

A determination of the specific gravity gave a value of 5.88 which is somewhat low for arsenopyrite, but is probably due to the presence of included pyrite.

Small crystals of the latter were found not only attached to some of the crystals of the former, but examination of a polished surface of the arsenopyrite crystals showed that these contained microscopic grains of pyrite.

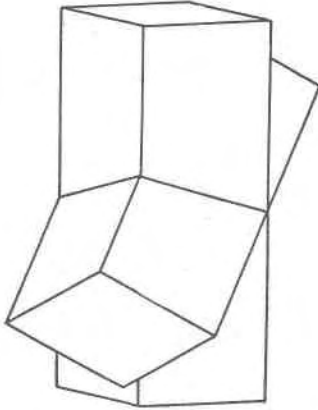


FIG. 1.

At first the crystals were suspected of being a copper mineral, since before the blowpipe they gave a strong copper reaction. An electrolytic determination on some crystals showed 0.2% of copper, while others showed none. A spectroscopic test, kindly

made for the writer by Dr. Papish, gave a strong copper line, indicating that this element was probably present, in the crystal examined, to the extent of 1% (alho exact results cannot be obtained by this method). It appears, therefore, that the copper is present in variable amounts, no doubt due to inclusions of chalcopyrite. No other foreign element showed in the spectroscope. A complete analysis was not made because of the known inclusions of pyrite and the suspected inclusions of chalcopyrite, which it was impossible to separate.

THE IDENTITY OF "COLLBRANITE" WITH LUDWIGITE

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The name collbranite was proposed by D. F. Higgins² for a mineral occurring in contact-metamorphosed limestone in the Suan Mining Concession in Central Korea. The following remarks are quoted from the original article:

¹ Published by permission of the Secretary of the Smithsonian Institution. [This mineral was included in the doubtful and discredited silicate list in our recent tabulation (6 (1), 17, 1921); it should be transferred to the borates as shown in the present article. Ed.]

² Higgins, D. F., *Geology and Ore Deposits of the Collbran Contact of the Suan Mining Concession, Korea, Econ. Geol.*, 13, 19, 1918.

"There occurs very commonly in the marble walls of the ore-bodies of the mine, and in massive form in the western group, a black acicular mineral in characteristic stellar aggregates. This mineral has been referred to by Koto as ilvaite. In the unfortunate lack of a chemical analysis the identification of this mineral is doubtful. The writer believes, however, from microscopic evidence and from that of mineral association, that the mineral is not ilvaite, but a highly ferrous pyroxene of the hedenbergite type. There is a definite possibility that this mineral may be very close to the iron end of the isomorphous (Ca, Fe) (SiO₃)₂ series; if not indeed the terminal pyroxene, ferrous metasilicate, FeSiO₃. He therefore proposes the name "collbranite" after Mr. H. Collbran and his son, Mr. A. H. Collbran, who have made the Suan mine a producer. This mineral will hereinafter be referred to as "collbranite."

In the publication by Koto³ which is cited the following description of this mineral is given:

"The ilvaite forms acicular radiating needles. It is opaque and submetallic appearing just like stibnite for which it has been taken. The cleavage toward (001) is distinct especially after partial solution. Before the blowpipe the ilvaite gives no reaction for sulphur but a reaction for manganese. On careful examination of thin needles the mineral turned out to be transparent breislakite-like emerald-green needles. Absorption pronounced; $c > a$ or b , a brown, c sap-green; and on account of strong absorption the needle becomes black in the latter direction. The optical character is positive. The refraction is high but the double refraction weak."

Since two observers had reached such widely divergent conclusions as to the identity of this mineral it was desirable that its identity be finally settled by analysis, especially since the name "collbranite" had entered the literature as indicating a new mineral species, yet with a unique lack of supporting evidence. Were it certainly of the composition assigned to it by Higgins the advisability of giving it a new name is open to question since the name ferrosilite, given to this compound by Iddings and Washington, was first published in 1903, and has been frequently used in the literature since that date. The investigation of the material has recently been undertaken in the Museum laboratory, the National Museum having received five or six excellent specimens of typical material from the Hol Gol (or Hol Kol) mine thru Mr. J. Morgan Clements. This material consists of black acicular radiating needles in an aggregate of calcite and diopside. Megascopically it agrees perfectly with the descriptions of both Higgins and Koto and its microscopic characters are as given by

³ Koto, B., The Geology and Ore-deposits of the Hol Gol Gold Mine, *J. Coll. Sci. Imp. Univ. Tokyo*, 27, art. 12, p. 11, 1910.

Koto. An analysis made upon material separated by heavy solutions gave: SiO_2 0.40, Fe_2O_3 32.49, Al_2O_3 2.32, B_2O_3 16.80, FeO 10.40, CaO 1.86, MnO 0.36, MgO 34.54, H_2O 1.42, sum 100.59%. This composition proves beyond question that the material is neither ilvaite nor a pyroxene, but that it is in fact ludwigite of not abnormal composition. That it should be mistaken for ilvaite under the microscope is not surprising since the optical properties of ludwigite and ilvaite are almost identical. How the mineral could have been mistaken for a pyroxene and what justification existed for assigning a new name to it is not clear. Such casual introduction of new names into a science already replete with meaningless words is greatly to be deplored. This ludwigite and its occurrence will be further reviewed in a paper on the distribution of ludwigite as a contact metamorphic mineral which is in preparation.

THE OLD COBALT MINE IN CHATHAM, CONN.

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The old cobalt mine in Chatham is one of the many diverse types of metal deposit in New England which have in times past enticed speculative persons into spending money in their development without ever repaying the money invested, yet giving to mineralogical science numerous valuable specimens. The region about Cobalt was believed to contain rich mineral deposits from the earliest times. There is an old legend to the effect that Governor Winthrop was accustomed to repair to his mines here for a certain period of each year with a single henchman and to secretly mine, smelt and manufacture gold to supply himself for the balance of the year.

The cobalt mine was first worked in 1762 by three Germans who shipped the ore in casks to England, Holland, and China. Later another German named Erklens spent ten thousand dollars in development and shipped twenty tons of ore to China, but lost money on the venture. Seth Hunt, of New Hampshire, worked here from 1818 to 1820 and spent his fortune to no avail. Prof. C. U. Shepard operated the mine for a time about 1844. The last and most extensive operations were begun in 1850 when Edmund Brown sunk a shaft and ran drifts, taking out a large amount of ore and also building offices and reduction works.