

The first part of the book describes methods for the size analysis of grains, and for the determination of the porosity and permeability of rocks. This is succeeded by a chapter dealing with the preparation of samples for optical examination. A knowledge of optical mineralogy is not assumed, and in Chap. v. full instructions are given for the identification of minerals by their optical properties, with the aid of the petrographic microscope. The treatment here is practical rather than theoretical, being aided by explanatory plates and diagrams. The book concludes with a descriptive list of minerals commonly occurring in sedimentary rocks, a determinative table of the non-opaque minerals of the same group (unfortunately printed in such small type as to hinder rapid reference), and a bibliography. In view of the varied materials to which the practical methods elaborated may be applied, these latter three sections are not perhaps so exhaustive as might be desired. The value of the book, however, lies in its description of laboratory methods, and for this purpose it can be recommended.

*High Speed Steel.* By Marcus A. Grossmann and Edgar C. Bain. Pp. ix+178. (New York: John Wiley and Sons, Inc.; London: Chapman and Hall, Ltd., 1931.) 17s. 6d. net.

THE practical importance of the high-speed steels in the engineering industry, coupled with their interest from the metallographic point of view, renders any account of these materials of wide appeal. English readers should perhaps be warned that, so far as the manufacture is concerned, the treatment of this applies specifically to American practice, which for many reasons would not be followed in its entirety by producers in Great Britain. It is of interest, for example, that the authors do not even mention the use of the induction furnace as a melting appliance for such alloys. Further, except for special purposes, smaller ingots would be cast here than apparently are usual in America. These smaller ingots are less subject to serious heterogeneity than larger masses would be, but of necessity result in a considerable reduction in the amount of work which can be put upon them.

The second section of the book is devoted to an account of the properties and metallographic characteristics of the alloys. A quite considerable amount of information has been concentrated into these pages, and on the whole the existing state of knowledge is fairly summarised. The position is such, however, that differences of opinion are not surprising. Most metallographers would hesitate to be quite so dogmatic as the authors on many points regarding, for example, the exact composition of the constituents which occur in these steels, or respecting the exact function of each of the elements which are present. The work is, however, of considerable interest and value; it deals with a most complex alloy system, and if, from its very nature, it emphasises the necessity for further research of a definitely fundamental type, it will perform a still more useful purpose.

F. C. T.

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*Recent Advances in Microscopy: Biological Applications.* Edited by Dr. A. Piney. Medicine, by Dr. A. Piney; The Living Eye, by Basil Graves; Zoology, by Dr. E. W. MacBride and H. R. Hewer; Botany, by E. C. Barton-Wright. Pp. vii+260. (London: J. and A. Churchill, 1931.) 12s. 6d.

THE four chapters within the covers of this book are so diverse in their subject matter—and even more in their method—that it seems scarcely worth while to make them into a volume. The chapter on the microscopy of the living eye, though written with expert knowledge, stands apart from any field in which the others might be included. The first chapter is essentially a short account of recent advances in human histology, but is entirely undocumented. The last two chapters purport to deal respectively with animal and plant cytology. The former chapter, however, deals almost entirely with the cytoplasm. The reason given for practically omitting attention to the nucleus is that the cytologist's work in this field is "practically at a close" since the general correlation of Mendelian laws with chromosome behaviour. This view leaves out of account the recent work on nuclear structure. The chapter gives, however, a very good survey of investigations on such cytoplasmic structures as Golgi apparatus and mitochondria, which will be found very useful for reference. The last chapter is too limited in outlook to be of much value, although much of the material included is of extreme interest, if adequately presented and discussed.

*Patterns for Eight Simple Relief Models illustrating Geological Structures.* Designed by Dr. Frank Smithson. (London: Thomas Murby and Co.; New York: D. Van Nostrand Co., Inc., 1930.) Patterns, 5s. 6d.; Cards specially suitable for mounting the patterns, 3s. 6d.; Models made-up, uncoloured, 45s.; Models made-up, hand-coloured, 63s.

THE patterns prepared by Dr. Smithson are printed in black and white on paper of excellent quality for taking water-colour and varnish. The models they are destined to form differ from those previously issued in that they illustrate the relation between surface relief and outcrop. The structures illustrated are as follows: 1, escarpment with tilted strata; 2, hills and valley with horizontal beds; 3, beds dipping up a valley; 4 and 5, beds dipping down valleys, sloping respectively at angles more and less than the dip (these two models placed together give a valley inlier); 6 and 7, folded beds with axes running respectively across and parallel to the valleys; 8, unconformity. Full instructions for making the models, with an illustration and description of each model, are included. When made up, the models are three or four inches high on a base ranging from 6 in. × 4½ in. to 6 in. × 9 in. They may be strengthened by coating with size and varnish. The models are clear and simple, and should prove valuable as an aid to the elementary student in understanding geological maps.