

*Elementary Trigonometry.* By Dr. John Prescott and H. V. Lowry. Pp. xi+444. (London, New York and Toronto: Longmans, Green and Co., Ltd., 1932.) 5s.

In this volume the authors "have tried to recapture the spirit of some of the writers of a few generations ago who looked on Trigonometry as a branch of applied rather than of pure mathematics". The course mapped out is therefore different in many ways from that found in most other textbooks. Great stress is laid on "the kind of calculations and manipulations of trigonometric expressions that occur in the applications of the subject". Theory is not neglected, but it only enters where it is necessary to establish practical formulæ. The scope is fairly wide and includes an excellent section on mensuration and solid geometry. A welcome feature is the introduction of radian measure at the beginning.

Cartesian geometry is freely used in establishing many of the standard theorems, and special attention is given to graphs and their uses. A novel feature is the addition of an appendix in which is discussed a geometrical method of calculating  $\pi$  to any degree of accuracy without using trigonometry.

Whilst many teachers may not agree with the general treatment, yet they will find much to stimulate interest together with a good selection of exercises, many of which are of an unusual type.

*General Science.* By F. Fairbrother and E. Nightingale. Part I. Pp. viii+136. (London: G. Bell and Sons, Ltd., 1932.) 2s. 3d.

GENERAL agreement is now reached upon the importance of giving all normal pupils in all schools some instruction in the nature of the environment in which their lives must be spent. For this purpose courses have to be planned which shall give the elements of physics, chemistry, biology, geology and astronomy. Until much more experience has been gained there is likely to be great diversity in such proposed courses.

The physical and chemical parts proposed by Fairbrother and Nightingale begin with experiments on the Bunsen burner, combustion, distillation and crystallisation. Then follows the measurement of length, area, volume and density and experiments on buoyancy and flotation. Thermal expansion, thermometry, pressure in liquids and in the atmosphere and the chemistry of the air complete the first part of the course, which is well illustrated by clear diagrams and everyday applications.

At present the value of any course in general science can be assessed only by the user—so much depends upon the teacher—and it is to be hoped that bold experimentation in the choice and treatment of topics will not be cramped by external examination systems and will lead to the production of many books of a standard similar to the present one.

*An Introduction to Organic Chemistry.* By Prof. Ira D. Garard. Pp. ix+296. (New York: John Wiley and Sons, Inc.; London: Chapman and Hall, Ltd., 1932.) 16s. 6d. net.

THIS is an expensive introduction to organic chemistry, which does not offer any particularly novel features. The type of treatment is indicated by the first few chapter headings, which run as follows: introduction, methane and related compounds, alcohols and ethers, halogen derivatives of the paraffins, unsaturated hydrocarbons, aldehydes and ketones. The descriptive work is well done, and the accompanying graphic formulæ are set out very clearly. Some of the space devoted to the accounts of individual substances might have been used to greater advantage in a fuller exposition of such general matters as the fundamental principles of stereochemistry and the nature of cyclic compounds. Thus, the constitutions of quinoline, isoquinoline, and more complex heterocyclic substances are presented without explanation before benzene has been discussed; and even when benzene is reached, its constitution receives scant attention. The final chapter contains laboratory directions for twenty-eight simple experiments in organic chemistry. The book contains fifteen diagrams, mostly of apparatus.

*Foundations and Methods of Chemical Analysis by the Emission Spectrum.* Being the authorised translation of "Die chemische Emissionsspektralanalyse" by Dr. Walther Gerlach and Dr. Eugen Schweitzer. Pp. 123. (London: Adam Hilger, Ltd., n.d.) 12s. 6d. net.

To a large extent this book consists of a summary of original researches carried out by the joint authors and published in the *Zeitschrift für anorganische und allgemeine Chemie*. It affords an authoritative account of the principles and practice of spectrographic analysis, and there are chapters dealing with the electrical and optical apparatus used in analysis by the emission spectrum, qualitative analysis, quantitative analysis, experiments on the refinement of the method by photometric intensity measurements, and special problems. Many of the points here presented have hitherto appeared only in the periodical literature. The book is well printed and illustrated, and it will be found helpful and suggestive to all who are interested in spectrographic methods.

*An Agricultural Atlas of England and Wales.* Second edition, revised. Made on behalf of the Agricultural Economics Research Institute, University of Oxford, by Malcolm Messer. Published by direction of the Ministry of Agriculture and Fisheries. Pp. iv+25+3 maps. (Southampton: Ordnance Survey Office, 1932.) 10s. net.

THE present re-issue of this atlas is based on the agricultural returns for 1928. The area of each map now includes the Channel Islands and additional maps show the distribution of agricultural labour, sugar-beet and poultry.