

or gromel, and flag, gladen, or water-segg for the wild iris.

There is throughout the book a sense of pungent fragrance as of a bunch of herbs, and the "chaplet" is, as the quoted foreword claims, indeed "not short in savour."

R. & L. H.

#### OUR BOOKSHELF.

*The Analysis of Non-Ferrous Alloys.* By F. Ibbotson and L. Aitchison. Pp. vii+230. (London: Longmans, Green and Co., 1915.) Price 7s. 6d. net.

At such a time as this, when there is a large demand for metals and metallic alloys of all descriptions, it is of the greatest importance that the manufacturers and users of these materials should have at their disposal rapid and accurate means of controlling the chemical composition of the goods they handle.

Until comparatively recently the "commercial" chemical analysis of non-ferrous alloys has received but little attention, at any rate from those most concerned, so that one has been forced to go for one's information to a series of widely scattered original papers in the various scientific and technical journals. A text-book embodying all the best of the information at present available is therefore exceedingly welcome.

The work under review may be divided broadly into three parts. The first part enters into a detailed description of the most recently devised apparatus for electrolytic analysis, and discusses the main theoretical considerations underlying the successful deposition of the metals.

The second part reviews the action of sulphurated hydrogen on solutions of the metals under varied conditions of acidity, temperature, concentration, and time. Then follows an exhaustive description of the best methods for the estimation of the various metals in solutions of their salts.

The remainder of the book is devoted to the application of the foregoing methods to the analysis of brasses, bronzes, "white metals," and other alloys of industrial importance.

The value of the book is enhanced by a very complete bibliography. The book should prove of great value to works chemists and to the more advanced students in technical schools.

B. W. DRINKWATER.

*Science of Dairying: a Text-book for the use of Secondary and Technical Schools.* By W. A. G. Penlington. Pp. viii+260. (London: Macmillan and Co., Ltd., 1915.) Price 2s. 6d.

THIS volume covers a very wide range, and is intended to be used as a text-book of dairying in secondary and technical schools. It deals first with the composition and properties of milk, and gives particulars of the methods employed in the detection of adulteration. Two chapters are devoted to bacteria and the important part they play

in dairying. A later chapter gives working details of the two best known rapid methods for the estimation of fat in milk. The first of these—the Babcock test—is not employed commercially in Great Britain, but is common in Australia, New Zealand, and Canada, whereas the second test—the Gerber—is universally practised in this country.

The principles, and outlines of the practice, of butter- and cheese-making are given in a clear and concise manner. The author then passes on to consider the physiology, feeding, care, etc., of the cow, and some of the common diseases to which she is subject. A chapter deals with arithmetical problems arising in dairy practice.

The book is written apparently for those who take up dairying more as a subject of examination than as an end in itself, and it is a little difficult to see to what class of English readers it will especially appeal. Without question, the educational value of such a work is considerable, but as dairying as a subject is not generally taught in the secondary schools in this country, the demand would appear to be limited to those attending a county dairy school, particularly those who are not following a systematic course of training. In the latter case the details are insufficient, but as introductory to the subject all students—whether short or long course—would benefit by a study of the book.

*The Internal Combustion Engine: a Text-book for the Use of Students and Engineers.* By H. E. Wimperis. New and revised edition. Pp. xvi+319. (London: Constable and Co., Ltd., 1915.) 6s. 6d. net.

SINCE the first edition of this book was published in 1908, there have been many important developments, both scientific and practical, in the internal combustion engine. These developments have necessitated many changes and additions in the present volume. The book is divided into three sections, the first of which treats of the theory of the subject. After describing the more elementary theorems in thermodynamics and the cycles employed, the author gives a very good account of the numerous experiments which have been made on explosions in closed vessels, and on temperatures inside the working cylinder. The second section deals with gas engines and gas producers, and includes information regarding the Humphrey gas pump, gas turbines, and Hopkinson's water-injection system. Methods of testing and of reducing test results are also given. The third section deals with oil and petrol engines and contains a good discussion on the Diesel engine, and on petrol engines for motor-cars and aircraft.

The illustrations are very good and clear. At the end of each chapter is given a number of excellent exercises, many of which have been taken from recent Cambridge examination papers. The book is very well adapted for the use of students, and has the merits of being moderate both in size and price.