

CLASS: SILICATES. DIVISION: (CLAYS).

## "Magnalite"

S. RICHARZ: Die Basalte der Oberpfalz (The basalts of the Oberpfalz). *Z. Deutsch. Geol. Ges.*, A, 72, 31-36, 1920; *Z. Krist.*, 57, 587, 1923.

NAME: From the composition, *magnesium-aluminium* and *lithos*, stone.

CHEMICAL PROPERTIES: *Composition*, SiO<sub>2</sub> 42.17, Al<sub>2</sub>O<sub>3</sub> 17.48, FeO 1.49, CaO 3.38, MgO 10.71, K<sub>2</sub>O 0.76, Na<sub>2</sub>O 1.38, H<sub>2</sub>O 14.01, H<sub>2</sub>O + 5.95, CO<sub>2</sub> 2.64, sum 99.97%.

PHYSICAL PROPERTIES: Color dull green to nearly white; soft with greasy feel;  $d = 2.34$ . Under the microscope nearly amorphous with some radiating fibers.

OCCURRENCE: In cavities in basalt from the Oberpfalz.

DISCUSSION: Homogeneity not demonstrated, and seems obviously a mixture, unworthy of a name. E. T. W.

## REDEFINITION OF SPECIES

CLASS: SILICATES. DIVISION: (UNDETERMINED).

## "Fluosiderite"

A. SCACCHI, 1881; redefined by F. ZAMBONINI: The pipernoid tuffs of Campania and their minerals. *Mem. serv. descr. carta geol. Ital.*, 7, pt. 2, 105-115, 1919; thru *Z. Krist.*, 57, 219, 1922; (original not seen).

CHEMICAL PROPERTIES: Qualitative tests show Ca, Mg, some Al, a little Fe and Mn, and Si; H<sub>2</sub>O may be present. The name is thus rather inappropriate.

CRYSTALLOGRAPHIC PROPERTIES: Orthorhombic;  $a:b:c = 0.3479:1:0.3203$ . Forms:  $b$  (010),  $m$  (110),  $g$  (130),  $l$  (350),  $-(1.10.0)$ ,  $d$  (021),  $o$  (111),  $t$  (112),  $p$  (132),  $q$  (152), and  $r$  (172). Combinations and habit variable; other orientations are suggested.

PHYSICAL AND OPTICAL PROPERTIES: Pleochroism,  $\perp c$  brown red,  $\parallel c$  brighter.

OCCURRENCE: Found in the tuffs of the Campania.

DISCUSSION: More data needed to establish and classify this mineral satisfactorily. E. T. W.

## ABSTRACTS: CRYSTALLOGRAPHY

THE CRYSTAL STRUCTURE OF SODIUM NITRATE. R. W. G. WYCKOFF. *Phys. Rev.*, 16, 149-57, 1920.

From Laue photographs it was found that NaNO<sub>3</sub> has a body-centered unit rhombohedron containing two molecules. The arrangement of the atoms in the crystal as a whole resembles that of the NaCl crystals, with NO<sub>3</sub> in the place of Cl.

E. F. H.

CRYSTAL ANALYSIS OF METALLIC OXIDES. W. P. DAVEY AND E. C. HOFFMAN. *Phys. Rev.*, 15, 333, 1920.

CaO, MgO, CdO, and NiO are cubic with the NaCl structure. Al<sub>2</sub>O<sub>3</sub> has a structure similar to that of calcite.

E. F. H.

NEW METHOD FOR X-RAY CRYSTALLOGRAPHY OF PULVERIZED SUBSTANCES. H. BOHLIN. *Ann. Physik*, **61**, 427-39, 1920.

This is an improvement on Debye and Scherrer's method, giving much sharper spectral lines. Al, Th, Ni, and Mg were studied by this method. E. F. H.

OPTIC AND ELECTRIC AXES OF SYMMETRY IN MONOCLINIC CRYSTALS. H. RUBENS. *Z. Physik*, **1**, 11-31, 1920.

The optic axes when  $\lambda=0.3\text{mm}$ . (Hg vapor radiations) agree well with the electric axes. Adularia, augite, gypsum, and sugar were studied. E. F. H.

VALENCY FORCES IN THE BUILDING OF CRYSTALS. H. THIRRING. *Z. Elektrochem.* **26**, 281-6, 1920.

Besides the electrostatic forces existing between the ions which occupy the points of a xl. structure, there must be repulsive forces, which may be supplied by electronic movements. E. F. H.

ELECTROSTATIC POTENTIAL OF THE FLUORSPAR LATTICE. E. BORMANN. *Z. Physik*, **1**, 55-6, 1920.

New theoretical determinations are made for  $\text{CaF}_2$ ,  $\text{CaCl}_2$ ,  $\text{CaBr}_2$  and  $\text{CaI}_2$ . E. F. H.

THE POSSIBLE EXISTENCE OF BINDING RINGS IN DIAMOND. N. H. KOLKMEIJER. *Proc. k. Akad. Amsterdam*, **23**, 120-8, 1920.

A confirmation, from a study of X-ray spectra, of Debye and Scherrer's conclusion that binding rings of electrons do not exist between the C atoms in the diamond. E. F. H.

THE NATURE OF CRYSTAL CLEAVAGE: G. WULFF. *Phys. Z.*, **21**, 718-20, 1920.

The cleavages of fluorite, sphalerite, diamond, calcite, and sulfur are considered from the standpoint of cohesion forces as deduced from the crystal structures determined by X-ray methods. E. F. H.

THE BRAGG CRYSTAL LATTICE AND CLEAVAGE. RUDOLF SCHARI-ZER. *Z. Kryst. Min.*, **55**, 440-3, 1920.

The cleavages of diamond, fluorite, pyrite, sphalerite, and halite are studied in connection with the space-lattices as determined by the Braggs. Cleavage takes place parallel to groups of lattice planes if these contain like atoms. If the lattice planes are equally distant, they must be similarly constituted, in order to have cleavage parallel to them. In case of several possibilities, cleavage is parallel to the plane with the greatest reticular density. E. T. W.

THE LATTICE-PLANES IN ISOMETRIC CRYSTALS. F. HAAG. *Z. Kryst. Min.*, **55**, 444-53, 1920.

This is a mathematical discussion in which Bragg's results for halite, diamond and pyrite are substantiated. E. T. W.

NEW ATTACHMENTS FOR THE POLARIZING MICROSCOPE. M. BEREK. *Z. Kryst. Min.*, **55**, 615-26, 1920.

Convenient arrangements of Bertrand lenses and iris diaphragms for the study of interference figures, and an improved Fedorov universal stage are described.

E. T. W.

1-HYDROXY-2-BENZOYL CAMPHOR. A. L. VAN DER VEEN. *Z. Kryst. Min.*, **55**, 627, 1920.

A complete optical and crystallographic description is given. The substance is orthorhombic bisphenoidal.

E. T. W.

MIXED CRYSTALS OF *P*, *P'* -DICHLORO-, -DIBROMO- AND -DIMETHYLBIPHENYL. K. MIELEITNER. *Z. Kryst. Min.*, **55**, 631-4, 1920.

Crystallographic data for these substances is given, and striking relationships are shown.

E. T. W.

THE PICRATES OF THE NITROGEN BASES OF THE ALCOHOL RADICALS. A. RIES. *Z. Kryst. Min.*, **55**, 454-522, 1920.

Complete crystallographic descriptions and transition data are given of 31 compounds, including substituted ammonium picrates, secondary, tertiary and quaternary amines.

E. T. W.

## MINERALOGY

MAGNETIZATION AND HYSTERESIS IN HEMATITE CRYSTALS. T. T. SMITH. *Phys. Rev.*, **15**, 345-64, 1920.

This paper presents some results obtained by measuring the couple exerted when a hematite crystal is suspended in a uniform magnetic field.

E. F. H.

REPORT FROM THE CHEMICAL LABORATORY OF THE ROYAL HUNGARIAN GEOLOGICAL SURVEY. BÉLA HORVÁTH. *A. Magyar Kir. Földtani Intézet évi Jelentése*, **1916** for **1915**, 471-86; **1917** for **1916**, 511-39; thru *Mineralog. Abstr.*, **1**, 385.

Four analyses of Hungarian bauxites and one of a feldspar are given.

E. F. H.

THE COEFFICIENTS OF THERMAL EXPANSION OF MINERALS AND STONES AND ARTIFICIALLY PREPARED SUBSTANCES OF SIMILAR COMPOSITION. KARL SCHULZ. *Fortsch. Min. Krist. Petr.*, **4**, 337-84, 1914; **5**, 293-324, 1916; **6**, 137-206, 1920; **7**, 327-426, 1922; thru *Mineralog. Abstr.*, **1**, 368.

This is a summary of the literature and compilation of data.

E. F. H.

THE OCCURRENCE OF BINDHEIMITE AS AN ORE MINERAL. EARL V. SHANNON. *Econ. Geol.*, **15**, 88-93, 1920.

Bindheimite, a hydrous antimonate of lead, hitherto regarded as comparatively rare is shown to be a common constituent of many oxidized lead ores and to be of widespread occurrence. It frequently occurs as a soft yellow ochre resembling ochreous limonite with which it is often associated. At other times it appears to be pseudomorphous after jamesonite.

W. F. H.

RARE ZINC-COPPER MINERALS FROM THE RHODESIAN BROKEN HILL MINE, NORTHERN RHODESIA. E. P. MENNEL. *Mineral. Mag.* **19**, (90), 69-72, 1920.

The copper minerals of this region include malachite, chesylite, cuprite, chalcocite, undetermined phosphates and double salts of copper and zinc (aurichalcite). The copper phosphates occur as greenish or bluish incrustations often mixed with parahopeite. About 1 g. of crystals of one of these rare minerals was collected and the following properties noted: Monoclinic,  $\beta$  about  $76^\circ$ , with deep ultramarine blue color. Transparent and non-pleochroic; moderate index (1.63) but strong double refraction. Parallel extinction with dispersion  $\rho < \nu$ .  $H = 3 \frac{1}{2}$ -4. Sp. gr. greater than 3.33. The plane of the optic axes is parallel to the plane of sym. 2H in olive oil is about  $43^\circ$ . Qualitative tests indicated a hydrated basic phosphate of Zn and Cu. The properties suggest somewhat the mineral *veszelyite*,  $7(\text{Cu}, \text{Zn}) \text{O}(\text{P}, \text{As})_2\text{O}_5 \cdot 9\text{H}_2\text{O}$ , differing however from the original *veszelyite* in crystal habit, color, and absence of As.

W. F. H.

RIEBECKITE-RHYOLITE FROM NORTHERN KARDOFAN, SUDAN. W. CAMPBELL SMITH. *Mineral. Mag.*, **19**, 48-50, 1920.

While investigating the relics of early habitations near Jebel Katul a number of implements were found constructed of a fine grained blue-grey stone rich in riebeckite. The minute riebeckite flakes are arranged in roughly parallel lines producing a flow structure. Glass is entirely absent.

W. F. H.

A REPLACEMENT OF WOOD BY DOLOMITE. S. F. ADAMS. *J. Geology*, **28**, 356-365, 1920.

More than 20 minerals are known to have replaced wood or plant remains. These include quartz, opal, calcite, aragonite, pyrite, marcasite, barite, cinnabar, fluorite, sulphur, malachite, azurite, gypsum, phosphorite, hematite, limonite, siderite, sphalerite, galena, chalcopyrite, chalcocite, halloysite, talc and chlorite. To this list dolomite must be added. Dolomite was the earliest replacing mineral which crystallized along radial channels replacing the sapwood with the destruction of most of the cell outlines. Later silicic acid permeated the heartwood and caused its silicification.

W. F. H.

THE MINERALS OF THE MASSIF OF SLATA, TUNIS. H. BUTTGENBACH. *Bull. soc. franc. min.* **43**, 24-67, 1920.

Crystallographic descriptions of many specimens of galena, cerussite, calcite, phosgenite, and barite. Three new forms on calcite:  $\eta''$  (16.4.1),  $\theta''$  (13.3.4),  $q$  (11.3.3), referred to the three rhombohedral axes.

E. F. H.

FIBROLITE (SILLIMANITE) AS A GEM-STONE FROM BURMA AND CEYLON. L. J. SPENCER. *Mineral. Mag.*, **10**, 107-112, 1920.

The specimens from Burma came from the ruby mines at Mogok, and include a faceted gem and a number of water worn elongated pebbles. The cut stone is transparent, flawless and of a pale sapphire-blue color. Its wt. is 0.816 gram. Pleochroism is strong, varying from colorless to sapphire blue.  $H. 7\frac{1}{2}$  (the value 6-7 given in text books is too low, due to determinations made on aggregates and not on single crystals).  $\alpha_{\text{Na}} 1.6584$ ,  $\beta 1.6596$ ,  $\gamma 1.6789$ ;  $\gamma - \alpha = 0.0205$ . 2 E (air)  $52^\circ 2'$ ; 2 V (calc.)  $28^\circ 2'$ . Other gem crystals from Ceylon (locality unknown), reveal another characteristic described as *fibrolite cat's eye*.

W. F. H.

A NEW MODEL ROTATING STAGE PETROLOGICAL MICROSCOPE. W. ALFRED RICHARDSON. *Mineral. Mag.*, 19, 96-98, 1920.

An instrument designed to produce a smaller model with as many advantages of the larger types as possible. The microscope was constructed by James Swift & Son. When closed it is 12½ in. high. The body tube is 140 mm. long and 40 mm. in diam. so as to be suitable for microphotography. The rotating stage is 120 mm. diam. and is provided with mechanical motions.

W. F. H.

THE FIBROUS GYPSUM OF NOTTINGHAMSHIRE. W. ALFRED RICHARDSON. *Mineral. Mag.*, 19, 77-95, 1920.

All the gypsum veins occur in marls and are of the "cross fiber" type. A line of division (central parting) runs thru the veins parallel to the walls. These partings are marked by inclusions of marl which swell out into lenticles. Frequently the vertical fibers of gypsum are bent or broken at the central parting and show evidence of strain. It is thought that the veins were formed by a dehydration and contraction of the marls. The relief of pressure by rupture has caused spontaneous crystallization at numerous closely spaced centers. The crystals grew vertically as long as contraction continued. When contraction ceased, growth was resisted, and the stresses set up were transmitted to the central parting producing bending and other pressure effects noted.

W. F. H.

A GRAPHIC METHOD FOR THE COMPARISON OF MINERALS WITH FOUR VARIABLE COMPONENTS FORMING TWO ISOMORPHOUS PAIRS. EDWARD S. SIMPSON. *Mineral. Mag.*, 19, 99-106, 1920.

A graphic method employing two rectangular co-ordinates was found convenient in studying a mineral of the spinel group to bring out its relationship to the type minerals, spinel, hercynite, and chromite and to the intermediate minerals picotite, chrompicotite, magnesiochromite, and magnochromite.

W. F. H.

ATOMIC ARRANGEMENT IN CRYSTALS. W. L. BRAGG. *Phil. Mag.*, 40, 169-89, 1920. CRYSTAL STRUCTURE. W. L. BRAGG. *Nature*, 105, 646-8, 1920.

The diameter of space occupied by atoms ("atomic domains") in crystals is approximately a constant for a given element. The radii of these "atomic domains" are given for a number of substances and their constituent elements. A curve is presented, showing the relationship between the atomic numbers of the elements and the radii of the domains. The alkalis have the greatest volumes, followed by the Ca group. Electro-negative elements possess the least diameters. The significance of these relations and the application of the Lewis-Langmuir theory of atomic structure are discussed. Photographs of models illustrating the structure of several crystals, the units of structure being spherical "atomic domains," are included.

E. F. H.

THE CRYSTAL LATTICE OF THE HYDROGEN HALIDES. A. RIES. *Z. Physik*, 1, 299-308, 1920.

The relation between ionization energy and molecular volume and that between the high ionization energies and low heats of sublimation in the H halides lead to the assumption that they have a molecular lattice. A strongly unsymmetrical structure for the halogen ions in the solid H halides is indicated.

E. F. H.