PROCEEDINGS OF SOCIETIES

MINERALOGICAL SOCIETY OF GREAT BRITAIN AND IRELAND

June 9, 1939

Dr. L. J. Spencer, President, in the chair.

The following were exhibited:—

(1) A new electromagnetic separator. By Dr. R. C. Evans.

(2) A selection of minerals from the Johnston-Lavis collection. By Dr. Malcolm MacGregor.

The following papers were read:—

(*1*). *New refractometers employing diamond and other minerals.* By Mr. B. W. Anderson, Mr. C. J. Payne, and Mr. J. Pike. (With demonstration.)

Refractometers of the total reflection type are invaluable as a means for testing faceted gemstones. The range of these instruments is limited to refractive indices below that of the hemisphere or prism of the refractometer and by the liquid used to ensure optical contact. A new design of refractometer in which small prisms of diamond or blende replace the usual dense glass hemisphere has enabled the range to be considerably extended. If synthetic spinel is employed a very useful refractometer is obtained for reading lower refractive indices as the dispersion of this material is almost identical with that of the minerals commonly tested, and, accordingly, exact readings may be taken in white light.

(2). *A new occurrence of kornerupine.* By Mr. B. W. Anderson and Mr. C. J. Payne.

Cut specimens of kornerupine have been encountered in mixed parcels of typical Ceylon stones. Confirmation of this new origin for the mineral was obtained by examination of a parcel of rough gem gravel sent direct from Ceylon from which two small pieces of kornerupine were recovered.

(3). *The "baddelyite from Alnö"—an error.* By Dr. H. von Eckermann.

E. Hussak in 1898 recorded the occurrence of baddelyite (ZrO_2) in the jacupiringitic varieties of the Alnö nepheline-syenites. A detailed study of these rocks has failed to confirm this, and no trace of zirconia could be detected. The anomalously birefringent melanite has, however, optical characters similar to those of baddelyite; and is suggested that the mineral described was really melanite.

(4). *Crystal-structure of a natural nickel-iron alloy.* By Professor E. A. Owen and Mr. B. D. Burns. (Communicated by the President.)

The mineral "awaruite" from Grant's Pass, Oregon, consisting of a mixture of nickel-iron alloy with impurities, the chief of which is probably serpentine, has been examined by x-ray analysis. The alloy possesses a face-centered cubic structure, the lattice parameter of which is 3.5516 Å. It is not definitely decided whether the alloy conforms to the formula $FeNi_2$ or to the formula Fe_2Ni_3, although the former is believed to be the more probable. The mineral contains by weight 26.50% iron, 60.42% nickel and 13.07% impurity. This gives 2.1 as the ratio of the number of nickel to the number of iron atoms present. Its density is 6.6 gm. per c.c., the density of the alloy being 8.5 gm. per c.c. The mineral contains 30 times its own volume of gas made up of a mixture of hydrogen and carbon monoxide in equal proportions.