BOOK REVIEWS

AUS DER GESCHICHTE DES SÄCHSISCHEN BERG- UND HÜTTENWESENS; ZUM 200 JAHRIGEN BESTEHEN DER BERGAKADEMIE ZU FREIBERG.

WALTHER FISCHER. Verlag Sachsiche Heimat, Hamburg, 1965, 152 p., 60 figs.

In pursuit of a long-standing interest in the historical aspects of earth sciences in Europe, particularly in Germany, Dr.-Ing. Walther Fischer has provided still another excellent contribution, this time, one dealing with the origins, establishment, and development of the celebrated mining school at Freiberg in Saxony. His *Mineralogie in Sachsen von Agricola bis Werner* (Dresden, 1939), and his more recent *Gesteins- und Lagerstättenbildung im Wandel der wissenschaftliche Ausschauung* (Stuttgart, 1961), naturally touched upon the Freiberg *Bergakademie*, but the present work, while necessarily including some material previously published, focusses more attention to the school and places its 200-year career in its proper historical and cultural perspective.

The text is divided into three parts: the development of ore-mining in Saxony (p. 7–78), the history of the *Bergakademie* (p. 79–97), and the development and career of iron mining and smelting in Saxony (p. 98–143). An unusual feature of the text is the deliberate interweaving of political and cultural events, with frequent references to prominent contemporary figures in disciplines outside the sciences. The aim is to show how the culture, prosperity, and political fortunes of Saxony and its citizens were related rather directly to the mining industry. The text is terse and studded with specific supporting data as places, names, dates, and statistics. The references at the end of the text were selected for their value as guides to older literature, also rich in additional references. The index is detailed and thorough.

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SILICATE SCIENCE, VOLUME III—DRY SILICATE SYSTEMS.

WILHELM EITEL. Academic Press, New York-London, 1965, xiv+553 pages, $22.00.

Earlier volumes of this series were reviewed on these pages (*Amer. Mineral.* **50,** 524–525 and 1134 [1965]). The present volume has two sections:

A) Dry silicate equilibria; fusion and polymorphism (112 pages) and

B) Dry silicate systems; fusion and polymorphism (400 pages).

In section A the emphasis is on methods. In section B new results for about 90 silicate systems, mostly ternary, are discussed.

As in the earlier volumes, the author has attempted complete coverage of the literature. In many cases in which partial or even conflicting results from various sources are summarized the reader may be left confused. At least it scarcely seems that any problem has been solved or even that our understanding of any system is in a satisfactory state.

There is a great deal in this volume for mineralogists and petrologists. About 20 pages are devoted to the system silica-alumina and many more pages to the feldspars which are discussed in connection with several systems. Throughout we find references not only to the well-known papers familiar to all English-speaking mineralogists but also extensive references to Japanese and Russian work and to results taken from the technological literature. All references are given in footnotes which appear on nearly every page and most of these footnotes include some further illuminating comment on the sources. Interspersed with the discussion of particular systems there are paragraphs which are purely petrological. The "Mineral Index" contains about 450 rock and mineral names. Surely every mineralogist or petrologist will find something that is new and valuable in this volume.

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SILICATE SCIENCE, VOLUME V—CERAMICS AND HYDRAULIC BINDERS. WILHELM EITEL. Academic Press, New York-London, 1966, xiv+618 pages.

This is to be the final volume (Vol. IV is not yet published) of Professor Eitel's summary of the progress in silicate science since the appearance of his *The physical chemistry of the silicates*. Though the general preface, which is repeated at the beginning of each volume, states that the series is devoted "exclusively to progress made in the period between 1952 and 1962" this volume contains many references to the literature of 1963 and 1964. It is divided into three sections—A) Solid-state reactions and their uses (95 pages), B) Reactions in ceramic bodies (175 pages), and C) Portland cements and related hydraulic binders (275 pages). The last section deals with the same material that has recently been covered in *The Chemistry of cements*, edited by Professor H. F. W. Taylor (*Amer. Mineral.* **50,** 1139 [1965]). However, the present volume is no substitute for that excellent book.

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THE CALEDONIAN COMPLEX OF ULTRABASIC, ALKALIC ROCKS, AND CARBONATITES OF THE KOLA PENINSULA AND NORTHERN KARELIA (GEOLOGY, PETROLOGY, MINERALOGY, AND GEOCHEMISTRY). A. A. KUKHARENKO. M. P. ORLOVA, A. G. BULAKH, E. A. BAGDASAROV, O. M. RIMSKAYA-KORSAKOVA, E. I. NEFEDOV, G. A. IL'INSKII, A. B. SERGEEV, AND N. B. ABAKUMOVA. Izdatelstvo "Nedra", Moscow, 1965, 772 pp., 325 figs., and colored maps. (In Russian.) 5 r. 44 k. (about $6.00).

This impressive monograph is a thorough description of a series of massifs near the much larger and better known Lovozero and Khibina massifs, and including those of the Pesochnyi River, Salmagorsk, Lesnaya Varaka, Lake Varaka, Afrikanda, Kovdor, Tur'yii Peninsula, Vuoriyarvi, Sellanlatvinsk, and Seblyavr.

There are four main sections: Geology and petrography, p. 9–288; Mineralogy, p. 289–546; Geochemical features, p. 547–644; Petrology, p. 645–754. The rocks, including olivinites, pyroxenites, nepheline pyroxenites, melteigites, urtites, nepheline syenites, fenites, and carbonatites are described in detail, with many modal and chemical analyses. Detailed studies of the minerals, many of which are rare or unusual, include chemical, optical, X-ray, and DTA work; among those treated at some length are magnetite, baddeleyite, perovskite, the pyrochlore group, garnet (melanite), sphene, melilite, pyroxene, phlogopite, and apatite. Comprehensive accounts are given of the geochemistry of the rocks, with many new chemical and spectrographic analyses, especially for Zr, Hf, Nb, Ta, the lanthanides and Y, and Sc.

An indispensable reference work for anyone interested in alkalic rocks and carbonatites.

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SALT BASINS AROUND AFRICA. BRITISH INSTITUTE OF PETROLEUM; American Elsevier Publishing Co., Inc., New York, N.Y., 1966, 122 p., $7.75.

Geologists interested in evaporite stratigraphy will delight in the information contained in this small volume, a record of a Joint Meeting of the Institute of Petroleum and The Geological Society in London, 1965. The papers are descriptive, and deal with the structure, stratigraphy, and sedimentation of evaporite and associated deposits around the periphery of the African Continent.

The separate papers are as follows: *The influence of basement structure on the evolution of the coastal (Mesozoic and Tertiary) basins*, W. Q. Kennedy; *The Red Sea Miocene evaporite basin*, F. Heybroek; *An evaporite basin in Southern Tanzania*, P. E. Kent; *The salt basins*

of the Gabon and the Congo (Brazzaville): A tentative paleogeographic interpretation, Y. Belmonte, P. Hirtz and R. Wenger; *The Senegal salt basin*, J. M. Ayme; *The Triassic salt in the Algerian Sahara*, G. J. Demaison; *The Mediterranean Basin*, W. D. Gill.

A sufficient amount of speculation concerning such topics as continental drift, graben tectonics, etc. spice the text, as does the symposium discussion which is included.

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