

mathematical statisticians by a preliminary consideration of the nature of partitions, and an introduction to the appropriate terminology and notation. Whereas, however, in Chapter 3, on moments and cumulants, mention of partitions seems to be carefully avoided, the reader of Chapter 11, in which more comprehensive methods of analysis are developed, is confronted without warning or preparation with the notions (a) of partitions, (b) of partitions of multipartite numbers, and (c) of separations of partitions, as ideas which are essential to each difficult stage of the argument. The fact is that some mathematical statisticians have thought about partitions and in terms of partitional notation, while others have not done so at all. These are not going to be helped, but only baffled by the manner in which the ideas are here introduced.

Each chapter is followed by a series of exercises, some of which are exceedingly good. Some examples in the text are at least equally difficult to the reader anxious to understand the solution. Thus in example 7.2, the following argument is used to demonstrate the recurrence formula, which yields very prettily the series of sub-factorials developed by Euler for the problem of the game of *Rencontre*: "Suppose that  $u_n$  is the number of ways in which all the letters go wrong. Consider any two letters. If these occupy each other's envelopes, the number of ways in which the remaining  $n-2$  letters can go wrong is  $u_{n-2}$ ; and there are  $(n-1)$  ways in which two letters can be interchanged. But if one letter occupies another's place and not vice versa, which can happen in  $(n-1)$  ways, there are  $u_{n-1}$  ways in which the others can go wrong". I have not made the test widely, but I submit that very few mathematicians unfamiliar with this particular argument would be able from this form of statement to see where the two factors  $(n-1)$  really come from. R. A. FISHER.

## ORE DEPOSITS

### Ore Deposits as related to Structural Features

Prepared under the direction of the Committee on Processes of Ore Deposition of the Division of Geology and Geography of the National Research Council, Washington, D.C. Edited by W. H. Newhouse. Pp. xi+280. (Princeton, N.J.: Princeton University Press; London: Oxford University Press, 1942.) 44s. net.

THE study of the genesis of ore deposits does not appeal to geologists in Great Britain (with a few notable exceptions) to anything like the same extent it does in the United States and Canada. In America a great and growing number of men have adopted economic geology applied to mining as a profession, and interesting contributions to the science regularly appear in the scientific and technical press. The reason may be due to greater interest shown in mining ventures by people in America, or may result from greater opportunities for practising the profession provided by the many diverse types of deposits found there.

In any event, the rapid expansion of the non-ferrous mining industry in the United States has stimulated the scientific study of the deposits themselves. In a few outstanding cases, such as manganese in the Gold Coast and coal in Kent, the geologist either actually discovered or predicted the presence of the mineral, but in the majority of instances 'finds' by prospectors have created the need for geological specialists to interpret the discoveries.

Some decades ago, geologists in Great Britain paid more attention to the problems of the metal-mining engineer, but with the decline of non-ferrous metalliferous mining the interest of the majority waned. This is unfortunate because, while it is true that most of the easily accessible deposits have been worked out, there exist several areas which, if thoroughly explored, might again yield discoveries which could be worked successfully in spite of world competition.

This book, which is published by the Princeton University Press and prepared under the direction of the Committee on Processes of Ore Deposition of the Division of Geology and Geography of the National Research Council, Washington, and is edited by Prof. W. H. Newhouse of the Massachusetts Institute of Technology, can be divided into two parts. The first portion consists of a general discussion on the controlling effects of structural features on the deposition of various ores, while the second and major part contains short discussions by some sixty different contributors on particular ore deposits to illustrate the diverse effects of various geological features. The studies do not enable any hard and fast rules or laws to be promulgated, but the deposits do fall within a broad classification.

Mining geology is not yet, and probably never will be, an exact science, because there are too many exceptions to general rules; but a careful study of this work will afford guidance to many a geologist when confronted with a difficult problem concerning a particular deposit, and it is therefore recommended as a valuable book of reference which should be included in every library of scientific books.

The book is very well illustrated and the print easy to read, but it is too bulky to form part of a field library. As is only to be expected with a volume containing contributions by so many American writers, the ordinary reader who has been so unfortunate as not to have received some of his training in America will find difficulty in translating some of the scientific or technical terms used into those with which he is more familiar. J. A. S. RITSON.

## DEMONSTRATION-LECTURES IN PHYSICS

### Analytical Experimental Physics

By Prof. Harvey Brace Lemon and Prof. Michael Ference, Jr. Pp. xvi+584. (Chicago: University of Chicago Press; London: Cambridge University Press, 1943.)

THE purpose of this book, as stated in the preface, is to provide a record of demonstration-lectures which were given to second-year students attending a general course of physical sciences at the University of Chicago. Will it fit any British syllabus? A comparison with those of the University of London will be a stage towards deciding this question. The book contains what is needed for London Intermediate Science, and much more besides. Of the twenty questions set in the London External General B.Sc. in June 1938, seven can be answered fully with the aid of this book, seven partly; and on the remaining six it gives no guidance. The deficiencies, for this purpose, are mostly that useful general notions are not developed in sufficient quantitative detail. For examples: (i) pairs of separated thin