommended to anyone who has a serious interest in thermodynamics, or indeed, who wants such an interest stimulated. W. E. PARRY

Techniques in Tropical Pathology

By Prof. B. G. Maegraith, Prof. W. E. Kershaw and D. Dagnall. Pp. xi+165. (Edinburgh and London: Oliver and Boyd, Ltd., 1961.) 25s. net.

THIS simple book, written by three workers deeply experienced in the subject, will prove of value to medical men and others who live in the more remote parts of the tropics. Perhaps a better title would have been "Tropical Parasitology" instead of *Tropical Pathology*, because very little pathology in the classical sense is included, and scarcely any histological staining methods. Likewise, the bacteriological side is a little weak, and there is no mention of an incubator in the list of apparatus given in the appendix. With these reservations, the book can be thoroughly recommended; it is divided into two main portions: (1) the technique of examination of different material (blood, urine, fæces, sputum, cerebrospinal fluid, pus, and biopsy specimens); and (2) the diagnosis of specific infections, in which a very short account of epidemiology is followed by a good description of the individual agents of disease.

Three coloured plates (one of which by its presumably unintentional 'fuzziness' gives a life-like impression of a thick blood film stained by Field's method), three photomicrographs, and four text figures illustrate the text. P. C. C. GARNHAM