tions of the spheres to problems in petrology. Special thanks are extended to Allen Edgar, Bernard Evans, and J. A. Speer for their thoughtful comments during review.

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NEW MINERAL NAMES

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New Data

Arseniopleite

P.J. Dunn, D.R. Peacor (1987) New data on the relation between caryinite and arseniopleite. Mineral. Mag., 51, 281–284.

Electron-microprobe analysis of arseniopleite from Långban, Sweden, gave the following composition for a single sample and (range) for additional samples: Fe_2O_3 0.5(0.0–0.5), MgO 7.1(7.1–8.0), CaO 7.4(7.4–7.7), MnO 20.1(20.1–21.5), PbO 8.7(3.5–8.7), BaO 0.3(0.0–3.7), P_2O_5 0.5(n.d.), As_2O_5 50.6(50.6–52.4), Na_2O 5.0(4.8–5.0), sum 100.2 wt%. The Fe_2O_3 is total Fe; microchemical tests gave a strong to moderate positive reaction for Fe^{3+}. The analyses are considered to correspond to the ideal formula $Na_4Ca_4Mn_4(Mn,Mg)_8(AsO_4)_{12}$ based on 48 oxygen atoms and by analogy with alluaudite structural requirements. Single-crystal Weissenberg study indicates that arseniopleite is isostructural with alluaudite. Significant differences in intensity and spacings of some reflections with large *d* values were observed between powder and single-crystal photographs of arseniopleite and caryinite, especially for 020 and 110. The differences are attributed to solid-solution variations, and it is suggested that arseniopleite may have Mn dominant in the *M*(1) site whereas caryinite has (Ca,Mn). Provisional retention of the name arseniopleite is suggested, either until additional studies are done or until nomenclature decisions are made for alluaudite-type structures. **J.L.J.**

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Bonchevite

W.D. Birch, W.G. Mumme (1985) Pekoite from Narechen, Bulgaria—A possible solution to the bonchevite problem. Mineral. Mag., 49, 135–137.

Scheelite-bearing quartz veins near the town of Narechen, southern Rhodope Mountains of Bulgaria, were the original source of bonchevite which was assigned the formula $PbBi_4S_7$ when the mineral was described and named by Kostov (*Mineral. Mag.*, 31, 821–828; 1958). Examination of new specimens collected near Narechen has shown that the sulfosalt they contain is pekoite of variable composition. It is suggested that the X-ray and chemical data used for the original description of bonchevite were obtained from a mixture of galenobismutite and partly (Cu,Pb)-substituted bismuthinite (namely pekoite as it is now known).

Discussion. X-ray powder patterns, single-crystal studies, and electron-microprobe analyses obtained by this reviewer in 1967 on type-locality specimens, kindly provided by Kostov, gave results in total accord with the above suggestion. **J.L.J.**

Caryinite

P.J. Dunn, D.R. Peacor (1987) New data on the relation between caryinite and arseniopleite. Mineral. Mag., 51, 281–284.

Caryinite, known only from Långban, Sweden, was found to have the following composition for a single sample and (range) for additional samples: Fe_2O_3 0.0(0), FeO 0.5(0.4–0.8), MgO 3.1(3.0–4.3), CaO 10.8(9.2–11.8), MnO 19.1(18.6–20.4), PbO 11.5(9.2–12.9), BaO 0.8(0.0–1.1), P_2O_5 0.8(0.8–1.6), As_2O_5 47.8(47.1–50.5), Na_2O 4.18(4.2–5.2), sum 98.6 wt%. The results are from electron-microprobe analyses except that Na was determined by flame emission; microchemical tests gave an inconclusive reaction for Fe^{2+} or Fe^{3+}. The analytical results yield the idealized formula $Na_4(Ca,Pb)_4(Ca,Mn)_4(Mn,Mg)_8(AsO_4)_{12}$. Single-crystal study indicates that the space group, by analogy with alluaudite, is $C2/c$ rather than $P2_1/c$. The formula and space group are new. **J.L.J.**

Falkmanite

K.G. McQueen (1987) A second occurrence of falkmanite: Pinnacles mine, Broken Hill, New South Wales. Can. Mineral., 25, 15–19.

A sulfosalt in Pb-rich ore gave an electron-microprobe composition corresponding to $Pb_{5.35}Sb_{3.65}As_{0.04}S_{10.92}$. Reflectance values in air and in oil are given. The X-ray powder pattern is similar to that of boulangerite, and was indexed with the monoclinic cell parameters of boulangerite.

Discussion. The re-introduction of the name falkmanite was reviewed in *Am. Mineral.*, 69, 411 (1984); the new analyses are almost identical to those reported previously. Some of the grains from the Pinnacles deposit are prismatic and up to 1.2 mm long, suggesting that the material is suitable for single-crystal study. **J.L.J.**

Freedite

F. Pertlik (1987) The structure of freedite, $Pb_8Cu(AsO_3)_2O_3Cl_5$. Mineral. Petrology, 36, 85–92.

Determination of the crystal structure of freedite (R = 8.6%) gave $a = 13.578(2)$, $b = 20.099(3)$, $c = 7.465(1)$ Å, $\beta = 105.73(1)°$, space group $C2/m$, $D_{calc} = 7.43$ g/cm³ for Z = 4[$Pb_8Cu(AsO_3)_2O_3Cl_5$]. The formula is new. **J.L.J.**

Lithiophorite

S. Llorca (1987) New data on the composition and structure of lithiophorites, based on samples from New Caledonia. Compt. Rendus Acad. Sci., Ser. 2, 304, 15–18 (in French, English abstract).

Lithiophorite from New Caledonia contains up to 10 wt% Co_2O_3 and 2 wt% NiO. Octahedral coordination of Co^{3+} in the MnO layer and incorporation of Ni^{2+} in the Al layers lead to a perfectly balanced structure. **J.L.J.**

Manganostibite

P.J. Dunn (1986) Manganostibite: New chemical data, and its relation to holicite and holdenite. Geol. Fören. Stockholm Förhandlinger, 109, 101–102.

Re-examination of manganostibite from the Brattfors mine, Nordmark, Sweden, the only locality known for the mineral, has shown that the 4.62 wt% CaO obtained in the original analysis in 1884 is not present, but two new analyses gave previously unreported SiO_2 values of 3.0 and 3.4 wt%. The ideal formula is $Mn_7Sb^{5+}(As^{5+},Si)O_{12}$. **J.L.J.**

Metavivianite, kerchenite

K.A. Rodgers (1986) Metavivianite and kerchenite: A review. Mineral. Mag., 50, 687–691.

Metavivianite (triclinic) was thought to be dimorphous with vivianite $Fe_3(PO_4)_2 \cdot 8H_2O$ (monoclinic). The Fe^{2+}-Fe^{3+} proportions were not determined in the original description of metavivianite; subsequent studies, including Mössbauer spectroscopy of type material from the Big Chief pegmatite, South Dakota, have shown that metavivianite has the general formula $Fe^{2+}_{3-x}Fe^{3+}_x(PO_4)_2(OH)_x \cdot (8 - x)H_2O$ where $x > 1.4$; i.e., much of the Fe in the mineral is trivalent and charge compensation is achieved by the presence of OH. Therefore, metavivianite does not seem to be dimorphous with vivianite, but re-examination of type material, of which none remains in the original repositories, should be done.

Kerchenite, generally regarded as a mixture of vivianite and indeterminate oxidation products, was originally given a formula that is encompassed within the new general formula for metavivianite. Assuming the homogeneity of the original (1907) kerchenite samples, this mineral and redefined metavivianite are identical. **J.L.J.**

ERRATUM

Ternary-feldspar mixing relations and thermobarometry by Nathan L. Green and Steven I. Usdansky (v. 71, p. 1100–1108). Page 1104, Figure 1: The univariant curves as published do not exactly match those calculated by using the expressions in Appendix 1 of the paper. The adjacent figure should therefore be substituted.