MINERALOGICAL SOCIETY (LONDON)

A meeting of the Society was held Thursday, June 24, 1948, in the apartments of the Geological Society of London, Burlington House, Piccadilly, W.1 (by kind permission). The following papers were presented:

(1) The application of phase-contrast microscopy to mineralogy and petrology

By Dr. F. Smithson

Phase-contrast microscopy is applicable to the study of minerals in thin section or in the form of grains. Such features as definition of boundaries, roughness of surface, zoning, etc., are conspicuous in cases where they are indistinct with ordinary illuminations. With a single polarizer added, "twinkling" becomes noticeable in a number of weakly birefringent minerals and the definition of boundaries between certain minerals may be improved with suitable orientation of the polarizer. Using phase-contrast with crossed nicols, further clarification of rock-textures sometimes results. Phase-contrast methods are unsuitable for examining opaque particles.

Replacement of the phase plate by appropriate stops produces images of high contrast, which exhibit some features more clearly and others less clearly than the phase-contrast image.

(2) The lattice parameters and interplanar spacings of some artificially prepared melilites

By Dr. K. W. Andrews (communicated by Dr. F. A. Bannister)

Lattice parameters and interplanar spacings are provided for gehlenite, akermanite, and three members of the intermediate series of solid solutions corresponding to 25, 50, and 75 per cent replacement of 2 Al by Mg+Si. The a parameter increases and the c parameter decreases going from gehlenite to akermanite, whilst the axial ratio varies from 0.659_0 to 0.638_7. Interplanar spacings are recorded in Å units.

(3) The densest and least dense packings of equal spheres

By Mr. S. Melmore

Proofs are given that the closest packings are those with a density of 0.74; and that the most open, under the condition that the symmetry operations are transitive on the spheres, are those with a density of 0.056.

(4) On the definition of diorite, gabbro, and related rocks

By Mr. S. E. Ellis (communicated by Dr. W. Campbell Smith)

A study has been made of the frequency-distribution of silica-saturated rocks of the calc-alkali series according to variations in the ratios between groups of constituent minerals. On the basis of the results, quantitative mineralogical definitions of diorite, gabbro, anorthosite and allied types are proposed. Triangular diagrams are used to demonstrate that the modal types defined in this way correspond fairly closely with distinct ranges in chemical composition definable in terms of simple ratios between Niggli values.

(5) Pyroxene from the Squilver dolerite, South Shropshire

By Mr. F. G. H. Blyth

Chemical analyses of the pyroxene and of the rock containing it are given, and the composition and optical properties of the mineral are discussed.

(6) SHIPS' LOADSTONES

By Mr. C. E. N. Bromehead

By the year 1200 the magnetic compass was familiar over much of Europe. Artificial magnets began to be made commercially in 1750. Between these dates loadstone, as such, was a valuable economic mineral, used to make or to re-magnetize all compass-needles. It soon became usual to mount a piece of the mineral with irons held against its poles, forming "ships' loadstones," examples of which are exhibited. The paper gives a general history of the subject, with references, etc.

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

NEW MINERAL NAMES

Sanmartinite

VICTORIO ANGELELLI AND SAMUEL G. GORDON, Sanmartinite, a new zinc tungstate from Argentina. *Notulae Naturae Acad. Natural Sci. Philadelphia*, No. **205**, 7 pp. (1948).

CHEMICAL COMPOSITION: The zinc analogue of wolframite, but the analyses and low G. indicate that about one-sixth of the W positions in the lattice are vacant, i.e., $RW_{0.83}O_{3.5}$, with R=Zn, Fe, Mn, Ca. Analysis by Horace Hallowell gave WO_3 72.62, ZnO 18.18, FeO 7.24, MnO 1.73, CaO 1.48, Insol. 0.24; sum 101.25% Two other preliminary analyses are given.

CRYSTALLOGRAPHY: The minute crystals (of the order of 60μ) are monoclinic, tabular parallel to {100}. The forms noted were {100}, {010}, {110}, {112}, and {102}. Goniometric data gave $a:b:c=0.8255:1:0.8664$, beta 90°28′; p_0 1.0495, q_0 0.8664. μ 89°32′.

From x-ray powder data a_0 4.712, b_0 5.738, c_0 4.958 (not stated whether Å or kX units), $a_0:b_0:c_0=0.8212:1:0.8641$. X-ray powder data and photographs are given; they closely resemble those of wolframite.

PHYSICAL PROPERTIES: Masses are dark brown to brownish black in color, but microscopic crystals are reddish-brown with red reflections, and are more or less translucent. They resemble dark sphalerite. Luster resinous. Sp. gr. (determined by Judith Weiss) 6.697.

OCCURRENCE: From a small, abandoned, prospect in Los Cerillos, 7 km. southwest of San Martin, Department of San Martin, Province of San Luis. Also reported to occur at other nearby localities. Occurs in a quartz vein 50–60 cm. wide that is intercalated between a light-colored granite and a pink pegmatite. Sanmartinite is associated with scheelite, which it appears to replace, quartz, tourmaline, and willemite.

NAME: For the region, which, in turn, is named for the liberator of Argentina, José de San Martín.

MICHAEL FLEISCHER

Wurtzite—4H, Wurtzite—6H, Wurtzite—15R

CLIFFORD FRONDEL AND CHARLES PALACHE, Three new polymorphs of zinc sulfide. *Science*, **107**, 602 (1948).

Three new polymorphs of ZnS were found in shrinkage cracks in clay ironstone concretions embedded in carbonaceous black shale of the lower Conemaugh formation at numerous localities in western Pennsylvania and eastern Ohio. These are named in the notation suggested by Ramsdell, *Am. Mineral.* **32**, 63 (1947) for silicon carbide, where the number refers to the formula weights per unit cell, and H and R refer to hexagonal and rhombodehedral forms. In this notation, wurtzite—2H is ordinary wurtzite.