BOOK REVIEWS

VORRÄTE UND VERTEILUNG DER MINERALISCHEN ROHSTOFFE. EIN BUCH ZUR UNTERRICHTUNG FÜR JEDERMANN, by FELIX MACHATSCHKI, Springer-Verlag in Wien I, Mölkereibastei 5, **1948,** Printed in Austria. viii+191 pages, 6 figs. Heavy paper covers. Price $3.70.

In this little book Professor Machatschki, who is now at the University of Vienna, has summarized for his countrymen the essential facts about the distribution and reserves of mineral raw materials. The book is divided into three sections:—

I. The supply of mineral raw materials (17 pages).
II. Occurrence and origin of mineral raw materials (11 pages).
III. Important mineral raw materials and their distribution (150 pages).

The point of view is geochemical and geological throughout. The first two sections and a brief appendix on rocks serve to orient the general reader in this regard.

The author is rightly of the opinion that the usual sort of statistical material is of little value to the layman and where given for just a particular year, or a limited period, may be very misleading. Average production figures with some reference to peaks and fluctuations, a review of trends and reserves are much more enlightening than exact figures on the output of some particular mineral substance in each of a great number of countries. Accordingly the book contains but few tables and these are in part unusual. One table in section II lists those raw materials which show a very irregular distribution, being produced in important amounts in only one or two countries, and gives for each the leading producers and the percentage of the world total which their production constitutes. In another table in the same section a system of symbols is used to indicate the supply and reserve situation for 33 raw materials in 22 countries and regions.

In section III there is given for each raw material a statement of its mineralogical and geological occurrence, its uses, production, distribution and reserves. In this section there are many digressions, as where the use of topaz as a gem is mentioned in connection with the distribution of fluorine in minerals, and cross references bridge the unnatural barriers which arise in any classification. In many places the estimate of reserves is stated in terms of the expected time to exhaustion of known supplies. The statement of production by individual countries, especially Austria, is often related to the needs of that country or the importance of a particular material in its economy. All values are given in dollars.

The book is well printed on good paper, is nearly free from misprints and has an excellent, 12 page, index.

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THE PETROGRAPHY AND PETROLOGY OF SOUTH AFRICAN CLAYS
V. L. BOSAZZA

This paper was presented by Mr. Bosazza for the degree of Doctor of Science (Geology) to the Natal University College, University of South Africa and published by Percy Lund and Humphries, London W.C. 1. (reproduced from typewritten pages by the replica process); price £2-2-0.

Much of the paper is devoted to discussions of clays in general, and hence covers a much wider field than the title indicates. Part 1 (pp. 3–114) takes up ultimate chemical composition including minor constituents, size distribution, microscopic examination, mineral analysis, clay minerals, water in clays, and reactions between clay minerals and organic compounds. Part 2 (pp. 115–176) takes up methods of classification, and the various hydrates composing clays and related materials. Part 3 (pp. 177–276) discusses weathering, transportation, sedimentation, and clays formed under varying conditions. It also gives more details about South African clays than the preceding sections.

In this thesis with its broad and rather diffuse presentation, the author gives about 100 direct quotations, and about 330 citations. There are a few notable omissions of pertinent materials on soils and clays, but Mr. Bosazza has assembled a rather remarkable list of references, and these will be very useful to other workers in the field.

The list of subjects treated, and the comments and evaluations of cited or quoted material constitutes a very elaborate approach to the problems of soils and clays. The 300 available pages hardly give space for such an exhaustive treatment, and a completely objective presentation and evaluation of all this material would be a staggering task, the more so as the science of clays and soils is in a formative stage.

There are, however, some subjects which might well have been covered more fully. For instance, the chapter on "microscopic examination by various means" mentions the making of thin sections of clays, but there is no discussion of optical properties, particularly of indices of refraction and birefringence which commonly permit a definite determinations of a clay mineral; nor is physical form mentioned, a property which is commonly completely diagnostic of kaolinite.

Interesting and somewhat surprising is the correlation of the change in the character of certain South African clay materials with climatic changes, as continental drift in Permian time (citing DuToit), brought the African continent into a progressively warmer and warmer environments.

Mr. Bosazza presents many new chemical analyses, most of them made by him, and many careful size analyses of soil materials. Descriptions of modes of occurrence, of physical and of chemical properties of many South African clays are given, and data is presented about numerous deposits of younger clays in the Delta, Nile valley.

The paper will be read with interest by all those working with clays and soils, and it gives information which will be very useful to those concerned with the commercial possibilities of South African clays.

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POPULAR GEMOLOGY, by Richard M. Pearl, pp. xii+316, 115 illustrations' $5\frac{1}{2}''\times8''$. John Wiley and Sons, Inc., New York, and Chapman & Hall, Ltd., London, **1946**. Price $4.00.

Persons seeking general information concerning gems will find *Popular Gemology* very easy and entertaining reading. As the more detailed scientific aspects of gems are treated very briefly, those interested in securing specific data concerning the various physical, optical, and other important properties will need to consult the more comprehensive books in the field of gemology.

The various chapters have attractive titles: The Lure of Gems, Recognizing Gems, Faceted Gems, Cabochon and Carved Gems, Gems of the Silica Group, Gems With a Genealogy, and Man-Made Gems. In the timely chapter of Luminescent Gems the various types of luminescence are discussed, the gems that exhibit this phenomenon are listed, and the necessary equipment described and illustrated. There is a short selected bibliography. Thirty pages are devoted to a very comprehensive index.

The order in which the various gems are discussed is quite unusual. It is doubtful that it aids in maintaining the interest of the reader. Many important historical facts, as well as the industrial and commercial uses, are included in many of the descriptions of the individual gems.

The book is amply illustrated and is well printed on excellent paper. It should stimulate further reading and study. *Popular Gemology* is a worthwhile addition to the rapidly growing list of books devoted to the study of gems.

Edward H. Kraus, *University of Michigan*