

TWO BOOKS ON MINERALS.

- (1) *A Pocket Handbook of Minerals, Designed for Use in the Field or Classroom, with Little Reference to Chemical Tests.* By Prof. G. Montague Butler. Second edition. Pp. ix + 311 + table in 5 folding sheets. (New York: John Wiley and Sons, Inc.; London: Chapman and Hall, Ltd., n.d.) Price 11s. 6d. net.
- (2) *Microscopical Determination of the Opaque Minerals: An Aid to the Study of Ores.* By Dr. J. Murdoch. Pp. vii + 165. (New York: John Wiley and Sons, Inc.; London: Chapman and Hall, Ltd., 1916.) Price 9s. 6d. net.

THESE two books form a useful addition to the already large number of American publications on determinative mineralogy.

(1) Prof. Butler's volume, now in its second edition, is specially designed for use in the field, and can easily be carried in the coat-pocket. A brief account is given of each mineral, and there is a useful table of the most characteristic properties of the different species, so that the recognition of a specimen should as a rule present little difficulty. The table does not, however, include specific gravity, one of the most generally useful means of identification. Even in the field a Walker's balance, or for smaller specimens the simple arm balance employed by Penfield, is available. The work appears on the whole to have been well done, though in a book containing so much detailed information there are naturally some points open to criticism. Oligoclase is described quite correctly as Ab_8An-Ab_8An , but a note is added that $Ab = Na_2O \cdot Al_2O_3 \cdot 6SiO_2$ and $An = CaO \cdot Al_2O_3 \cdot 2SiO_2$. This is misleading, for according to general usage *Ab* only represents half the amount of albite indicated by the former formula. Garnierite is not now the most important ore of nickel. The "compact fibrous masses" of crocidolite (blue asbestos) resemble in structure, not ordinary amphibole asbestos, but serpentine asbestos (chrysotile, better referred to by its older name, *karystiolite*). Again, it is not much use giving the value of precious stones per carat without specifying the size.

(2) Dr. Murdoch's book, on the other hand, is intended as a guide to students who wish to study the structure and composition of the opaque metallic ores in the laboratory, by examining the polished surface under the microscope. There is a useful introduction describing the methods employed and the results that can be obtained, followed by tables for identification. The first classification is by colour, the next by hardness, and the third by the behaviour with reagents. Königsberger's earlier method of observing the optical characters of opaque minerals in polarised light is described, but not his later method (*Centralblatt für Min.*, etc., 1909, p. 245), which promises to be of more general utility.

J. W. E.

OUR BOOKSHELF.

A Manual of Field Astronomy. By Andrew H. Holt. Pp. x + 128. (New York: John Wiley and Sons, Inc.; London: Chapman and Hall, Ltd., 1917.) Price 6s. net.

THIS is a handy and lucid manual dealing with all the problems that arise in field work with a theodolite, namely, determinations of altitude, latitude, azimuth, time, and longitude. It contains a useful list of formulæ for obtaining any element of the astronomical triangle in which three elements are supposed to be known. Attention may be directed to the unusual notation; the polar distance, zenith distance, and colatitude are called *z*, *p*, and *s* respectively; this is because they are opposite the points *Z*, the zenith, *P*, the pole, and *S*, the star. The explanations refer throughout to the American Ephemeris, but the arrangement of the British Nautical Almanac is so similar that they will serve equally for it. All needful corrections, such as parallax and refraction, are explained, but the author deliberately refrains from introducing refinements that are of no importance for work in the field. It is evident from a study of the examples that the degree of accuracy contemplated by the author is only of the order of the nearest 10". A considerably higher degree of accuracy is attainable with field instruments of the finest type, but the methods explained in the book will suffice, if carefully followed, to give this greater refinement.

An appendix explains the use of the "solar attachment," which is designed to solve the astronomical triangle mechanically, and give a direct determination of the meridian from an observation of the sun at any time. The accuracy attainable with it is stated to be not much greater than the nearest minute of arc.

ANDREW C. D. CROMMELIN.

Stanford's Half-inch Map of the Battle Front in France and Flanders: Ostend, Zeebrugge, Bruges. War Map No. 23. (London: E. Stanford, Ltd., 1917.) Price 2s. 6d.

THIS sheet is a continuation northward of the map of the British battle front in France and Flanders previously published by the same firm. It extends from Dunkirk in the west to within six miles of Flushing in the east, and southward to the latitude of Roulers, and so comprises the greater part of the plain of Flanders. There is little high ground in this region, and the only contour shown is that of 125 ft. All the ground above that height is stippled light red. The method is successful so far as this sheet goes, but on higher ground done on a uniform method the depth of colour would obscure the map. There are no spot heights, but they are scarcely required in Flanders. Woods, lakes, and marshes are shown by conventional signs without colouring. Roads, railways, and canals are clearly marked. As regards roads, apparently there is a differentiation into main-roads, by-roads, and tracks. This, however, is not stated in the ex-