PROCEEDINGS OF SOCIETIES

MINERALOGICAL SOCIETY (LONDON)

A meeting of the Society was held Thursday, March 31, 1949, in the apartments of the Geological Society of London, Burlington House, Piccadilly, W. 1 (by kind permission).

The following papers were presented:

(1) The Petrology of the Evaporites of the Eskdale No. 2 Boring, East Yorkshire. Part 1.—The Lower Evaporite Bed.

By Dr. F. H. Stewart

A study has been made of rocks from the lowest of the three Permian evaporite beds passed through by the D'Arcy Exploration Company's boring in 1938–39, near Aislaby, Eskdale. The bed is 460 feet thick and is underlain by dolomite. It can be divided into four main zones:—

Halite-anhydrite zone, with predominant halite (86 feet).
Upper anhydrite zone, with subordinate halite and carbonate (41 feet).
Polyhalite zone, with subordinate anhydrite, and a halite-rich upper part (85 feet).
Lower anhydrite zone, with subordinate halite and carbonate (248 feet).

Many of the rocks have suffered large scale changes due to replacement and recrystallization since their original precipitation. Polyhalite is believed to be a secondary mineral and has replaced anhydrite and halite. Many other replacements are noted. Most of these changes were probably due to the action of percolating brines during the formation of the evaporite bed.

Other points discussed are the occurrence of early gypsum in the polyhalite zone, the distribution of dolomite and magnesite, and the occurrence of talc.

(2) A New Barium Mineral from the Benallt Manganese Mine, Rhiw, Carnarvonshire

By Dr. W. Campbell Smith, Dr. F. A. Bannister and Dr. M. H. Hey

Small, white prisms and thin, colourless plates R.I. ϵ 1.612, ω 1.622, uniaxial −, sp.gr. 3.41, found on manganese ore prove to be a new hydrated barium aluminium silicate. Microanalysis and x-ray study show that the hexagonal rhomb-based unit cell, $a=5.32$, $c=7.67$ Å contains $BaAlSi_3O_8(OH)$.

(3) Plagioclases from Sultan Hamud, Kenya

By Mr. P. M. Game

Analyses have been made and empirical unit cell contents calculated for an albite-oligoclase and an oligoclase from Sultan Hamud, Kenya. Most of the determined optical properties are in good agreement with the corresponding values measured by previous workers; the R.I.'s are, however, lower by about .001 than the mean of selected previous determinations. The poles of (001) and (010) fall close to the appropriate Reinhard migration curves, but indicate an anorthite content from 3 to 4% lower than that derived from the analyses.

(4) Some Problems on Determining Optical Constants and the Thickness of Thin Sections

By Mr. P. M. Game

Plagioclases from Sultan Hamud, Kenya, have been used for these investigations. Parallel plates of different orientations were rotated on a refractometer and curves were drawn to show the resulting movement of the shadow edges. The values of α and γ are immediately obtained from these curves, but the ambiguity in the determination of β has long been recognized. A practical trial of the most recently suggested method of distinction, that of E. J. Burbage and B. W. Anderson, casts some doubt on the validity of the formula proposed and shows its restricted use. It is concluded that the most accurate value of β is that found by calculation from the measured values of α, γ and 2V. The reliability of 2V as obtained by direct measurement is compared with the results derived by calculation from birefringence values, small errors in which cause relatively large errors in the optic axial angle calculated from them. Investigation of the errors involved in microscopical determinations of thickness shows a persistent tendency to over-estimate; better results may be expected by focussing on cleavage cracks rather than on dust particles.

(5) Silica Percentage as a Factor in Rock Classification

By Dr. A. K. Wells

By plotting total silica against free silica (quartz) in the igneous rocks, it is shown that it is impossible to separate granites and granodiorites from syenites and diorites on a silica-percentage basis. The causes of the variation in mineral content of rocks of the same SiO_2-percentage are examined.

(6) Unusual Dolomite from Portsoy, Banff

By Mr. W. T. Harry and Mr. E. M. Patterson

Serpentine near Portsoy, Banff, occasionally bears irregular dolomite masses of most unusual appearance. These measure up to 1 inch across, resemble white calcite and present large flat cleavage surfaces. Each is a single crystal, interpreted as a large porphyroblast developed during retrogressive metamorphism through replacement of serpentine by CaO- and CO_2-bearing solutions. Two chemical analyses of the mineral demonstrate a noteworthy absence of iron and a high barium content.

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