

MINERALOGICAL SOCIETY (LONDON)

A meeting of the Society was held on Thursday, January 28th, 1954, at 5 p.m., in the apartments of the Geological Society of London, Burlington House, Piccadilly, W.1. (by kind permission).

The following papers were read:

(1) THE STRUCTURES OF THE PLAGIOCLASE FELDSPARS. V. THE HEAT TREATMENT OF LIME-RICH PLAGIOCLASES.

By Dr. P. Gay.

A number of lime-rich plagioclases have been subjected to varying heat treatments; the effects of these heat treatments have been studied by x -ray single crystal methods.

It is found that appreciable changes occur after severe heat treatments. Two important conclusions can be reached from the examination of the experimental data. First, partially inverted materials can exist stably, and so the concept of unique high and low temperature series is incorrect. Secondly, at least for feldspars from 0-80% An, the high temperature form shows a c -axis length of 7\AA , similar to that of the albite structure. This, taken together with the fact that the intermediate feldspars can be homogenized by heating to give a 7\AA c -axis, suggests that at high temperatures a range of solid solutions exists from albite almost up to pure anorthite. This resolves the apparent discrepancy between previous x -ray investigations and the early thermal work.

(2) INVESTIGATION OF THE CRYSTAL STRUCTURE OF ANTIGORITE FROM MIKONU, NEW ZEALAND.

By Dr. J. Zussman.

A variety of antigorite from Mikonui, New Zealand, was examined by Aruja (*Min. Mag.*, 1944, vol. 27, p. 65), and found to have cell dimensions $a=43.5$, $b=9.26$, $c=7.28\text{\AA}$, $\beta=91.4^\circ$.

A crystal of this variety has now been found which gives clearer x -ray diffraction photographs than those hitherto obtained, so that a Weissenberg ($h0l$) layer could be indexed completely and the intensities measured visually.

Trial structures based upon kaolinite type sheets, corrugated in different ways, have been tested most conveniently by comparing the "optical transforms" of their " b " axis projection with the x -ray data.

(3) THE IDENTITY OF JURUPAITE AND XONOTLITE.

By Dr. H. F. W. Taylor.

Jurupaite, discovered by Eakle in 1921 at Crestmore, California, is shown by x -ray powder and oriented fibre photographs to be identical with xonotlite ($3\text{CaSiO}_3 \cdot \text{H}_2\text{O}$) with part of the lime replaced by magnesia. Probably due to this replacement, the refractive indices of jurupaite are lower than those of typical specimens of xonotlite, but other properties are substantially identical. The cell dimensions of xonotlite, found by Berman in 1935, are confirmed, but probably refer to a pseudo-cell and not to the true unit-cell. Attention is drawn to the difficulty in reconciling the observed water content of xonotlite with the crystallographic symmetry.

(4) VEATCHITE FROM THE PERMIAN EVAPORITES OF YORKSHIRE.

By Dr. F. H. Stewart, Mr. R. A. Chalmers and Mr. R. B. Phillips.

A few small crystals of veatchite have been found in well cuttings from the D'Arcy Exploration Company's boring at Aislaby in Yorkshire. A microchemical analysis agrees

with the formula $\text{SrB}_6\text{O}_{10} \cdot 2\text{H}_2\text{O}$. X-ray powder photographs are similar to those of material from Lang, California, the only other recorded locality for this mineral. The physical and optical characters of the Yorkshire material are essentially similar to those previously recorded but show minor differences. The mineral is confined to the lower evaporite bed of the Aislaby boring.

The following paper was taken as read:—

(1) THE ORTHOCLASE-MICROCLINE INVERSION.

By Dr. W. S. Mackenzie.

The variable lattice of microcline is discussed and two examples of the association of monoclinic and triclinic potash feldspar are described. The differences in the nature of the change from one form to the other in these two occurrences are considered important for establishing the relation between orthoclase and microcline.

A meeting of the Society was held on Thursday, March 25th, 1954, at 5 p.m., in the apartments of the Geological Society of London, Burlington House, Piccadilly, W.1 (by kind permission).

The following papers were read:

(1) ON BASSETITE AND URANOSPATHITE.

By Prof. C. Frondel.

Re-examination of the original materials described by Hallimond has led to the identification of additional specimens in the Harvard collections, and analyses have been obtained. Bassetite proves to be the ferrous iron compound, not a calcium salt resembling autunite in composition. In uranospalthite the non-volatile constituents correspond with a composition between torbernite and zeunerite, though the very low density and refractive index suggest that it will be a higher hydrate. On exposure to normal conditions in the Harvard laboratories both minerals were subject to alteration, with optical changes corresponding with those in the original description, due to loss of water. X-ray measurements are given for analyzed crystals from the Harvard material.

(2) MANGANESE AMPHIBOLES FROM SITASAONGI MINE, BHANDARA DISTRICT, INDIA.

By Mr. S. A. Bilgrami.

Three manganese amphiboles, winchite, juddite, and a new variety, are described together with chemical analyses and optical properties. The winchite occurs in a feldspathic gneiss, the others in pegmatite which cuts a manganese ore band. The chemical composition of these amphiboles is discussed and their possible origin suggested.

(3) TRANSITIONAL OPTICS OF SOME INTERMEDIATE PLAGIOCLASE FELDSPARS.

By Dr. I. D. Muir.

The optical properties of the analyzed andesine from the iron-rich facies of the Beaver Bay diabase are transitional between the standard low- and high-temperature forms. Comparisons made with plagioclases from similar dolerites and gabbros indicate that andesines and labradorites transitional between the true low- and high-temperature states are common. Confirmation of the transitional nature of these plagioclases has been obtained by x-ray rotation photographs. After heat treatment the minerals were subjected to a further optical and x-ray examination.

(4) ZONED PLAGIOCLASES IN LAYERED GABBROS OF THE SKAERGAARD INTRUSION,
EAST GREENLAND.

By Dr. J. M. Carr.

A mild zoning affects the primary precipitate crystals of three analyzed plagioclase feldspars from gabbros belonging to the main layered series. Usually it is normal in type and thus shows an outward trend to more sodic material. In one specimen, however, a minority of the crystals possesses oscillatory-normal zoning. The zoning of these crystals progresses through an alternating series of more and less calcic zones towards a final more sodic composition. Both types of zoning are largely ascribed to changes in hydrostatic pressure due to vertical movement of magma and crystals. According to this view, the oscillatory zoning resulted from prolonged circulation of a selection of the feldspars in convecting magma.

The following papers were taken as read:

(1) AN OCCURRENCE OF A REGULAR MIXED-LAYER CLAY-MINERAL.

By Mr. H. Heystek (communicated by the General Secretary).

A white clay used industrially occurs near Burghersdorp, Cape Province, South Africa at the contact of dolerite sheets intrusive into shale. Chemical analyses, x -ray data, differential thermal analysis, and base-exchange experiments, of materials taken at intervals between 1 and 15 feet from the contact, indicate that the illite of the shale has been altered to mixed layers in the ratio 1:1 of montmorillonite and hydrous mica.

(2) TWO ARFVEDSONITIC RHYOLITE INTRUSIONS FROM CLOGHANEELY,
Co. DONEGAL.

By Dr. E. H. T. Whitten.

Petrographic descriptions of two small arfvedsonite-epidote-rhyolite dikes intruding Dalradian quartzite of north-west Donegal are given. Slight compositional variation of the amphibole produces variation in the optical orientation (changing sign and position of optic axial plane) even within the amphiboles of the same slice. The age of the rhyolites is discussed.

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