dividuals in a radial arrangement about a common center. Hobbs[7] observed this form of pyrite in the Galena district as early as 1895. He described cubes of pyrite developed in the direction of one of the principal axes and concluded that "the large radial sheaves of iron sulphide which occur at Galena are for the most part pyrite." However, since specimens showing this columnar development of the cube are not common in the lead and zinc region of the Upper Mississippi Valley, it appears that much of the fibrous iron sulphide has been referred to as marcasite. Van Horn[8] has stated that acicular iron sulphides have been termed marcasite, probably upon the basis that an orthorhombic mineral might assume this habit more readily than an isometric mineral.

Summary

The present study points to the fact that some of the fibrous iron sulphide found in the lead-zinc district of the Upper Mississippi Valley has been erroneously termed marcasite. Marcasite has been reported to be the most abundant iron sulphide in the area. While this contention may be correct, it seems logical to raise the question whether the amount of pyrite present has not been greatly underestimated.

[7] Hobbs, W. H., A Contribution to the Mineralogy of Wisconson: *Univ. of Wisconsin Bull., Science Series,* vol. **1**, No. 4, p. 145, 1895.

[8] *Op. cit.*, p. 288.

BOOK REVIEW

THE PETROGRAPHY OF THE KOLA PENINSULA (In Russian), B. M. Kupletski. Acadamy of Sciences, U.S.S.R., Petrographical Institute, Leningrad, **1932**; Series I. Regional Petrography. Six roubles.

In addition to the text proper consisting of 150 pages the book contains a geological map of the Kola Peninsula, 184 new analyses of minerals and rocks, and a few smaller sketch maps. The emphasis is not placed so much on the well-known apatite and nepheline deposits as in former papers, but the general geology, glacial phases excepted, is presented in a more unified manner and with greater completeness than hitherto.

The Kola Peninsula lies north of the White Sea, and is a prolongation, in rocks and structure, of the Fennoscandian Archean region. It is a horst bounded by a disconnected rim of downfaulted early Paleozoic sediments. Most of the peninsula is formed of pre-Cambrian schists and gneisses, once sediments, and include a wide variety. Among the early Archean ones are grünerite, actinolite, and magnetite schists, the last so rich in magnetite as to be a prospective iron ore. Into these are intruded an early Archean granite, now gneissic and somewhat crushed, and a late

Archean rapakivi with coarse texture and large phenocrysts. Two large outcrops of alkaline granite in the east half of the peninsula contain crossite and aegirine for their mafic minerals.

There are many intrusions of basic rocks, also of two ages. The older ones are the oldest known intrusives here: the metamorphosed gabbros and pyroxenites at the head of Kandalaksha Bay. The later ones, of possible Cambro-Silurian age, are fresh and more widespread. Two 70-foot sills are found, with enstatite and olivine segregated at the bottom, fine-grained labradorite in the middle, and coarse labradorite at the top.

One chapter is devoted to a description of the many and varied dikes of the Turya Cape. Another includes the other alkaline rocks: natrolite syenite dikes of the northern region, shonkinite dikes of the western, and most important, the two great masses of the west central part. The western one of these two masses has, excluding the endocontact rocks, a very coarse border of hibinite with 35% of nepheline. Inside this is a series of fine-grained nepheline syenites, and at the core is a coarse foyaite with 20% of nepheline. In tabular masses within the southwest part of the hibinite occur the economically valuable rocks: urtite with 80–90% of nepheline, and an apatite rock with 60–85% of apatite. The urtite is to be used as an ore of aluminum, and the apatite is being quarried for phosphate from a billion-ton deposit. Kupletski favors Bowen's or Smyth's hypothesis in explaining the genesis of these rocks, but does not discuss the question at length. The eastern mass is somewhat similar, with local sodalite, eudialyte, and cancrinite syenites.

The sedimentary rocks around the rim include sandstones (some glauconitic) and shales, non-fossiliferous and possibly of Silurian age.

Besides nepheline and apatite, economically useful materials include magnetite, diatomite, ores of copper and nickel, and many less abundant ones. Extensive nepheline sands near the main alkaline mass are being used for glass manufacture.

The mineral assemblages of the Hibina Tundra nepheline rocks include many unique and beautiful minerals. Their description and a discussion of the geochemistry of the rocks is given by Fersman in this journal, volume 11 (1926), pages 289–299.

CHARLES D. CAMPBELL

PROCEEDINGS OF SOCIETIES

MINERALOGICAL SOCIETY OF GREAT BRITAIN AND IRELAND

MINERALOGICAL SOCIETY, June 7, 1934, SIR THOMAS J. HOLLAND, President, in the chair. PROF. C. PALACHE: *The form relations of the lead oxychlorides, laurionite, paralaurionite, and fiedlerite.* The separate identity of each of the first two minerals is confirmed and their homoeomorphism is exhibited by a re-orientation of laurionite. The form series of fiedlerite has been simplified by the choice of a new unit form. New forms are described on paralaurionite and fiedlerite. The crystallography of all three species is summarized in new angle tables, and their habits are illustrated by a series of drawings.

MR. F. A. BANNISTER: *The crystal-structure and optical properties of matlockite* (PbFCl). W. Nieuwenkamp's recent work proving the identity of matlockite with artificial lead fluochloride PbFCl has been confirmed. New chemical analyses,