

NEW MINERALS

- 72-547. SCOTT, E. R. D. *New carbide, (Fe,Ni)₂₃C₆, found in iron meteorites.* Nature (Phys. Sci.), **229**, 61-62, 1 fig., 1971.

The mineral [haxonite] is face-centred cubic, a 10.55 Å. Electron probe microanalysis for Cañon Diablo material gave Fe 89.5, Ni 4.91, Co 0.18, Cr <0.05, Cu <0.05, C $5.7 \pm 0.3\%$. The mean total (Fe + Ni + Co) from 35 analyses from various meteorites is $94.2 \pm 0.1\%$, compared with a theoretical total for (Fe,Ni,Co)₂₃C₆ of 94.7%. Indexed X-ray powder data are listed for material from Toluca; strongest lines 2.356, 2.151, 1.863, and 1.242 Å. The new mineral has properties similar to those of cohenite, although in reflected light its isotropic nature is distinctive. The cubic iron carbide has been observed in various forms (e.g. as spiky plates in kamacite; on kamacite in patches of spheroidized plessite; as pseudomorphs after the Widmanstätten plates of kamacite) in all classes of iron meteorites.

F. B. A.

- 72-548. INDOLEV, L. N., ZHOLANOV, YU. YA., KASHIRTSSEVA, K. I., SUKNEV, V. S., & DEL'YANIDI, K. I. [*The new mineral indigirite, a hydrous magnesium aluminium carbonate.*] Zap. Vses. Min. Obshch., **100**, 178-183, 3 figs., (in Russian), 1971.

A new mineral is described from the oxidation zone of the Sarylakh Au-Sb deposit in the upper part of the Indigirki River, northeastern Yakutia. It is associated with gypsum, iron minerals, and fragments of quartz in an assemblage of hydrous sulphates of Mg (hexahydrite) and Fe (melanterite), 'stilpnosiderite', gibbsite, and kaolinite. The country rocks are Upper Triassic sediments and the orebody itself consists of gold-bearing stibnite-quartz veins. The *indigirite* occurs as snow-white, radiating fibrous masses; H. ~2, sp. gr. ~1.6; ω 1.472, ϵ 1.502, positive elongation. It is insol. in water or ammonia, soluble with effervescence in acids or KOH; on heating, the refr. ind. increases to 1.538 at 100°C and to 1.668 at 900°C while the birefringence decreases to practically zero (spinel). Chemical analysis gave MgO 12.08, Al₂O₃ 14.58, CaO 0.45, Fe₂O₃ 0.64, CO₂ 24.18, H₂O 44.36, SO₃ 0.45, insol. 1.60, =98.34, which after deduction of the CaO, SO₃, and 0.30% H₂O as gypsum, indicates an idealized formula Mg₂Al₂(CO₃)₄(OH)₂·15H₂O. X-ray powder data are tabu-

lated; strongest lines occur at 5.80 (10), 7.62 (9), 5.24 (9), 2.70 (9), 2.60 (9), and 4.56 (8) Å. Loss of weight and d.t.a. curves are figured; the latter has a distinct endothermic peak at 120°, due to loss of water of crystallization, and others at 160°, 215°, and in some samples 550°C, due to the escape of hydroxyl water and dissociation of the complex carbonate. The IR spectra are figured for indigirite and the products of its heating at 100°, 660°, 860°, and 900° and indicate a layered character, with layers of spinel type and triangular CO₃²⁻ radicals: intense bands in the 500-680 cm⁻¹ region are characteristic for condensed AlO₆ octahedra. EM photographs show elongated tablets with irregular boundaries; the parameters of partially dehydrated crystals are c 6.23 (|| elongation) and 3.16 Å (⊥ elongation). The various properties differ from those of other hydrous carbonates, mainly in the lower refr. ind. and specific gravity of indigirite. [From translation by M. Fleischer]

R. A. H.

- 72-549. LEONARD, B. F., MEAD, CYNTHIA, W., & FINNEY, J. J. *Paradocrasite, Sb₂(Sb,As)₂, a new mineral.* Amer. Min., **56**, 1127-1146, 5 figs., 1971.

Paradocrasite forms an aggregate of silver-white, striated, stubby prisms replacing calcite in a specimen of supposed 'dyscrasite' from Broken Hill, New South Wales. It is brittle and has perfect {010} parting and several less perfect partings. Microprobe analysis gives 82.9% Sb and 18.6% As by weight, equivalent to Sb_{2.93}As_{1.07}. *Paradocrasite* crystallizes in the space group C2, and has a 7.252, b 4.172, c 4.431 Å, β 123° 0.84', Z = 1, density (meas.) 6.52, (calc.) 6.44. Reflectance, optical orientation, microhardness, and etch tests are reported in detail. Minute bodies of stibarsen (SbAs) are exsolved from *paradocrasite* and it is replaced by small radiating clumps of antimonian löllingite.

A. P.

- 72-550. ZEMANN, J. *Phoenikochroit-Chrominium-Scheibeit.* Oesterr. Akad. Wiss., Math.-Naturw. Kl., **107**, 257-259, 1970.

The X-ray investigation of original material shows that the recently described new minerals 'chrominium' [M.A. 71-546] and 'scheibeite' [M.A. 71-555] are identical with phoenikochroite.

J. Ze.

PETROLOGY

General

- 72-551. DE LA ROCHE, H., ISNARD, P., & GRANDCLAUDE, P. *Domaines et tendances ignées communes dans les diagrammes Q-Ab-Or, An-Ab-Or et Q-Ab-An-Or (étude documentaire).* Sci. de la Terre, **14**, 371-382, 5 figs., 1969.

Various igneous petrological series as listed by Nockolds & Allen [M.A. 12-264, 558] are plotted in these diagrams, the plots being obtained by automatic processing of C.I.P.W.-Lacroix norms. Comparison is made with data by Nockolds [M.A. 12-537] on the average composition of igneous rocks.

R. A. H.

- 72-552. MOTTANA, A., SUTTERLIN, P. G., & MAY, R. W. *Factor analysis of omphacites and garnets: a contribution to the geochemical classification of eclogites.* Contr. Min. Petr., **31**, 238-250, 7 figs., 1971.

R-mode technique factor analysis on published analyses

of 186 garnets and 103 omphacites from eclogites of known geological setting confirms the division of eclogites into three groups [M.A. 17-434, 19-159] and lends support to the interpretation of eclogites as rocks formed under a wide range of P - T conditions both in the metamorphic and in the igneous realm.

R. A. H.

- 72-553. O'HARA, M. J., RICHARDSON, S. W., & WILSON, G. *Garnet-peridotite stability and occurrence in crust and mantle.* Contr. Min. Petr., **32**, 48-68, 7 figs., 1971.

The boundary between the spinel- and garnet-lherzolite mineral facies is strongly curved between 1300° and 1450°C; below 1200°C it lies almost parallel to the temperature axis of the P - T diagram. A pressure of at least 12 kbars is required to stabilize garnet peridotite on the geothermal gradient; the depth at which the boundary is encountered is not sensitive to variations in this gradient. Well-preserved garnet lherzolites exposed at the Earth's surface cannot have been subjected to