MINERALOGICAL SOCIETY (London)

A meeting of the Society was held on Thursday, January 24th, 1952, in the apartments of the Geological Society of London, Burlington House, Piccadilly, W.1 (by kind permission).

The following papers were read:

(1) The Graphitization of Diamond and the Nature of Cliftonite.

By Dr. H. J. Grenville-Wells

Diamond heated in vacuo to about 2000° C. is wholly or partially converted to graphite which has a strong preferred orientation, the [0001] axis of the graphite being associated with the diamond [111] axis irrespective of the original habit of the diamond. The preferred orientation of the graphite in cliftonite, however, has been shown to involve the association of the [0001] axis with the cube axes of the crystal, thus casting doubt on the possibility that cliftonite is a pseudomorph after diamond. The graphite itself appears in both cases to be imperfectly crystallized, and is neither α- nor β-graphite, nor the usual mixture of the two. It has been shown by means of divergent-beam x-ray photographs that the mosaicity of diamonds can be increased by heat treatment.

(2) Sinhalite ($MgAlBO_4$), a New Mineral.

By Dr. G. F. Claringbull and Dr. M. H. Hey

Many of the brown and yellow gemstones supposed for many years to be olivine (peridot) prove to be a new mineral with the composition $MgAlBO_4$. It is orthorhombic with unit cell dimensions $a=4.328$, $b=9.878$, $c=5.675$ Å; space groups D_{2h}^5-Pbmm, C_{2v}^2 $Pb2_1m$ or $C_{2v}^4-Pbm(2)$. The x-ray powder pattern resembles that of olivine.

(3) The Growth and Properties of Large Crystals of Synthetic Quartz.

By Mr. C. S. Brown, Mr. R. C. Kell, Mr. L. A. Thomas,
Dr. Nora Wooster and Dr. W. A. Wooster

An outline is given of early experiments on the hydrothermal synthesis of α-quartz, most of which succeeded in producing crystals on a microscopic scale. Experiments aimed at the synthesis of large single crystals are described. These include the Nacken-Wooster method and the modern developments of the Spezia process. A recent technique has enabled high quality quartz crystals weighing up to 150 grams to be grown in about a month.

The physical properties and morphology of synthetic quartz crystals are compared with those of the natural mineral.

(4) On the Occurrence of Turquoise in Cornwall.

By Sir Arthur Russell, Bart., and Dr. E. A. Vincent

(5) The Types of Distribution of Inclusions within Fluorite, Quartz, and Calcite Crystals from Derbyshire.

By Mr. G. Mueller

Inclusions of pyrite, rutile, hydrocarbons, etc., were identified within crystals of gangue minerals from numerous Derbyshire localities. Several examples were found for each of the following modes of distribution: (1) uniform throughout the crystal or within certain growth zones, (2) concentration towards a direction, (3) preferential deposition on certain

faces, (4) concentration along all or some edges, termed "positive edge effect," (5) apparent repulsion from all edges, "negative edge effect," (6) repulsion from the edges and concentration into narrow zones fringing these, "complex edge effect." The proposed explanations of the structures are based on field evidences indicating the mechanical and chemical conditions prevailing during mineralization. The "edge effects" may have also an alternative electrical explanation.

The following papers were taken as read:—

(1) The Decomposition of Afwillite on Heating.

By Mrs. K. M. Moody

Afwillite, $Ca_3(SiO_3OH)_2 \cdot 2H_2O$, loses water when heated, and decomposition takes place in two stages. In an investigation of these processes, the products have been identified by *x*-ray powder methods. The intermediate product is a poorly-crystallized mixture containing $\gamma - Ca_2SiO_4$ and probably CaO and SiO_2. The dehydrated material readily reabsorbs water, but there is no reversion to afwillite or other hydrated silicates. At about 1000° C. a further change occurs and the material recrystallizes as rankinite, $Ca_3Si_2O_7$.

(2) Refractive Indices of Muscovite in the Infra-red.

By Dr. W. Hall and Prof. S. Tolansky (Communicated by Dr. F. A. Bannister)

Refractive indices β and γ of an Australian muscovite have been measured over the wavelength range λ 5870–9410 Å.

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

Samuel G. Gordon, for thirty years assistant curator at the Philadelphia Academy of Sciences, and more recently associated with the atomic energy plant at Oak Ridge, Tenn., collapsed and died May 18, 1952, in Cincinnati, Ohio. He was 54 years old. For many years he served as one of the associate editors of the *American Mineralogist*, and was a member of several mineralogical expeditions to South America, Greenland, and Africa.