

of Incompatibility in Fungi", both of which provoke thought.

The editors are to be congratulated on bringing together these papers into a useful publication, which will appeal not only to specialists working in the field of fungal incompatibility but to a wider group of genetically minded biologists.

JOHN WEBSTER

Applied Queueing Theory

(Studies in Management.) By Alec M. Lee. Pp. xi+244. (London: Macmillan and Co., Ltd.; New York: St. Martin's Press, Inc., 1966.) 42s. net.

QUEUEING theory is a highly developed branch of mathematics, which deals with the relationships between the probability distribution of arrival intervals and service lengths on the one hand, and length of queues and waiting times on the other. These relationships depend, moreover, on the number of servers, priorities of service, type of queueing, and so on. The theory is so highly developed that its sophistication has far outstripped its usefulness. This is surprising, if one remembers that queueing serves as a model for telephone traffic, breakdown repair, aircraft stacks, flight reservation, and many other situations in addition to the more obvious ones.

Alec Lee takes the first word of his title seriously. Chapters 2-5 may be omitted by "any reader who is familiar with one of the theoretical books about queues". They assume, as do later chapters, that the reader is conversant with statistical and mathematical terminology. Even if he is not, however, he will enjoy chapters 6-16, which contain case studies from the operation of airlines—the field in which the author is thoroughly at home. He describes, for example, a freight reservation process (Chapter 9), passenger check-in procedures (10), and air terminal design (13).

The stories terminate in solutions. If they cannot be found by analysis, then simulation techniques are used, and Chapter 6 deals with these.

The style is brisk and in parts intentionally funny.

Could somebody, please, write an equally splendid book on other applications?

S. VAJDA

Compound Plastic Deformation of Layers of Different Metals

By G. E. Arkulis. Translated from the Russian by Z. Lerman. Translation edited by T. Pelz. Pp. xiii+223. (Jerusalem: Israel Program for Scientific Translations; London: Oldbourne Press, 1965.) 72s.

THERE is at present a great deal of interest in composite materials of various kinds so that this translation of an account of recent Russian work and ideas is timely. The book is an introduction to Russian work on a new branch of the theory of mechanical working and covers the period up to 1962. The author first considers the perfect compression of a multilayer sandwich and uses this to advance a theory of joint plastic deformation. This is used to solve problems such as the influence of the structure of the sandwich layers, mechanical properties of the components, ratio of thicknesses, coefficients of external and interlayer friction, and the strain on the process of joint plastic deformation and on the forces required. The results of this investigation are used in the analysis of a number of practical problems such as compression, drawing and rolling in both plane and grooved rolls. From the theoretical ideas and the data available valuable and useful results are obtained. Particular emphasis is placed on the Soviet work in the field. The book is intended primarily for the engineering staff in the metal working industries but will also be of interest to research workers in the field of mechanical working of metals and will be useful to students wishing to know of the Russian work.

A. KELLY

Thermal Methods of Analysis

By Wesley Wm. Wendlandt. (Chemical Analysis: a Series of Monographs on Analytical Chemistry and Its Applications, Vol. 19.) Pp. x+424. (New York and London: Interscience Publishers, a Division of John Wiley and Sons, Inc., 1964.) 124s.

THE study of chemical behaviour as a function of thermal conditions is one of the oldest techniques known to chemists, yet only in recent years have thermal methods achieved quantitative significance as a general diagnostic approach. The current upsurge of interest in the subject can largely be attributed to the solution of many of the instrumental problems inherent in the method; with the development of instruments capable of adequate control over the variable involved, and in many instances the advent of automatic systems which relieve the operator of tedious manual control, the way is now open for the application of thermal methods over a wide field ranging from problems of structure, mechanism and kinetics through to direct applications in chemical analysis. The appearance of this book at a time when more and more scientists are entering the field of thermal studies is particularly opportune.

In terms of extent of application to date the techniques of thermogravimetric analysis (TGA) and differential thermal analysis (DTA) merit particular consideration and more than two-thirds of the book is devoted to them. Each is dealt with in three chapters covering principles, instrumentation and applications. The author has collated a wealth of material into a lucid and critical account of the two techniques. Subsequent chapters discuss thermometric titrimetry, pyrolytic techniques, dynamic reflectance spectroscopy, thermal analysis and miscellaneous thermal methods. The literature is critically covered up to 1962 and a number of later references are included.

The various thermal methods are often interdependent and elucidation of a particular problem can demand recourse to a combination of approaches, for example, gas evolution analysis is a valuable and often essential adjunct to either TGA or DTA. Such relationships are brought clearly to the fore in the text. Again, the performance in terms of the accuracy and precision of the technique are markedly variable, but the reader will find these factors adequately delineated.

The book is confidently recommended, not only as an authoritative discussion of thermal methods but in addition for its undoubted stimulus to further scientific thought and activity in a field which has much to offer in all branches of chemistry.

J. K. FOREMAN

Organic Electronic Spectral Data

Vol. 3: 1956-1957. Edited by Owen H. Wheeler and Lloyd A. Kaplan. Pp. 1210. (New York and London: Interscience Publishers, a Division of John Wiley and Sons, 1966.) 188s.

THE wide applicability and ease of application of photoelectric spectrophotometry to the investigation of electronic spectra of organic compounds rapidly led after its introduction to the appearance in the literature of a vast number of reports on such data. The resulting problem of information retrieval is experienced by a wide range of research workers. The enormity of the problem is in fact well illustrated by the present position in data collection. Volumes 1 and 2 of *Organic Electronic Spectral Data* covered the periods 1946-52 and 1953-55 respectively. The present volume covers the period 1956-57, and at a rough estimate contains approximately 20,000 entries. Each gives the solvent or phase, max (in millimicrons for maxima shoulders and inflexions) extinction coefficient and a reference. It is a prodigious compilation and doubtless will be of much use. But, of course, 9 years of accumulation of data lie ahead of it. An effort is being made to close the gap: Volume 4 for 1958-59 and Volume 5 for 1960-61 are promised.

D. J. MILLEN