

them to think for themselves. In this, Profs. Piper and Ward have succeeded; and their practical classification of the sciences could be read with profit even by specialists on one subject or the other.

It is difficult to dispute on any point of the book if one takes into account its purpose. But one cannot fail from noting the pragmatic character of its exposition. For example, the importance of the calculus is denoted with reference to its applications to reality. Again, in the exposition of logic, much prominence is given to induction, verification, and discovery, while formal logic is summarily treated. The bibliographies at the end of each chapter, the appendix on questions and exercises, and a very good index are features which enhance the practical value of this work.

(2) Dr. Dubs has written a comprehensive book on inductive logic, and one which has the distinction of being accurate and clear. But it is difficult to note anything in it of the importance announced by the author in his preface. His main thesis is that "induction always concerns itself with the establishment of the correctness of a hypothesis or assumption. The attempt to establish this hypothesis may be by one of three ways: empirical induction, immediate description, or rational induction, which is the most general of them all. Its very simplicity, however, has often led to its being misunderstood by those who have used it, especially by logicians, who have too often tried to assimilate it to the better-recognised deductive procedure" (pp. 126-127). So the author endeavours to re-state the case for rational induction; but in doing so, he hits upon scarcely anything new in the field of inductive logic. T. G.

*Joseph Fraunhofers Leben, Leistungen und Wirk-samkeit.* Nach Quellen geschildert von Prof. Moritz v. Rohr. (*Grosse Männer: Studien zur Biologie des Genies*, herausgegeben von Wilhelm Ostwald, Band 10.) Pp. xx+233. (Leipzig: Akademische Verlagsgesellschaft m.b.H., 1929.) 15 gold marks.

In this sympathetic and concise biography, Prof. von Rohr has rendered yet another service to science. The achievements of Joseph Fraunhofer, who was the founder of the modern technical optical industry in Germany, were too little known even in his own country.

The book paints a grey picture of the optical industry at the opening of the nineteenth century, with its preoccupation in the mass production of cheap spectacle lenses and its lack of attention to more complex instruments. It is suggested that English opticians owed much of their pre-eminence at that time to the demands of seamen for telescopes and the like.

Whence springs genius? How could this lad with his desultory and indifferent schooling train himself to become a leader not only in technical practice, but also in those fundamental steps which mark the emergence from crudeness and haze to precision and clarity in the understanding of the underlying principles of technical optics? All

the world knows of the Fraunhofer lines and their applications to exact refractometry, but how many realise the painstaking efforts at refractometry with the aid of a monochromator; the ambitious attempt to produce non-spherical surfaces of optical accuracy?

Fraunhofer belongs not to Germany alone but to the world. To read this little book is to gain a clearer perspective in one's view of present-day problems, and encouragement in the patient efforts which they require. L. C. M.

*Handbuch der anorganischen Chemie.* Herausgegeben von Prof. Dr. R. Abegg, Dr. Fr. Auerbach und Prof. Dr. I. Koppel. In 4 Bänden. Band 4, Abteilung 3: *Die Elemente der achten Gruppe des periodischen Systems.* Teil 2: *Eisen und seine Verbindungen.* B Lieferung 1. Pp. Bxvi + B463. (Leipzig: S. Hirzel, 1930.) 45 gold marks.

The high standard of all the volumes of Abegg's "Handbuch" is too well known to require comment, and it is only necessary to announce that a further volume has appeared in which the description of the elements is carried into the eighth group. The rapid progress towards completion under the editorship of Dr. Koppel is to be especially praised, and the way in which he has maintained the character of the work deserves the highest commendation. Unlike some other comprehensive works on inorganic chemistry, 'Abegg' has always been characterised by a maturity of exposition and a critical treatment of the material which shows clearly that the contributors have not been content merely in amassing abstracts. The present volume, which deals with compounds of iron, covers the field in a way which leaves nothing to be desired. It will be invaluable to all chemists. As in previous volumes, emphasis is laid on the physico-chemical aspects of the substances, but not to the neglect of descriptive chemistry. The complex iron cyanides and colloid systems are to be dealt with in another volume.

*An Introduction to Regional Surveying.* By C. C. Fagg and G. E. Hutchings. Pp. xi+150. (Cambridge: At the University Press, 1930.) 7s. 6d. net.

REGIONAL survey, as an exercise in concrete geographical study, was introduced into university education in Great Britain by the late Prof. A. J. Herbertson under the inspiration of Prof. P. Geddes. The methods since then have been utilised in most of the schools of geography in Great Britain, and a great deal of work has been accomplished, though relatively little has been published, largely for lack of means. The authors of this small volume are enthusiasts and have themselves done good work in regional survey. They set out here to explain some of the methods of field work and mapping. Their aim is practical guidance, and even if they explain a good deal that will be obvious to any student of geography, they have written a useful handbook for which there is a real need. There are several sketch maps and diagrams.