NEW OBSERVATIONS ON KOBELLITE

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Although kobellite, a rather rare sulpho-salt, has been reported from eight different localities, the chemical composition of the mineral has never been settled. The identification of kobellite from two new localities in Canada (Rossland, B.C. and the Tintina Silver Mines, Yukon) provided an opportunity to make new observations on this mineral.

Electron probe analyses show that a solid solution series is present which extends from the high bismuth member to the antimony end-member. The ideal formula for kobellite is $5PbS.4(X)_2S_3$ where X is Bi and/or Sb. The previous formula proposed by Nuffield (1948) is $6PbS.FeS.2Bi_2S_3.Sb_2S_3$.

Analysis of material from the type locality in Sweden gives a ratio of Bi:Sb $\simeq$ 1.6:1 and the Rossland material gives a ratio of Bi:Sb $\simeq$ 0.67:1. The Tintina mineral is the pure Sb end-member.

It is proposed that kobellite be retained for the bismuth member and a new name be given to the antimony member.

CO-EXISTING PYROXENES IN A THOLEIITE SILL, GRAND MANAN, N.B.

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Optical, chemical, and single crystal x-ray studies have been conducted to investigate the pyroxenes of a 500 ft. thick tholeiitic sill from Grand Manan, New Brunswick.

As in previously described sills of tholeiitic characteristics the pair diopsidic augite and orthopyroxene are present in the central part of the sill. Pigeonite is the calcium poor phase in the upper and lower margins. Intermediate zones occur in which orthopyroxene co-exists with pigeonite, subcalcic, and calcic clinopyroxene.

The exsolution phenomena were studied by means of c axis oscillation photos. The precession method can be used as a convenient check on the presence or absence of an orthorhombic phase in pigeonite if the b and c axes of the two phases coincide. In the sill pigeonite lamellae in augite are shown to have partially inverted to orthopyroxene. Also Weissenberg photos can be useful in detecting an orthorhombic phase which can not be recognized by the oscillation method.

Chemical studies relate the crystallization of the pyroxenes in the sill to the crystallization paths proposed by Hess & Kuno.

RE-EXAMINATION OF YUKONITE

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Yukonite was described in 1913 by Tyrrell & Graham. Re-examination of type material from Tagish Lake, Yukon, has confirmed the original analysis from which the formula $Ca_6Fe_{16}(AsO_4)_{10}(OH)_{30}.23H_2O$ was derived. Although originally described as amorphous, yukonite gives a weak x-ray powder pattern which differs from that of arseniosiderite, most notably in the absence of the strongest line at 9.9 Å.

Excess water in yukonite is driven off at low temperatures, and does not result in changes in the x-ray pattern. Arseniosiderite and yukonite thermogravimetric curves and formulae are compared and the relationships of these minerals to "tuvite", "khovakhsite", and smolyaninovite are discussed.