

nesium, iron, manganese, and zinc groups. The greatest need for improvement in the earlier editions was in the scope of the determinative tables, which have been expanded with considerable success.

A. D. B.

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*Microscopical Determination of the Opaque Numerals.* By JOSEPH MURDOCH. Pp. vi+165, figs. 9 (index of cuts).

A determinative key for use in connection with the metallographic microscope is provided in this book. As the first work of its kind the book has already found wide use. The fundamental basis of classification is color (of the polished surface), followed by hardness and microchemical tests. A number of so-called minerals are thought by the author to represent mixtures rather than well-defined compounds, but these, with a number of unknown minerals discovered in connection with the studies on which the key is based, are given place in the key.

The book is remarkably satisfactory for a first attempt in the field, and has already made possible the use of the metallographic microscope in colleges where no research work can be undertaken.

A. D. B.

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*Geologic Map of West Virginia.* By I. C. WHITE, R. V. HENNEN, D. B. REGER, and R. C. TUCKER. Morgantown, W.Va.: State Geological Survey, 1917.

A revised map of the state, showing coal, oil, gas, iron ore, and limestone areas, on the scale of eight miles to the inch. A list of coal mines by counties, printed on the sheet, includes those in operation up to July, 1917, except for some that are doubtless only temporary producers. The geology of areas other than those mentioned is not shown, nor is there any stratigraphic division of the limestone areas.

A. D. B.

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*Economic Geology, 4th edition.* By HEINRICH RIES. London: Wiley & Sons, 1916. Pp. xviii+856, figs. 291, pls. LXXXV.

In the fourth edition this well-known work has been considerably expanded and materially improved, both in the treatment of topics and in the descriptions of deposits. Many illuminating figures and diagrams have been added. Among the more noteworthy changes are the expansion of the chapter on petroleum and the chapter on ore deposits, and the addition of descriptions of many of the important Canadian deposits.