

MINERALOGICAL SOCIETY (LONDON)

A meeting of the Society was held on Thursday, January 11th, 1951, in the apartments of the Geological Society of London, Burlington House, Piccadilly, W. 1 (by kind permission).

EXHIBITS

- (1) Crystals of analcime and baryte from the trachyte of Traprain Law, East Lothian: by Dr. S. I. Tomkeieff.
- (2) The use of a Laspeyres ocular lens in preference to the Berek compensator: by Dr. A. F. Hallimond.
- (3) Sections and colour photographs of (a) artificial corundum, (b) kyanite-staurolite intergrowth, (c) garnet: by Dr. Francis Jones.

PAPERS

The following papers were read:

- (1) 'REICHENBACH' AND 'BREZINA' LAMELLAE IN METEORITIC IRONS.

By Dr. L. J. Spencer

Reichenbach lamellae, seen as bands on etched sections, were originally described as enclosed plates of troilite parallel to cube planes in the kamacite-taenite structure, and Brezina lamellae as schreibersite parallel to the rhombic-dodecahedron. These minerals, and also cohenite, have since been observed in both of these and in other orientations. It has sometimes been assumed that bands at right angles indicate orientation on cube planes, but they may also be due to other orientations. On a section parallel to an octahedral plane it is possible only with lamellae parallel to the rhombic dodecahedron.

- (2) SEDIMENTARY INCLUSIONS IN THE HYPERSTHENE-GABBRO, ARDNAMURCHAN, ARGYLL-SHIRE.

By Mr. M. K. Wells

The hypersthene-gabbro contains an abundance of granular basic hornfels inclusions which have all been interpreted in the past as recrystallized basic igneous rocks. Some of these inclusions, particularly banded ones, are now believed to be sedimentary rocks which have suffered considerable metasomatism. The original composition of these xenoliths is largely a matter of speculation. In a few cases the true nature of the original rock can still be assessed: these include altered sandstone, pelitic, semicalcareous and peraluminous sediments. Analyses are given of some of the alteration products, together with full details of the texture and field relationships of each rock type. The significance of this discovery in connection with the problem of genesis of the gabbro is briefly discussed.

- (3) SOME DATA ON SYNTHETIC ALUMINOUS AND OTHER PYROXENES.

By Mr. E. R. Segnit

The limits of solid solution in the clinopyroxene phase in the synthetic system CaSiO_3 - MgSiO_3 - Al_2O_3 have been determined. In the system, diopside-alumina, solid solution extends to 13% Al_2O_3 . The field of homogeneity in the ternary system extends on the lime-rich side beyond the join diopside- $\text{CaAl}_2\text{SiO}_6$.

The influence of these replacements in the diopside structure on the optical properties is indicated.

Some data are also provided on the homogeneity limits in the systems diopside- Fe_2O_3 , diopside- TiO_2 .

(4) THE PETROLOGY OF THE EVAPORITES OF THE ESKDALE NO. 2 BORING, EAST YORKSHIRE.
PART III THE UPPER EVAPORITE BED.

By Dr. F. H. Stewart

The bed is 205 feet thick. The upper 83 feet was not cored, and the rocks below this have been divided into three main zones:—a basal anhydritic zone (26 feet); followed upwards by a zone of granular halite (44 feet); and then by a zone of halite with a considerable quantity of clastic material (52 feet).

Petrographic descriptions of the rocks are given. The chief constituents are halite, anhydrite and magnesite. Dolomite is present near the base. Quartz is abundant, and talc is conspicuous in the halite zone. Rinneite occurs through a range of 30 feet in the zone of granular halite. Sylvine and carnallite are present in small quantity. Halite-anhydrite pseudomorphs after gypsum are found in the basal zone. There has been much replacement and recrystallisation since original deposition.

A meeting of the Society was held on Thursday, March 8th, 1951, in the apartments of the Geological Society of London, Burlington House, Piccadilly, W. 1 (by kind permission).

PAPERS

The following papers were read:

(1) THE SURFACE STRUCTURE OF CRYSTALS.

By Mr. A. F. Seager

A preliminary survey has been made of the detailed surface of a wide range of mineral crystals, including fluorite, topaz, beryl, pyrite, baryte, quartz and apatite. The growth forms or vicinal "pyramids" almost invariably show striations, which are interpreted as due to growth by layer spreading. The growth layers may be polygonal, circular or elliptical and exhibit a symmetry not lower than that of the face on which they are found, if certain irregularities are excepted. Evidence has been obtained of the origin of striations on quartz, topaz and other minerals. A generalized description of crystal growth in terms of layer spreading is suggested.

(2) A NEW OCCURRENCE OF UVAROVITE FROM NORTHERN KARELIA IN FINLAND.

By Mr. Oleg von Knorring

A mineralogical and chemical study has been carried out on uvarovite garnets from Northern Karelia. The chromium garnet, usually considered as a rare member of the garnet group, here occurs as a rock-forming mineral. Physical and optical properties have been determined on three analysed uvarovites with varying contents of chromium and it is shown that a strict linear relationship exists between the chromium content on the one hand and the refractive index, density and unit cell size on the other. Evidence of the metamorphic origin of the uvarovite is adduced.

(3) THE PARAGENESIS OF SYLVINE, CARNALLITE, POLYHALITE AND KIESERITE IN ESKDALE BORINGS NOS. 3, 4 AND 6, NORTH-EAST YORKSHIRE.

By Mr. G. Armstrong, Prof. K. C. Dunham, Mr. C. O. Harvey, Mr. P. A. Sabine
and Mr. F. W. Waters

The mineralogy of the Permian evaporite succession as revealed by three Imperial Chemical Industries boreholes is described and an account is included of a lower polyhalite zone and two main and one subsidiary sylvine beds. Kieserite, recorded for the first time from Great Britain, accompanies polyhalite in the Lower Potash Seam, where it ap-

pears to have been the last mineral formed. A partial analysis of polyhalite-kieserite rock and complete analyses of the Middle and Upper Potash Seams and Carnallitic Marl are given.

(4) AN X-RAY STUDY OF WADEITE.

By Mr. J. Shearer, Mr. E. T. Robinson and Mr. J. T. Jefferies. (Communicated by Prof. R. T. Prider.)

Wadeite is ideally $[K(Zr,Ca)Si_2O_6]_3$ and has hexagonal cell dimensions $a=6.88 \text{ \AA}$, $c=10.16 \text{ \AA}$. Indexed powder data are also given.

(5) ON THE OCCURRENCE OF BAYLDONITE, STOLZITE, HYDROCERUSSITE AND OTHER RARE MINERALS IN THE LAKE DISTRICT.

By Mr. A. W. G. Kingsbury and Mr. J. Hartley

As the result of the finding, in 1947, of the rare lead-copper arsenate, bayldonite, in Brandy Gill, Carrock Fell, by the first author a more comprehensive investigation of the district has been undertaken and a considerable number of rare species, including hydrocerussite, covellite, pseudomalachite, cornwallite, antlerite and mottramite, none of which was previously known to occur in the Lake District, have been found; in addition, new occurrences and a number of definite localities have been found for some of the well-known minerals.

The following paper was taken as read:

(1) SOME PHYSICAL PROPERTIES OF RAW AND CALCINED FLINT.

By Mr. J. H. Weymouth and Dr. W. O. Williamson

Flints from English sea-beaches contain quartz, of which some is very fine-grained. There is no detectable opal or cristobalite. The partial replacement of included rhombohedral carbonate by silica is apparent. Adequate calcination of the flint produces cristobalite, which is first noticed at 1200°C . The density and refractive index of the flint appear to fall at temperatures much below those necessary to produce cristobalite, i.e., while the material is still quartz. The low densities and refractive indices are ascribed to the development of minute pores. To those pores is ascribed also the brownish turbidity seen by transmitted light. The cristobalite ultimately formed is of anomalously low density and refractive index and shows the brownish turbidity already mentioned. By processes of recrystallisation it becomes clear and its density and refractive index increase to normal values. This is explicable by the disappearance of minute pores. The measured density and refractive index of calcined flint vary sympathetically during the various processes of heat-treatment.

NOTICE

X-RAY IDENTIFICATION AND CRYSTAL STRUCTURES OF CLAY MINERALS

This monograph of 345 pages with 81 text-figures and 66 tables, edited by Dr. G. W. Brindley, was published on March 1st, and will be obtainable only from the General Secretary, Mineralogical Society, British Museum (Natural History), or in the U.S.A. from Dr. R. E. Grim, Illinois Geological Survey, Urbana, Illinois, U.S.A. The price is 35s. (36s. post free), and in the U.S.A. \$6 post free. Each member of the Society will be allowed one copy for personal use at the special price of 25s. (26s. post free), on the strict understanding that it will not be resold for at least 12 months from the date of purchase. Remittance should accompany order, and cheques should be made payable to the Mineralogical Society and not to individuals.

(Titles and abstracts kindly submitted by G. F. Claringbull, General Secretary).