

## Thirty-third list of new mineral names

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THE present list contains 200 entries. Of these 167 are valid species, most of which have been approved by the IMA Commission on New Minerals and Mineral Names, 3 are for artificial products, 6 are unnecessary names for varieties, 2 are gem names, 2 are corrections to names misspelt in the 32nd List, 14 are erroneous transliterations into and from the Cyrillic alphabet, and there are 6 other errors. As in previous lists contractions for names of frequently cited periodicals are used including C.M. for *Canadian Mineralogist*. 82 entries had been completed by Dr M. H. Hey before his death in January 1984.

**Aluminium.** B. V. Oleinikov, A. V. Okrugin, M. I. Novgorodova, N. A. Ashikhmina, O. B. Oleinikov, D. I. Frikhkar, O. A. Bogatikov, N. V. Leskova, and A. I. Gorshkov, 1984. *Zap.* **113**, 210. First found in traps of the Siberian platform in picritic gabbro-dolerites near Noril'sk, also from the Vilyuy River basin, and from Pacific Ocean sediments, as greyish-white malleable grains up to 1 mm, with dull lustre but metallic on fresh fractures. In reflected light white, isotropic,  $H\ 1\frac{1}{2}$ ,  $D$  obs. 2.7. Cubic in both face-centred and primitive modifications  $Fm\bar{3}m$  or  $Pm\bar{3}m$  with  $a\ 4.04\text{--}4.07\ \text{\AA}$ ;  $Z = 4$ . Composition 99-100% Al.

**Alumopharmacosiderite.** [14th list, artificial] K. Schmetzer, W. Horn, and H. Bank, 1981. *N. Jahrb. Min. Monatsh.* **97**. At Guanaco, NE of Taltal, Chile, as white crusts with schlossmacherite [31st list], cerulite, olivenite, mansfieldite, and quartz. Cubic,  $P\bar{4}3m$ ,  $a\ 7.745(1)\ \text{\AA}$ ,  $R.I.\ 1.565(2)$ , isotropic, similar to pharmacosiderite. Composition  $KAl_4(OH)_4(AsO_4)_3 \cdot 6.5H_2O$ . Named for its composition and similarity to pharmacosiderite.

**Amicchite** = erroneous backtransliteration from Cyrillic of Amicite [31st List]. A. P. Khomyakov, G. Ye. Cherepivskaya, T. A. Kurova, and V. V. Kaptsov, 1982. *Doklady, Earth Sci. Sect.* **263**, 135; Амичит in *Doklady Akad. Nauk SSSR*, **263**, 978.

**Argutite.** Z. Johan, E. Oudin, and P. Picot, 1983. *Tschermak's Min. Petr. Mitt.* **31**, 97. As up to 10  $\mu\text{m}$  subhedral crystals, sometimes twinned on {101} from Ordovician and Devonian zinc

deposits in central Pyrenees, France. Tetragonal, grains too small for X-ray study. Reflectances given, optically close to cassiterite. Composition  $GeO_2$  with a little Zn, Fe, and Mn. Named for the Plan d'Argut deposit. [A.M. **69**, 406.]

**Arhbarite.** K. Schmetzer, G. Tremmel, and O. Medenbach, 1982. *N. Jahrb. Min. Monatsh.* **529**. As blue spherulitic aggregates at the Arhbar mine, Bou-Azzer district, Morocco. Monoclinic. Optically biaxial,  $\alpha\ 1.720(5)$ ,  $\gamma\ 1.740(5)$ , extinction  $45^\circ$ ,  $2V\ 90^\circ$ . Unindexed X-ray powder pattern given. Composition  $Cu_2AsO_4(OH) \cdot 6H_2O$ . Named for the mine. [A.M. **68**, 1038.]

**Arsendescloizite.** P. Keller and P. J. Dunn, 1982. *Min. Record*, **13**, 155. The As analogue of descloizite occurs at Tsumeb, SW Africa;  $P2_12_12_1$ ,  $a\ 6.075$ ,  $b\ 9.358$ ,  $c\ 7.634\ \text{\AA}$ . Tabular crystals on {001}, with {011}, {101}, and {111}. Pale yellow,  $\alpha\ 1.990$ ,  $\parallel\ [010]$ ;  $\beta\ 2.030$ ,  $\gamma\ 2.035\ \parallel\ [100]$ ;  $2V\ c.\ 30^\circ$ ,  $r > v$ .  $4[PbZnAsO_4OH]$ . [M.A. **83M/0748**.]

**Arsenocrandallite.** K. Walenta, 1981. *Schweiz. Min. Petr. Mitt.* **61**, 23. Blue to bluish-green crusts and spherules from the Neubulach mining district, Schwarzwald, Germany, are rhombohedral,  $a\ 7.04\ \text{\AA}$ ,  $\alpha\ 60.19^\circ$ .  $D\ 3.25$ . [(Ca,Sr)Al<sub>3</sub>H(AsO<sub>4</sub>)<sub>2</sub>(OH)<sub>6</sub>], the As analogue of crandallite (alunite group). Isotropic or weakly birefringent,  $n\ 1.625$ . [A.M. **67**, 854; M.A. **82M/3343**.]

**Aschamalmite.** W. G. Mumme, G. Niedermayr, P. R. Kelly, and W. H. Paar, 1983. *N. Jahrb. Min. Monatsh.* **433**. In leucocratic gneiss near Ascham Alm, Untersulzbach valley, Salzburg, Austria, as lead grey, heavily altered crystals, metallic lustre,  $VHN_{25}\ 150\text{--}181\ \text{kg/mm}^2$ . Monoclinic,  $C2/m$ ,  $Cm$ , or  $C2$ , with  $a\ 13.71$ ,  $b\ 4.09$ ,  $c\ 31.43\ \text{\AA}$ ,  $\beta\ 91.0^\circ$ ;  $Z = 4$ ;  $D$  calc. 7.33; reflectances in air and oil given. Composition near  $Pb_6Bi_2S_9$ , the monoclinic analogue of heyrovskite [27th List]. Named for locality.

**Asselbornite.** H. Sarp, J. Bertrand, and J. Deferne, 1983. *N. Jahrb. Min. Monatsh.* **417**. At Schneeberg, Saxony, E. Germany, as lemon yellow to brown transparent cubes up to 3 mm with greasy-adamantine lustre, Cubic,  $Im\bar{3}m$ ,  $I432$ ,

- Im3*, or *I23*, with  $a$  15.66 Å;  $Z = 4$ ;  $D$  calc. 5.6. Composition  $(\text{Pb,Ba})(\text{UO}_2)_6(\text{BiO})_4[(\text{As,P})\text{O}_4]_2(\text{OH})_{12} \cdot 3\text{H}_2\text{O}$ . Named for Dr Eric Asselborn, collector of minerals and surgeon at Dijon (France) hospital.
- Authurite = error for arthurite 1982. *Min. Record*, **13**, 144.
- Balangeroite**. R. Campagnoni, G. Ferraris, and L. Fiora, 1983. *A.M.* **68**, 214. Brown asbestiform fibres with chrysotile, in the Balangero serpentinite, Lanzo valley, Piemont, Italy, are orthorhombic,  $a$  13.85(4),  $b$  13.58(3),  $c$  9.65(3) Å, with a marked sub-cell having  $c' = c/3$ . Elongation  $[001]$ ;  $n$  1.680(5). Composition  $[(\text{Mg,Fe}^{2+},\text{Fe}^{3+},\text{Mn})_{39}\text{Si}_{15}\text{O}_{54}(\text{OH})_{36}]$ , the Mg analogue of gageite [6th List]. [*M.A.* 83M/5053.]
- Bannermanite** (of Hughes *et al.*). J. M. Hughes, L. W. Finger, and R. M. Hazen, 1981. *Ann. Rept. Geophys. Lab. for 1980*, 379; J. M. Hughes and L. W. Finger, *A.M.* **68**, 634 (1983). Black crystals from a fumarole of the Izalco volcano, El Salvador, are named for H. M. Bannerman. Monoclinic,  $C2/m$ ,  $a$  15.413(7),  $b$  3.615(2),  $c$  10.066(8) Å,  $\beta$  109.29(8)°;  $Z = 2$ ;  $D$  3.5(2). Composition  $(\text{Na,K})_x\text{V}_x^{4+}\text{V}_{6-x}^{5+}\text{O}_{15}$ , with  $x$  between 0.90 and 0.54. Not the bannermanite of W. Thompson, 1967 [31st List]. [*M.A.* 84M/0878.]
- Barentsite**. A. P. Khomyakov, T. A. Kurova, G. N. Nechelyustov, and G. O. Piloyan, 1983. *Zap.* **112**, 474 (Баренцит). From below 600 m level of Restin'yun Mountain, NE Khibin massif, Kola Peninsula, as colourless, transparent grains 3–5 mm in size, sometimes partially dissolved in water. The surface of the grains is covered by a thick white powdery alteration product. On fresh fractures the mineral is transparent, vitreous or pearly lustre. Perfect  $\{001\}$  and  $\{100\}$  cleavage, brittle,  $H$  3. Triclinic,  $P\bar{1}$ ,  $a$  6.472,  $b$  6.735  $c$  8.806 Å,  $\alpha$  92.50,  $\beta$  97.33,  $\gamma$  119.32°;  $Z = 1$ ;  $D$  obs.  $2.56 \pm 0.02$ , calc. 2.55; biaxial negative,  $2V = 62^\circ$ ,  $\alpha$  1.358,  $\beta$  1.479,  $\gamma$  1.530. Composition  $\text{Na}_7\text{AlH}_2(\text{CO}_3)_4\text{F}_4$ . Named for Willem Barents (1550–97) the Dutch seafarer after whom the Barents Sea surrounding the Kola Peninsula was also named.
- Bario-orthojoaquinite**. W. S. Wise, 1982. *A.M.* **67**, 809. Crystals up to 8 mm, from the Benitoite Gem mine, San Benito Co., California, are orthorhombic, pseudotetragonal bipyramids with  $a$  10.477,  $b$  9.599,  $c$  22.59 Å;  $D$  3.959;  $2[\text{Fe}_2^{2+}\text{Ba}_4\text{Ti}_4(\text{Ba,Sr})_4\text{O}_4\text{Si}_4\text{O}_{12} \cdot 2\text{H}_2\text{O}]$ .  $\alpha$  1.735  $\parallel$   $[100]$ , very pale yellow,  $\beta$  1.737, pale yellow,  $\gamma$  1.80(1)  $\parallel$   $[001]$ , yellow,  $2V$ , 10 to 15°. Compare orthojoaquinite (this List).
- Berdesinskiite**. H.-J. Bernhardt, K. Schmetzer, and O. Medenbach, 1981. *Z. deut. Gemmol. Ges.* **30**, 143. A black monoclinic mineral from the Kornerupine mine near Lasamba Hill, Kwale dist., S. of Voi, Kenya, with  $a$  10.11,  $b$  5.084,  $c$  7.03 Å,  $\beta$  111.46°;  $Z = 4$ ;  $D$  calc. 4.536. Composition  $\text{V}_3^{3+}\text{Ti}^{4+}\text{O}_5$ ; data are compared with those of schreyerite and  $\text{Fe}_2\text{Ti}_3\text{O}_9$ . Named for W. Berdesinski. [*A.M.* **67**, 1067; *M.A.* 83M/5054; *N. Jahrb. Min. Monatsh.* 1983, 110.]
- Bergslagite**. S. Hansen, L. Fäth, O. V. Petersen, and O. Johnsen, 1984. *N. Jahrb. Min. Monatsh.* 257. At Långban Värmland, Sweden, as thin veins in hematite ore, colourless, whitish, or greyish translucent with vitreous lustre and uneven fracture. Monoclinic or triclinic (pseudomonoclinic),  $P2_1/c$  or  $P\bar{1}$ ,  $a$  4.8819(9),  $b$  7.809(1),  $c$  10.127(1) Å,  $\beta$  90.16(1)°,  $Z = 4$ ,  $V$  386.1 Å<sup>3</sup>;  $D$  obs. =  $D$  calc. 3.40;  $\alpha$  1.659,  $\beta$  1.681,  $\gamma$  1.694,  $2V_2$  70(2)°; ideally  $\text{CaBeAsO}_4\text{OH}$ , isostructural with datolite, bakerite, herderite, gadolinite, drugmanite (31st List), and hingganite (this List). Named for locality, since Långban is in the western part of the Bergslagen region.
- Bezmeritnovite, error for Bezsmertnovite (Безмертновит). *M.M.* **46**, 516 (1982).
- Bijvoetite**. M. Deliens and P. Piret, 1982. *C.M.* **20**, 231. Yellow orthorhombic crystals from Shinkolobwe, Zaïre, tabular on  $\{001\}$ , have  $a$  21.22(3),  $b$  45.30(7),  $c$  13.38(2) Å;  $Z = 16$ ;  $D$  obs. 3.9;  $\text{Ln}_2\text{O}_3 \cdot 4\text{UO}_3 \cdot 4\text{CO}_2$ ,  $c$   $14\text{H}_2\text{O}$ , with Ln = mainly Y, Dy, Gd, and Tb. Named for M. Bijvoet (1892–1980). [*A.M.* **68**, 1248, space group  $C2ma$ ,  $Cm2b$ , or  $Cmma$ .]
- Bismutostibiconite**. K. Walenta, 1983. *Chemie der Erde*, **42**, 77. At the Clara mine and on the mine dumps at Neubulach, Black Forest, Germany, as yellow to yellowish-brown earthy crusts, rarely also greenish. Often intergrown with beyerite, atelestite, and preisingerite.  $H$  4–5. Cubic,  $Fd\bar{3}m$ , with  $a$  10.38 Å,  $Z = 8$ ;  $D$  calc. 7.38. Isotropic,  $n$  2.09; composition  $\text{Fe}_{3.54}^{3+}\text{Bi}_{1.31}^{3+}\text{Sb}_{1.69}\text{O}_7$ ; stibiconite group. More material needed to clear up chemistry, measure specific gravity.
- Bonshtedtite**. A. P. Khomyakov, V. B. Aleksandrov, N. I. Krasnova, V. V. Ermilov, and N. N. Smolyaninova, 1982. *Zap.* **111**, 486 (Бонштедтит). From the Khibin and Kovdov massifs, Kola Peninsula. Monoclinic  $P2_1/m$ . Khibin material has  $a$  8.92,  $b$  6.631,  $c$  5.151 Å,  $\beta$  90° 25';  $D$  2.95,  $\alpha$  1.520  $\parallel$   $[010]$ ,  $\beta$  1.568  $\parallel$   $[001]$ ,  $\gamma$  1.591  $\parallel$   $[100]$ . Composition  $2[\text{Na}_3\text{Fe}^{2+}\text{PO}_4\text{CO}_3]$ , with  $1\frac{1}{2}\%$  MnO and  $2\frac{1}{2}\%$  MgO. Kovdov material is slightly richer in MgO. Named for E. M. Bonshtedt-Kupletskaya. [*M.A.* 83M/5056.]
- Bostwickite**. P. J. Dunn and P. B. Leavens, 1983. *M.M.* **47**, 387. A dark red-brown mineral found in the Taylor mine (later part of the Franklin mine, Franklin, New Jersey) in 1874 and long thought to be arseniosiderite is described and named for R. C. Bostwick. Single-crystal data

- could not be obtained, so unindexed powder data are given.  $\text{CaMn}_6^{3+}\text{Si}_3\text{O}_{16} \cdot 7\text{H}_2\text{O}$ .  $D$  2.93  $\text{g}/\text{cm}^3$ ;  $\alpha$  1.775, red-brown,  $\beta$  1.798 red-brown,  $\gamma$  1.800 yellow-brown;  $2V_\alpha$  25°. [M.A. 83M/5057.]
- Burtite**. P. M. Sonnet, 1981. C.M. 19, 397. Octahedra in a tin skarn at 5° 49' 50" N., 33° 31' 26" E., on the West bank of the Beht River, Morocco, are rhombohedral  $R\bar{3}$ , or possibly cubic, with  $a$  8.128 Å;  $Z = 4$ ;  $D$  3.28(1).  $\text{CaSn}(\text{OH})_6$ . Isotropic,  $n$  1.633, but thick grains may show weak birefringence and a uniaxial positive interference figure. Named for D. M. Burt. [A.M. 67, 854; M.A. 84M/0879.]
- Cabriite**. T. L. Evstigneeva and A. D. Genkin, 1983. C.M. 21, 481. White grains up to 200  $\mu\text{m}$ , with a slightly greyish-rose tint, in massive Cu-Ni sulphide ores from the Oktyabr deposit, Noril'sk region, Siberia, together with sperrylite, polarite, etc. Orthorhombic,  $Pmmm$ , with  $a$  7.88,  $b$  7.88,  $c$  3.94 Å;  $Z = 4$ ;  $D$  calc. 11.18. Composition  $\text{Pd}_2\text{CuSn}$ . Named for Dr L. J. Cabri, ore mineralogist of Ottawa, Canada.
- Calciobetafite**. F. Mazzi and R. Munno, 1983. A.M. 68, 262. Small brown isotropic octahedra in the sanidinite of Monte di Procida, Campi Flegrei, Campania, Italy, are cubic,  $Fd\bar{3}m$ ,  $a$  10.2978(5) Å;  $Z = 8$  (Ca, Ln, Th, U) $_2$ (Nb, Ta, Ti) $_2\text{O}_7$ , pyrochlore group. Named as the Ca analogue of betafite. [M.A. 83M/5058.]
- Caratiite**. A. M. Clark, E. E. Fejer, and A. G. Couper, 1984. M.M. 48, 537; H. Effenberger and J. Zemann, 1984. M.M. 48, 541. Very fine green needles up to 1 cm long, with some paratacamite coating, in lava from the 1869 eruption of Mt. Vesuvius, Naples, Italy, with vitreous to greasy lustre and no fluorescence; tetragonal,  $I4$ ,  $a$  13.60(2),  $c$  4.98(1) Å,  $Z = 1$ ;  $D$  obs. 3.0,  $D$  calc. 3.22; uniaxial positive,  $\omega$  1.598,  $\varepsilon$  1.711, with distinct dichroism; ideally  $\text{K}_4\text{Cu}_4\text{O}_2(\text{SO}_4)_4\text{MeCl}$  (where  $\text{Me} = \text{Na}$  or  $\text{Cu}$ ). Named for Mariano Carati of Naples, Italy, mineral collector. Compare piypite (this List).
- Carboirite**. Z. Johan, E. Oudin, and P. Picot, 1983. *Tschermak's Min. Petr. Mitt.* 31, 97. In the Carboire, Argut, and other deposits of the central Pyrenees, France, as green pseudo-hexagonal plates  $100 \times 100 \times 30$   $\mu\text{m}$  in sphalerite, showing {001} and {010} with {001} cleavage, vitreous lustre,  $H$  6. Triclinic,  $C\bar{1}$ , with  $a$  9.513,  $b$  5.569,  $c$  9.296 Å,  $\alpha$  96.08,  $\beta$  101.52,  $\gamma$  89.45°;  $Z = 4$ ;  $D$  calc. 3.95 for  $\text{Ge}/(\text{Ge} + \text{Si}) = 0.75$ ; optically biaxial positive,  $\alpha$  1.731,  $\beta$  1.735,  $\gamma$  1.740,  $2V$  7°. Composition ideally  $\text{Fe}^{2+}\text{Al}_2\text{GeO}_5(\text{OH})_2$ ; forms solid solution with chloritoid. X-ray data are compared with those of ottrelite and triclinic chloritoid. Named for the deposit.
- Cebaite**. P. Zhizhong and S. Jinchuan, 1979. *Proc. Intern. Exchange on Geol. Research*, 11 (Chinese with English abstract).  $\text{Ba}_3\text{Ce}(\text{CO}_3)_5\text{F}_2$ . Named for composition.
- Chaméanite**. Z. Johan, P. Picot, and F. Ruhlmann, 1982. *Tschermak's Min. Petr. Mitt.* 29, 151. Occurs in intergrowths with giraudite (this List) at the Chaméane deposit, Vernet-la-Varenne, Puy-de-Dôme, France. Cubic,  $a$  11.039 Å, grey in reflected light.  $8[(\text{Cu}, \text{Fe})_4\text{As}(\text{Se}, \text{S})_5]$ . Named for the deposit. [A.M. 67, 1074.]
- Charlesite**. P. J. Dunn, D. R. Peacor, P. B. Leavens, and J. L. Baum, 1983. A.M. 68, 1033. As colourless, transparent, simple hexagonal crystals tabular on {0001}, perfect {1010} cleavage, from Franklin, New Jersey, USA. Space group probably  $P31c$ , with  $a$  11.16(1),  $c$  21.21 Å;  $D$  obs. 1.77,  $D$  calc. 1.79;  $\omega$  1.492(3),  $\varepsilon$  1.475(3). Composition ideally  $\text{Ca}_6(\text{Al}, \text{Si})_2(\text{SO}_4)_2\text{B}(\text{OH})_4(\text{OH}, \text{O})_{12} \cdot 26\text{H}_2\text{O}$ . Ettringite group, Al analogue of sturmanite (this List). Named for Professor Charles Palache (1869-1954).
- Chessexite**. H. Sarp and J. Deferne, 1983. *Schweiz. Min. Petr. Mitt.* 62, 337. At the Mine de Maine, near Autun, France, it occurs as thin white square plates with fluorite and gypsum. Orthorhombic with  $a$  13.70,  $b$  27.96,  $c$  9.99 Å;  $Z = 2$ ;  $D$  calc. 2.04;  $\alpha$  1.456,  $\beta$  1.460,  $\gamma$  1.480 with the optical orientation  $a = \alpha$ ,  $b = \beta$ ,  $c = \gamma$ ,  $2V$  47°. Composition  $(\text{Na}, \text{K})_4\text{Ca}_2(\text{Mg}, \text{Zn})_3\text{Al}_6(\text{SiO}_4)_2(\text{SO}_4)_{10} \cdot 40\text{H}_2\text{O}$ . Named for R. Chessex, Professor of Petrography at Geneva University, Switzerland. [A.M. 69, 406.]
- Chiavennite**. M. Bondi, W. L. Griffin, V. Mattioli, and A. Mottana, 1983. A.M. 68, 623; G. Raade, R. Åmli, M. H. Mladeck, V. K. Din, A. O. Larsen, and A. Åsheim, *ibid.* 628. As red-orange to orange-yellow crystals in a pegmatite at Valle di San Giacomo, Chiavenna, Italy, and in a nepheline-syenite pegmatite at the Heia quarry, Tvedalen, Larvik, Norway. Orthorhombic,  $P2_1ab$ , with  $a$  8.866(7),  $b$  32.34(2),  $c$  4.787(3) Å on Norwegian, and  $a$  8.729(5),  $b$  31.326(7),  $c$  4.903(2) Å on Italian material;  $D$  2.56 and 2.64(1) respectively. The Italian material is nearer to the ideal formula than the Norwegian which has more Al replacing Si, Mn, or Ca. Ideally  $4[\text{CaMnBe}_2\text{Si}_5\text{O}_{13}(\text{OH})_2 \cdot 2\text{H}_2\text{O}]$ .  $\alpha$  1.581,  $\gamma$  1.600 (Ital.),  $\alpha$  1.596(2),  $\beta$  1.600(2),  $\gamma$  1.618(2) (Norwegian). [M.A. 84M/0880.]
- Chollestadite**. R. C. Rouse and P. J. Dunn, 1982. A.M. 67, 90. The end-member  $\text{Ca}_{10}(\text{SiO}_4)_3(\text{SO}_4)_3\text{Cl}_2$ , present in moderate amounts (up to about 25%) in ellestadite from Crestmore, California. The pure phase only known artificially. Apatite group. [M.A. 83M/1825.]
- Chrom-aluminium-hisingerite, variant of Chrome-alumina-hisingerite, q.v. O. M. Shubnikova,

1936. *Trudy Lomonosov Inst. Akad. Nauk SSSR*, no. 7, 321.
- Chromdravite.** E. V. Romyantseva, 1983. *Zap.* **112**, 222 (Хромдравит). Omega basin, Central Karelia, as very dark green, nearly black crystals with pyramidal termination in micaceous metasomatic rocks. Trigonal, with  $a$  16.11,  $c$  7.27 Å;  $D$  obs. 3.40(1); uniaxial negative,  $\omega$  1.778,  $\varepsilon$  1.722. Ideally  $\text{NaMg}_3\text{Cr}_6(\text{BO}_3)_3\text{Si}_6\text{O}_{18}(\text{OH})_4$  with 31.6% Cr. Tourmaline group, analogous to dravite. Compare chrome-tourmaline, 18th List. [M.A. 84M/0881, A.M. **69**, 210.]
- Chrome-alumina hisingerite.** D. P. Serdyuchenko, 1933. *Zap.* **62**, 391 (Хромово-алюминиевий гизингерит, p. 389). Regarded as a chromian nontronite.
- Chromium.** Yue Suchin, Wang Wenying, and Sun Sujing, 1981. [*Kehue Tongbao*, **26**, 959], abstr. A.M. **67**, 854. Native chromium is reported from a contact zone in Sichuan, China. [A.M. **67**, 854.]
- Clinoclase** (of Lasaulx). A. von Lasaulx, 1878. *Sci. Proc. R. Dublin Soc.* **2**, 25. A term for anorthic feldspars.
- Clinokurchatovite.** S. V. Malinko and N. N. Pertsev, 1983. *Zap.* **112**, 483 (Клинокурчатовит). In skarn deposits from Sayak IV, Kazakhstan; Solongo, Buryatia, and Titov, Yakutia, USSR. As colourless or pale grey grains with ludwigite, kurchatovite, magnetite, etc., simple or polysynthetic twinning, perfect {010} cleavage,  $H$   $4\frac{1}{2}$ . Monoclinic,  $a$  12.19,  $b$  10.95,  $c$  5.59 Å,  $\beta$  102°;  $Z = 8$ ;  $D$  obs. 3.08, calc. 3.16; optical orientation:  $\alpha \perp [010]$ ,  $\gamma : b$  52°,  $\beta : b$  38°,  $\gamma : a$  26°,  $\beta : a$  64°;  $\alpha$  1.644,  $\beta$  1.675,  $\gamma$  1.704,  $2V = 88^\circ$ . Composition  $\text{CaMgB}_2\text{O}_5$ . Named for relationship with kurchatovite (24th List) which contains a little Mn.
- Comancheite.** A. C. Roberts, H. G. Ansell, and P. J. Dunn, 1981. *C.M.* **19**, 393. Orthorhombic orange to yellow crystals with {001} and {110} cleavages and anhedral red masses from Terlingua, Brewster Co., Texas, have  $a$  18.41,  $b$  21.64,  $c$  6.677 Å;  $Z = 4$ ;  $D$  7.7(4). Composition  $\text{Hg}_{13}(\text{Cl}, \text{Br})_8\text{O}_9$ , with Br/Cl 0.77. Straight extinction, elongation neg.,  $n$  1.78–1.79. Named for the Comanche Indians, the first miners at Terlingua. [M.A. 84M/0882.]
- Coyoteite.** R. C. Erd and G. K. Czamanske, 1983. *A.M.* **68**, 245. Black grains from Coyote Peak, Orick, Humboldt Co., California, are anorthic,  $a$  7.409(8),  $b$  9.881(6),  $c$  6.441(3) Å,  $\alpha$  100° 25(3)',  $\beta$  104° 37(5)',  $\gamma$  81° 29(5)'. In reflected light strongly anisotropic, from grey to dull golden orange. Composition probably  $2[\text{NaFe}_3\text{S}_5 \cdot 2\text{H}_2\text{O}]$ . Named for locality. [M.A. 83M/5060.]
- Davanite.** K. A. Lazebnik, Yu. D. Lazebnik, and V. F. Makhotko, 1984. *Zap.* **113**, 95 (Даванит). From the Murun Mesozoic alkali massif near Davan, Torgo River basin, W. Yakutia, USSR, as a clear transparent, colourless mineral with vitreous lustre, shelly fracture, no cleavage.  $H$  5. Triclinic, with  $a$  7.14,  $b$  7.53,  $c$  6.93 Å,  $\alpha$  103.35°,  $\beta$  114.48°,  $\gamma$  93.88°;  $D$  obs. 2.76, calc. 2.754. Biaxial positive,  $\alpha$  1.623,  $\gamma$  1.668. Composition  $\text{K}_2\text{TiSi}_6\text{O}_{15}$ , the Ti analogue of dalyite,  $\text{K}_2\text{ZrSi}_6\text{O}_{15}$  (19th List). Named for locality.
- Eclarite.** W. H. Paar, T. T. Chen, V. Kupchik, and K. Hanke, 1983. *Tschermak's Min. Petr. Mitt.* **32**, 103. At Bärenbad, W. of Hollersbachtal, Salzburg, Austria, about 1.5 km N. of the galena-sphalerite-fluorite deposit of Achsel Alm the mineral occurs as up to 15 mm long tin-white needles with metallic lustre in fan-shaped groups and as fracture-filling aggregates of xenomorphic grains in cataclastic pyrite and arsenopyrite in quartz. Orthorhombic, *Pnma*,  $a$  54.76(4),  $b$  4.030(3),  $c$  22.75(3) Å;  $Z = 2$ ;  $D$  obs. 6.85, calc. 6.88. Ideally  $(\text{CuFe})\text{Pb}_9\text{Bi}_{12}\text{S}_{28}$ , cosalite group. Data confirmed by structure determination [V. Kupčik, 1984. *T.M.P.M.* **32**, 259]. Named for Dr E. Clar, Emeritus Professor, Wien, Austria.
- Ekerite**, error for eakerite, through back-transliteration from Экерит. *Dokl. Acad. Sci. USSR, Earth Sci. Sect.* **250**, 153 (1982).
- Fergusonite-beta(Nd).** Sun Weijun, Ma Fengjun, and Zhuang Shijie, 1983. *Sci. Geol. Sinica*, **78**. As red-brown or yellowish red irregular grains, rarely prismatic, in a Nb-RE deposit in dolomite at Bayan Obo, Inner Mongolia, China, with riebeckite, biotite, magnetite, monazite, etc. Essentially metamict but heat-treated specimens monoclinic, with  $a$  5.07,  $b$  5.62,  $c$  5.41 Å,  $\beta$  93.0°. Powder pattern of untreated material listed. Weakly anisotropic,  $n$  2.0. Composition ideally  $(\text{Nd,Ce})\text{NbO}_4$ . Named for composition, but  $\beta$ -Fergusonite-(Nd) would have been more appropriate. [A.M. **69**, 406.]
- Ferronickelplatinum.** N. S. Rudashevskii, A. G. Mochalov, Yu. P. Men'shikov, and N. I. Shumskaya, 1983. *Zap.* **112**, 487 (Ферроникельплатина). From the Koryak-Kamchatka region, NE USSR, as steel-grey metallic aggregates of grains up to 4.5 mm; reflectances and microhardness given. Tetragonal, with  $a$  3.871(4),  $c$  3.635(5) Å,  $Z = 1$ ;  $D$  calc. 15.6. Composition  $\text{Pt}_2\text{FeNi}$ , isomorphous with tulameenite and tetraferroplatinum (28th and 29th Lists respectively). Named for composition.
- Ferrotychite.** A. P. Khomyakov, Yu. A. Malinovskii, and S. M. Sandomirskaya, 1981. *Zap.* **110**, 600 (Ферротихит). A fuller description and alternative name for the mineral described by Khomyakov in 1979 as Fe-tychite (32nd List). [M.A. 82M/0334.]

- Flückite, in 31st List as Fluckite. V. I. Kudryashova, 1982. *Zap.* **111**, 700. Said here to be named in honour of P. Flück of Strasbourg.
- Fluorellstadite.** R. C. Rouse and P. J. Dunn, 1982. *A.M.* **67**, 90.  $\text{Ca}_{1.0}(\text{SiO}_4)_3(\text{SO}_4)_3(\text{F,Cl,OH})_2$  with F dominant; apatite group. Some ellestadite from Crestmore, California has F dominant. [M.A. 83M/1825.]
- Franconite.** J. L. Jambor, A. P. Sabina, A. C. Roberts, M. Bonardi, R. A. Ramik, and B. D. Sturman, 1984. *C.M.* **22**, 239. White radiating globules, 120  $\mu\text{m}$ , on weloganite, calcite, and quartz, at the Francon quarry, Quebec, Canada; crystals bladed. Powder pattern indexed on a monoclinic cell with  $a$  22.21(1),  $b$  12.857(5),  $c$  6.359(4) Å,  $\beta$  92.24(6)°,  $Z = 4$ ;  $D$  obs. 2.72(1), calc. 2.736 (or 2.713). Composition  $(\text{Na,Ca})_2(\text{Nb,Ti})_4\text{O}_{11} \cdot n\text{H}_2\text{O}$ ,  $n \approx 9$ ; alkali deficiency to  $\text{NaNb}_3\text{O}_8 \cdot n\text{H}_2\text{O}$ . Colourless,  $\alpha$  1.72(1)  $\perp$  blade,  $\beta$  1.78(1) calc.,  $\gamma$  1.79(1)  $\parallel$  elongation,  $2V(-)35(5)^\circ$ . The unnamed mineral No. 10 of Sabina (1976, 1979), and probably the unnamed UK43, from Mont St Hilaire, of Chao and Baker (1979). Named for locality.
- Fransoletite.** D. R. Peacor, P. J. Dunn, W. L. Roberts, T. J. Campbell, and D. Newbury, 1983. *Bull.* **106**, 499. In the Tip Top pegmatite, Custer, South Dakota, USA, as colourless aggregates of crystals up to 3 mm, and as a secondary mineral. Monoclinic,  $P2_1/a$ , with  $a$  7.354(7),  $b$  15.07(2),  $c$  7.055(7) Å,  $\beta$  96.41(8)°;  $Z = 2$ ;  $D$  obs. 2.56(3), calc. 2.53. Imperfect [010] cleavage,  $\alpha$  1.560,  $\beta$  1.566,  $\gamma$  1.586,  $2V$  25°. Ideally  $\text{H}_2\text{Ca}_3\text{Be}_2(\text{PO}_4)_4 \cdot 4\text{H}_2\text{O}$ . Named for Dr A.-M. Fransolet, University of Liège, Belgium.
- Furutobeite.** A. Srigaki, A. Kitakaze, and Y. Odashima, 1981. *Bull.* **104**, 737. Grains up to 0.3 mm in the bornite-rich ore of the Furutobe mine, Akita prefecture, Japan, are monoclinic,  $a$  20.025,  $b$  3.963,  $c$  9.705 Å,  $\beta$  101.57°.  $4[(\text{Cu,Ag})_6\text{PbS}_4]$ . [A.M. 67, 1075; M.A. 82M/3348.]
- Gainesite.** P. B. Moore, T. Araki, I. M. Steele, G. H. Swihart, and A. R. Kampf, 1983. *A.M.* **68**, 1022. As pale lavender bipyramids up to 1 mm long, vitreous lustre, conchoidal fracture, from the Nevel (Twin Tunnels) pegmatite, Newry, Oxford Co., Maine, USA, in small crevices of cleavelandite. Tetragonal,  $I4_1/amd$ , with  $a$  6.567(3),  $c$  17.119(5) Å;  $Z = 2$ ;  $D$  obs. 2.94;  $\omega$  1.618(2),  $\epsilon$  1.630(2). Structure determined. Composition ideally  $\text{Na}_2\text{Zr}_2\text{Be}(\text{PO}_4)_4$ . Named for Dr R. V. Gaines of Pottstown, Pennsylvania.
- Garyansellite.** D. Sturman, and P. J. Dunn, 1984. *A.M.* **69**, 207. From an iron formation, north-eastern Yukon Territory, Canada, as brown plates  $\parallel$  {010}, or small crystals elongated along [100] with prominent {111} and {011} faces, good {001} cleavage,  $H$  4, brown streak, vitreous lustre. Orthorhombic,  $Pbna$ , with  $a$  9.452(4),  $b$  9.890(5),  $c$  8.198(4) Å;  $Z = 4$ ;  $D$  obs. 3.16(4), calc. 3.154; optically biaxial negative, pleochroic,  $\alpha$  1.733(2),  $\beta$  1.757(2),  $\gamma$  1.761(2),  $2V_x$  55(2)°. Composition  $(\text{Mg}_{1.45}\text{Fe}_{1.39}^{3+}\text{Mn}_{0.14}\text{Al}_{0.01}\text{Fe}_{0.01}^{2+})_{\Sigma 3.00}(\text{PO}_4)_{1.99}(\text{OH})_{1.43} \cdot 1.52\text{H}_2\text{O}$ , the Mg-dominant member of the phosphoferrite-reddingite-kryzhanovskite group. Named for H. Gary Ansell, Associate Curator, Geological Survey of Canada.
- Gebhardtite.** O. Medenbach, W. Gebert, and K. Abraham, 1983. *N. Jahrb. Min. Monatsh.* **445**. In the lower oxidation zone Tsumeb mine, SW Africa, as brown, transparent, fibrous groups of crystals up to 5 mm long, white streak, adamantine lustre, perfect {001} and good {010} cleavage. Monoclinic,  $P2_1/c$ , with  $a$  6.724(6),  $b$  11.20(1),  $c$  34.19(4) Å,  $\beta$  85.2(1)°,  $Z = 2$ ;  $D$  calc. 6.0; biaxial negative,  $2V$  34(1)°, marked horizontal dispersion,  $r < v$ ;  $\alpha$  2.08,  $\gamma$  2.12,  $Z \parallel b$ ,  $\alpha : a$  3°. Composition  $\text{Pb}_8(\text{As}_3^{3+}\text{O}_5)_2\text{OCl}_6$  or  $\text{Pb}_8\text{Cl}_6\text{As}_4^{3+}\text{O}_{11}$ . Named for Dr Georg Gebhard of Reichshof-Oberwehrrat, chemist and mineral collector.
- Geffroyite.** Z. Johan, P. Picot, and F. Ruhlmann, 1982. *Tschermak's Min. Petr. Mitt.* **29**, 151. Occurs in very fine-grained intergrowths with other selenides in the Chaméane deposit, Vernet-la-Varenne, Puy-de-Dôme, France. Cubic,  $Fm\bar{3}m$ ,  $a$  10.889 Å, with pentlandite-type structure.  $4[(\text{Cu,Fe,Ag})_9(\text{Se,S}_8)]$ . Brown in reflected light. Named for J. Geffroy. [A.M. 67, 1074.]
- Giraudite.** Z. Johan, P. Picot, and F. Ruhlmann, 1982. *Tschermak's Min. Petr. Mitt.* **29**, 151. A member of the tetrahedrite group, the As analogue of hakite (27th List), occurs at the Chaméane deposit, Vernet-la-Varenne, Puy-de-Dôme, France. Cubic,  $I\bar{4}3m$ ,  $a$  10.578 Å,  $Z = 2$ ;  $(\text{Cu,Zn,Ag})_{12}(\text{As,Sb})_4(\text{Se,S})_{13}$ . Named for R. Giraud. [A.M. 67, 1074.]
- Gormanite.** B. D. Sturman, J. A. Mandarino, M. E. Mrose, and P. J. Dunn, 1981. *C.M.* **19**, 381. Blue-green crystals with {001} cleavage from the Rapid Creek and Big Fish River areas, Yukon Territory, Canada, are anorthic,  $a$  11.77(1),  $b$  5.11(1),  $c$  13.57(1) Å,  $\alpha$  90° 45(5)',  $\beta$  99° 15(5)',  $\gamma$  90° 5(5)';  $Z = 2$ ;  $D$  3.13;  $\alpha$  1.619(3) nearly  $\perp$  (001), colourless,  $\beta$  1.653(3), blue,  $\gamma$  1.660(3), colourless,  $\gamma$ : [010] 14°,  $2V_x$  53(2)°.  $(\text{Fe}^{2+}, \text{Mg})_3(\text{Al,Fe}^{3+})_4(\text{PO}_4)_4(\text{OH})_6 \cdot 2\text{H}_2\text{O}$ . The ferrous analogue of souzalite. Named for D. H. Gorman. [M.A. 84M/0884.]
- Gortdrumite.** G. M. Steed, 1983. *M.M.* **47**, 35. Anisotropic grains up to 0.2 by 0.05 mm with chalcopyrite, bornite, and chalcosine at Gortdrum, Co. Tipperary, Eire, give an X-ray powder pattern indexed as orthorhombic,  $a$  14.96,  $b$  7.90,

- $c$  24.1 Å. (Cu,Fe)<sub>6</sub>Hg<sub>2</sub>S<sub>5</sub>; with Cu  $\gg$  Fe. Named for locality. [M.A. 83M/1944.]
- Gruzdevite.** E. M. Spiridonov, L. Ya. Krapiva, A. K. Gapeev, V. I. Stepanov, E. Ya. Prushinskaya, and V. Yu. Volgin, 1981. *Dokl. Akad. Nauk SSSR*, **261**, 971 (Груздевит). The Sb analogue of aktashite (26th List) occurs with the latter at the Chauvai Sb–Hg deposit, Kirgizia; there is a complete series, and the aktashite is zoned. Rhombohedral,  $a$  8.609 Å,  $\alpha$  107° 41', [Cu<sub>6</sub>Hg<sub>4</sub>Sb<sub>3</sub>S<sub>12</sub>]. Named for V. S. Gruzdev. [A.M. 67, 855; M.A. 82M/3349.]
- Giuseppettite** (32nd List). Error for Giuseppettite. Named for G. Giuseppetti.
- Hashemite.** Ph. L. Hauff, E. E. Foord, S. Rosenblum, and W. Hakki, 1983. A.M. **68**, 1223. Occurs as small dark brown, commonly zoned, crystals in W. central Jordan. Orthorhombic, *Pnma*, with  $a$  9.112(2),  $b$  5.541(1),  $c$  7.343(1) Å,  $Z = 4$ ;  $D$  obs. 4.59;  $\alpha$  1.810(2), 1.952(2);  $\beta$  1.813(2), 1.960(2);  $\gamma$  1.824, 1.977(2) for light and dark coloured material respectively.  $2V_z$  35–37°(+). Ba(Cr,S)O<sub>4</sub>, the chromate analogue of baryte. Named for the Hashemite kingdom of Jordan.
- Henryite.** A. J. Criddle, C. J. Stanley, J. E. Chisholm, and E. E. Fejer, 1983. *Bull.* **106**, 511. From the Campbell orebody, Bisbee, Arizona, USA, irregular grains in polished section of a drill-core against hessite and petzite intergrowths. Cubic, face-centred,  $a$  12.20(2) Å,  $Z = 8$ ;  $D$  calc. 7.86. Composition Cu<sub>3.77</sub>Ag<sub>3.01</sub>Te<sub>4.00</sub>. Named for the late Dr N. F. M. Henry [1909–83] of Cambridge University. Not the discredited henryite (of Endlich).
- Hingganite-(Yb).** A. V. Voloshin, Ya. A. Pachomovskii, Yu. P. Men'shikov, A. S. Povarennykh, E. N. Matrienko, and O. V. Yakubovich, 1983. *Dokl. Akad. Nauk SSSR*, **270**, 1188. In amazonite pegmatites of the Kola Peninsula, as colourless, transparent, spherical aggregates, vitreous lustre, up to 2 mm diameter,  $H$  6½–7. Monoclinic,  $P2_1/a$ , with  $a$  9.888(5),  $b$  7.607(3),  $c$  4.740(2) Å,  $\beta$  90.45(4)°,  $Z = 4$ ;  $D$  (Gladstone–Dale method) 4.72, calc. 4.83; biaxial positive,  $2V$  65°,  $\alpha$  1.725,  $\beta$  1.738,  $\gamma$  1.760. Composition ideally (Yb,Y)BeSiO<sub>4</sub>(OH) where Yb  $>$  Y. [A.M. 51, 152.]
- Hunzaite.** E. Gübelin, 1982. *Gems Gemmology*, **18**, 183. Gem name for bright green pargasite from the Hunza valley, Pakistan.
- Ingodite.** E. N. Zav'yalov and V. D. Begizov, 1981. *Zap.* **110**, 594 (Ингодит). A specimen labelled grünlingite from the type locality, Brandy Gill, Cumberland, and another from the Ingoda deposit, Transbaikal, were found to contain a hexagonal mineral,  $a$  4.248,  $c$  23.22 Å; 9[Bi<sub>2</sub>TeS]. [A.M. 67, 855; M.A. 82M/3350.]
- Iron barringerite.** C. Kegiao, J. Zaimiao, and P. Zhizhong, 1983. *Sci. Geol. Sinica*, 199. From a 'certain platinum bearing copper–nickel deposit in China'. Hexagonal,  $P\bar{6}2m$ , with  $a$  5.857,  $c$  3.452 Å. Composition, Fe<sub>2</sub>P. An unnecessary name for end-member barringerite (26th List). [A.M. 69, 407.]
- Janhaugite.** G. Raade and M. H. Mladeck, 1983. A.M. **68**, 1216. As reddish-brown lamellar aggregates and sprays with vertical striations in a sodium-rich granite ESE of Lake Gjerdingen, Nordmarka, c. 30 km north of Oslo, Norway; monoclinic,  $P2_1/n$ , with  $a$  10.668(2),  $b$  9.787(4),  $c$  13.93(3) Å,  $\beta$  107.82(2)°,  $Z = 4$ ;  $D$  obs. 3.60, calc. 3.71.  $\alpha$  1.770,  $\beta$  1.828 (both  $\pm$  0.004),  $\gamma_{\text{calc.}}$  1.910;  $2V_z$  80°. Composition (Na,Ca)<sub>3</sub>(Mn,Fe)<sub>3</sub>(Ti,Zr,Nb)<sub>2</sub>Si<sub>4</sub>O<sub>15</sub>(OH,F,O)<sub>3</sub>. Named for Mr Jan Haug, who first observed the mineral.
- Jarosewichite.** P. J. Dunn, D. R. Peacor, P. B. Leavens, and W. B. Simmons, 1982. A.M. **67**, 1043. Dark red crystals from the Franklin mine, Franklin, Sussex Co., New Jersey, are orthorhombic,  $a$  6.56(3),  $b$  25.20(10),  $c$  10.00(5) Å,  $Z = 8$ ;  $D$  3.66,  $\alpha$  1.780(5)  $\parallel$  [100],  $\beta$  1.795(5)  $\parallel$  [010],  $\gamma$  1.805(5)  $\parallel$  [001]; Mn<sup>3+</sup>Mn<sup>2+</sup>AsO<sub>4</sub>(OH)<sub>6</sub>. Named for E. Jarosewich, chief chemist, Smithsonian Institution. [M.A. 83M/1945.]
- Jasmundite.** G. Hentschel, L. S. Dent Glasser, and C. K. Lee, 1983. *N. Jahrb. Min. Monatsh.* 337. In the basalt of Bellerberg, near Mayen, Eifel, Germany, as dark brown irregular grains with resinous lustre in metamorphosed limestone inclusions with mayenite, brownmillerite, larnite, portlandite, and ettringite, occasionally euhedral with dominant {110} and {101}. Tetragonal,  $I\bar{4}m2$ , with  $a$  10.461,  $c$  8.813 Å,  $Z = 1$ ;  $D$  obs. 3.03, calc. 3.23. Uniaxial positive,  $\omega$  1.715,  $\epsilon$  1.728. Composition Ca<sub>22</sub>(SiO<sub>4</sub>)<sub>8</sub>O<sub>4</sub>S<sub>2</sub>. Named for Professor Dr Karl Jasmund, former Director of the Mineralogical-Petrographical Institute of Köln University, Germany.
- Jeanbandyite.** A. R. Kampf, 1982. *Min. Record*, **13**, 235. Brown-orange pseudo-octahedral crystals from the Contacto vein, Llallagua, Bolivia, are tetragonal,  $P4_2/n$ ,  $a = c = 7.648$  Å,  $Z = 4$ ;  $D$  3.81; Fe<sub>1-x</sub>Sn<sub>1+y</sub>(OH)<sub>6</sub> with  $3x + 4y = 1$ ;  $\omega$  1.837,  $\epsilon$  1.833. Named for Mrs Jean Bandy. [A.M. 68, 471; M.A. 83M/3662.]
- Jeppite.** M. W. Pryce, L. C. Hodge, A. J. Criddle, 1984. M.M. **48**, 263. From the lamproite plug, Walgidee hills (18° 19' S, 124° 51' E.), Kimberley, W. Australia, as sparse black crystals, elongated along  $b$ ; submetallic lustre, brittle, brown streak, perfect (100) and good (201) cleavage,  $H$  5–6. Monoclinic,  $C2/m$ , with  $a$  15.453,  $b$  3.8368,  $c$  9.123 Å,  $\beta$  99.25°;  $D$  obs. 3.94,  $D$  calc. 3.98. Colour values and reflectances given. Composition, (K,Ba)<sub>2</sub>(Ti,Fe)<sub>6</sub>O<sub>13</sub>. Named for Dr J. Jeppe of

- Stellar Minerals Pty. Ltd., who discovered the mineral.
- Johillerite.** P. Keller, H. Hess, and P. J. Dunn, 1982. *Tschermak's Min. Petr. Mitt.* **29**, 169. A single specimen of altered tennantite from Tsumeb, SW Africa, has in cavities violet crystals. Monoclinic,  $C2/c$ ,  $a$  11.870(3),  $b$  12.755(3),  $c$  6.770(2) Å,  $\beta$  113.42(2)°,  $D$  4.15,  $Z = 4$ ;  $(Mg,Zn)_3Cu(AsO_4)_3$ . Named for Johannes-Erich Hiller. [A.M. **67**, 1075.]
- Kaatialaite.** G. Raade, M. H. Mladeck, R. Kristiansen, and V. K. Din, 1984. A.M. **69**, 383. As grey to yellow powdery coatings admixed with arsenolite and other minor phases on löllingite in granite pegmatite at Kaatjala, Kuortane, W. Finland, on mine dumps; synthetic material forms aggregates of rough, tabular, transparent, six-sided greenish-blue crystals a few tenths of a mm across, vitreous lustre on fresh surfaces. Monoclinic (synthetic material),  $P2_1$  or  $P2_1/m$ ,  $a$  15.363(5),  $b$  19.844(5),  $c$  4.736(2) Å,  $91.77(3)^\circ$ ,  $Z = 4$ ;  $D$  obs. 2.64, calc. 2.62; biaxial positive,  $2V_Z$  15(2)°,  $\omega$  1.581,  $\varepsilon$  1.626. Composition ideally  $Fe(H_2AsO_4)_3 \cdot 5H_2O$ . Named for locality.
- Kamaishilite.** E. Uchida and J. T. Iiyama, 1981. *Proc. Japan. Acad.* **57B**, 239. A colourless, transparent tetragonal dimorph of bicchulite occurs in an idocrase skarn at the Kamaishi mine, Japan.  $a$  8.850,  $c$  8.770 Å,  $Z = 4$ ;  $Ca_2Al_2SiO_6(OH)_2$ . Nearly isotropic,  $n$  1.629. Apparently an alteration product of idocrase. Named for the mine. [A.M. **67**, 855.]
- Kamiokite.** A. Sasaki, S. Yui, and M. Yamaguchi, 1975. *Abst. Ann. Meeting Min. Soc. Japan, Tokyo*, p. 9; D. Picot and Z. Johan, 1977. *Atlas des Minér. Métall., Mém. de Bureau de rech. géol. et minières*, No. 90, 219. As hexagonal grains up to 50  $\mu$ m in the ores of the Mohawk and Akmeek mines, Michigan, as well as at the Kamioka mine, Japan. Strongly anisotropic,  $H$  4½; composition  $Fe_2Mo_3O_8$ . Named for the Kamioka mine. [A.M. **68**, 1038.]
- Kamitugaite.** M. Deliens and P. Piret, 1984. *Bull.* **107**, 15. From pegmatitic rocks at Kobokobo, Kivu, Zaïre, with beryl and columbite, as thin elongated tablets up to 5 mm long  $\parallel$  [100], flattened on (010), yellow, transparent. Triclinic,  $P1$  or  $P\bar{1}$ , with  $a$  10.98,  $b$  15.96,  $c$  9.068 Å,  $\alpha$  95.1°,  $\beta$  96.1°,  $\gamma$  89.0°,  $V$  1574 Å<sup>3</sup>,  $Z = 2$ ;  $D$  calc. 4.47; biaxial negative,  $2V$  60°,  $\alpha$  1.709(calc),  $\beta$  1.735,  $\gamma$  1.744;  $X \parallel b^*$ ,  $Y \parallel a$ ,  $Z \perp a$  and  $b^*$ ,  $a : Y$  1-2°. Composition  $PbAl(UO_2)_5[(P,As)O_4]_2(OH)_9 \cdot 9\frac{1}{2}H_2O$ . Named for Kamituga, mining centre in Kivu, Zaïre.
- Keiviite.** A. V. Voloshin, Ya. A. Pakhomovskii, and F. N. Tyusheva, 1983. *Min. Zh.* **5**, 94 (Кейвиит). In amazonite pegmatites, Kola Peninsula, as elongated, colourless, transparent prisms and as fine-grained intergrowths with fluorite; vitreous lustre, with bastnäsite and wulfenite, perfect {110}, and imperfect {001} cleavage, microhardness 8633-9025 MPa. Monoclinic,  $C2/m$ , with  $a$  6.840(2),  $b$  8.916(4),  $c$  4.745(1) Å,  $\beta$  102.11(3)°,  $Z = 2$ ;  $D$  obs. 5.95, calc. 5.99; optically biaxial negative,  $2V$  58°,  $\alpha$  1.723,  $\beta$  1.758,  $\gamma$  1.768. Composition,  $Yb_2Si_2O_7$ . Named for Keiva, Kola Peninsula.
- Keiviite.** Incorrect back-transliteration of keiviite (see previous entry). Appears in text only.
- Kiddcreekite.** D. C. Harris, A. C. Roberts, R. I. Thorpe, A. J. Criddle, and C. J. Stanley, 1984. *C.M.* **22**, 227. In the Kidd Creek mine, Timmins, Ontario, Canada, in bornite ore at the 1200 level; also in the Campbell ore body, Bisbee, Arizona, USA; associated with scheelite, tungstenite, clausenthalite, tennantite, or with colusite, stuetzite, altaite, respectively. Irregular grains up to 100  $\mu$ m are cubic, face-centred (powder only),  $a$  10.856(2) Å,  $Z = 4$ . Composition  $Cu_6SnW_8S_8$ , the tungsten analogue of hemusite (26th List). Isotropic, pale grey-brown or grey, reflectances listed. The unnamed phase of Thorpe *et al.*, 1976. Named for locality.
- Kittatinnyite.** P. J. Dunn and D. R. Peacor, 1983. A.M. **68**, 1029. As minute bright yellow crystals with perfect {0001} cleavage at the Franklin mine, Franklin, New Jersey, USA. Hexagonal,  $P6_3/mmc$ ,  $P6_3mc$ , or  $P\bar{6}2c$ , with  $a$  6.498(4),  $c$  22.78(2) Å,  $Z = 2$ ;  $D$  obs. 2.61; optically negative with  $\omega$  1.727(3). Composition ideally  $Ca_2Mn_3^{2+}Mn^{2+}(SiO_4)_2(OH)_4 \cdot 9H_2O$ . Named from the Algonquin word 'kittatinny' = 'endless hills' in allusion to the Franklin area.
- Konyaite.** J. D. J. van Doesburg, L. Vergouwen, and L. van der Plas, 1982. A.M. **67**, 1035. Salt efflorescences in the Great Konya basin, Turkey, contain minute crystals, identified by X-ray powder data as synthetic  $Na_2Mg(SO_4)_2 \cdot 5H_2O$ . Synthetic material is monoclinic,  $P2_1/c$ , with  $a$  5.784(3),  $b$  24.026(9),  $c$  8.066(3) Å,  $\beta$  95.37(3)°;  $D$  2.088(6),  $Z = 4$ ;  $\alpha$  1.464(1)  $\parallel$  [010],  $\beta$  1.468(1),  $\gamma$  1.474(1);  $2V_V$  74(2)°. Metastable, breaking down to blödite. [M.A. 83M/1948.]
- Kostylevite.** A. P. Khomyakov, A. A. Voronkov, L. I. Polezhaeva, and N. N. Smol'yaninova, 1983. *Zap.* **112**, 469 (Костылевит). Khibin alkaline massif, Vuonnemiok River valley, as colourless transparent prisms elongated along  $c$ , with (001), (010), (100), (110), and (011) faces, sometimes twinned on (100); vitreous lustre, perfect {110} cleavage, microhardness 428-535 kgs/mm<sup>2</sup>,  $H$  5 on Mohs scale. Monoclinic,  $P2_1/a$ , with  $a$  13.171,  $b$  11.727,  $c$  6.565 Å,  $\beta$  105.26°,  $Z = 2$ ;  $D$  obs. 2.74, calc. 2.79; biaxial positive,  $2V$  48°,  $\alpha$  1.595,

- $\beta$  1.598,  $\gamma$  1.610. Composition  $K_4Zr_2Si_6O_{18} \cdot 2H_2O$ . Named for E. E. Kostyleva-Labuntsova (1894–1974) who studied zirconsilicates.
- Kularite.** R. Nekrasova and I. Ya. Nekrasov, 1983. *Dokl. Akad. Nauk SSSR*, **268**, 688. An unnecessary name given to so-called 'grey monazite' or 'black monazite'. 7 analyses show 0.03–0.95% Si and 1.12–1.40% Th, as well as individual lanthanides. X-ray powder pattern shows no unusual reflections. Named for Kular Ridge, Siberia.
- Kvanefjeldite.** O. Johnsen, E. S. Leonardsen, L. Fálth, and A. Annehed, 1983. *N. Jahrb. Min. Monatsh.* 505. From the Ilimaussaq alkaline intrusion, Kvanefjeld plateau, S. Greenland, as pink veinlets and patches up to 3 cm in black nepheline syenite with villiaumite and analcime, composed of platy crystals with good {010} and poor {101} cleavage. Orthorhombic, *Pcab*,  $a$  10.213,  $b$  15.878,  $c$  9.058 Å,  $Z = 4$ ;  $D$  obs. 2.55, calc. 2.53. Composition  $Na_4(Ca,Mn)(Si_3O_7OH)_2$ . The structure consists of highly corrugated, new  ${}^2_6[Si_3O_7OH]$  layers containing rings of eight tetrahedra. Named for locality.
- Kyzylkumite.** I. G. Smyslova, A. I. Komkov, V. V. Pavshukov, and N. V. Kuznetsova, 1981. *Zap.* **110**, 607 (КЫЗЫЛКУМИТ). Material presumably from Kyzyl-Kum, Uzbekistan, is a dimorph of schreyerite (30th List). Monoclinic,  $a$  33.80,  $b$  4.578,  $c$  19.99 Å,  $\beta$  93.40°,  $Z = 18$ ;  $V_2Ti_3O_9$ . [A.M. **67**, 855; M.A. 82M/3352.]
- Lannonite.** S. A. Williams and F. P. Cesbron, 1983. *M.M.* **47**, 37. Chalky white crusts of minute plates with wilcoxite (this List), khademite (29th List), and gypsum, on fluorite-pyrite ore, at the Lone Pine mine, Catron Co., New Mexico, USA. Tetragonal (powder only),  $a$  6.84,  $c$  28.01 Å,  $Z = 1$ ;  $D$  obs. 2.22, calc. 2.32;  $H$  2. Composition  $HCa_4Mg_2Al_4(SO_4)_8F_9 \cdot 32H_2O$ . Colourless,  $\omega$  1.460,  $\varepsilon$  1.478, presumed uniaxial. Named for D. Lannon, *fl.* 1893.
- Lanthanite-(Nd).** A. C. Roberts, G. Y. Chao, and F. Cesbron, 1980. *Pap. Geol. Survey Canada*, No. 80-1C, 141. In calcareous sandy clays at Curitiba, Paraña, Brazil, as pink lamellar crystals up to 2 mm, flattened along [010], showing {001}, {100}, {101}, {122}, and {121} with striations on {010}, perfect {010} and good {101} cleavage, vitreous to pearly lustre,  $H$  2½–3. Orthorhombic, *Pbnb*, with  $a$  9.476,  $b$  16.940,  $c$  8.942 Å,  $Z = 4$ ;  $D$  obs. 2.81, calc. 2.816; biaxial negative,  $\alpha$  1.532,  $\beta$  1.590,  $\gamma$  1.614,  $2V$  61°. Composition  $(Nd,La)_2(CO_3)_3 \cdot 8H_2O$ . Named according to Levinson rule. [V. I. Kudryashova, *Zap.* **111**, 695.]
- Lasarenkoite.** Error for Lazarenkoite. V. I. Kudryashova, 1983. *Zap.* **112**, 692.
- Lennilenapeite.** P. J. Dunn, D. R. Peacor, and W. B. Simmons, 1984. *CM.* **22**, 259. Black, flat aggregates, up to 1 cm, of platy crystals, with tirodite, willemite, and nelenite; also light green to light brownish-green (or yellowish green with bronze lustre) crusts on sphalerite and dolomite; from Franklin mine, Sussex Co., New Jersey, USA. Anorthic, with  $d_{001}$  12.18(5) Å;  $D$  obs. 2.72;  $H$  3; cleavage {001} perfect, nearly  $\perp$  {001} imperfect. Composition variable  $K_{6-7}(Mg,Mn,Fe^{2+},Fe^{3+},Zn)_{48}(Si,Al)_{72}(O,OH)_{216} \cdot 16H_2O$ , the Mg-dominant analogue of stilpnomelane;  $\alpha$  1.553 (1.539),  $\beta = \gamma$  1.594 (1.583),  $2V$  0°. Named for the Lenni Lenape (Algonquin) Indians of the Franklin area.
- Lepersonnite.** M. Deliens and P. Piret, 1982. *C.M.* **20**, 231. Bright yellow crusts and spherules from Shinkolobwe, Shaba, Zaire, formerly confused with studtite, are orthorhombic, *Pnmm*, or *Pnn2*, with  $a$  16.23,  $b$  38.74,  $c$  11.73 Å;  $D$  calc. 4.0;  $Z = 2$ . Composition  $CaO \cdot Ln_2O_3 \cdot 24UO_3 \cdot 8CO_2 \cdot 4SiO_2 \cdot 60H_2O$ . Named for Dr J. Lepersonne, honorary head of Dept. Geol. Min., Musée royale de l'Afrique centrale, Tervuren, Belgium. [A.M. **68**, 1248.]
- Lindsleyite.** S. E. Haggerty, J. R. Smyth, A. J. Erlank, R. S. Richard, and R. V. Danchin, 1983. *A.M.* **68**, 494. From De Beers mine, Kimberley, S. Africa. Rhombohedral,  $R\bar{3}$ ,  $a$  9.09 Å,  $\alpha$  69.56°. Composition  $[Ba(Ti,Zr,Fe,Cr)_{21}O_{38}]$ , with some Sr, Ln, Ca, and Pb replacing Ba. Crichtonite group. Named for D. H. Lindsley. [M.A. 84M/0885.]
- Lithiotantite.** A. V. Voloshin, Ya. A. Pakhomovskii, V. I. Stepanov, and F. N. Tyusheva, 1983. *Min. Zh.* **5**, 91. (ЛИТИОТАНТИТ). In granite pegmatites of eastern Kazakhstan, as colourless to grey transparent crystals up to 0.4 mm, adamantine lustre, no cleavage,  $H$  6–6½, irregular fracture. Monoclinic,  $P2_1/c$ , with  $a$  7.444,  $b$  5.044,  $c$  15.255 Å,  $\beta$  107.18°,  $Z = 4$ ;  $D$  obs. 7.0, calc. 7.08, weakly anisotropic in reflected light,  $n > 1.9$ ,  $2V$  very large. Composition ideally Li (Ta, Nb)<sub>3</sub>O<sub>8</sub>. Named for composition.
- Lithosite.** A. P. Khomyakov, N. M. Chernitsova, N. I. Chistyakova, 1983. *Zap.* **112**, 218 (ЛИТОСИТ). As rounded grains from borehole core from the Vuonnemiok region, SE Khibin alkaline massif, Kola Peninsula, USSR, with greenish clear orthoclase and colourless sodalite. Monoclinic (pseudo-orthorhombic),  $a$  15.197,  $b$  10.233,  $c$  8.435 Å,  $\beta$  90.21°,  $Z = 2$ ;  $D$  obs. 2.51(1), calc. 2.54; biaxial positive,  $2V$  47°,  $\alpha$  1.510,  $\beta$  1.513,  $\gamma$  1.527. Composition,  $K_6Al_4Si_8O_{25} \cdot 2H_2O$ . Named for Greek *λίθος* (stone). [M.A. 84M/0886; A.M. **69**, 210.]
- Lithiotantite.** A. V. Voloshin, Ya. A. Pakhomovskii, V. I. Stepanov, and F. N. Tyusheva, 1983. *Min.*



- Zh.* 5, 91. Error in title only for lithiotantite. [See previous entry.]
- Lotharmeyerite.** P. J. Dunn, 1983. *Min. Record*, 14, 35. Dark reddish-orange twinned crystals from Mapimi, Durango, Mexico, are named for J. Lothar Meyer, 1830–95. Ideally  $\text{CaMn}^{3+}\text{Zn}(\text{SO}_4)_2\text{OH}\cdot 2\text{H}_2\text{O}$ . *D* 4.2; *n* > 1.80. [A.M. 68, 849.]
- Loudounite.** P. J. Dunn and D. Newbury, 1983. *C.M.* 21, 37. As spherical aggregates of minute light green to white fibres at the Goose Creek quarry, Loudoun Co., Virginia, USA. Optically biaxial with wavy extinction; *D* obs. 2.48(3);  $\alpha$  1.536(4),  $\gamma$  1.550(4). Ideally  $\text{NaCa}_5\text{Zr}_4\text{Si}_{16}\text{O}_{40}(\text{OH})_{11}\cdot 8\text{H}_2\text{O}$ . Named for locality.
- Lunjokite.** A. V. Voloshin, Ya. A. Pakhomovskii, F. N. Tyusheva, 1983. *Zap.* 112, 232 (Луньокит). From fissures in a pegmatite, near Lunjok River, Kola peninsula, as colourless, white, or yellowish-white aggregates up to 1 mm; perfect {010}, imperfect {001} cleavage, *H* 3–4. Orthorhombic, *Pbca*, *a* 14.78, *b* 18.76, *c* 7.087 Å, *Z* = 8; *D* obs. 2.66, calc. 2.69; biaxial positive, *2V* 70,  $\alpha$  1.603,  $\beta$  1.608,  $\gamma$  1.616. Composition  $\text{Mn}(\text{Mg,Fe,Mn})\text{Al}(\text{PO}_4)_2\text{OH}\cdot 4\text{H}_2\text{O}$ , the Mn analogue of overite. Named for the Lunjok River occurrence. [M.A. 84M/0887; A.M. 69, 210.]
- Lun'okite. Correct transliteration of Луньокит but the mineral was submitted to and approved by IMA as lunjokite, the accepted spelling of the river.
- Macfallite.** V. I. Kudryashova, 1982. *Zap.* 111, 241. Error for MacFallite (31st List).
- Mcnearite.** H. Sarp, J. Deferne, and B. W. Liebich, 1981. *Schweiz. Min. Petr. Mitt.* 61, 1. Fibres up to 2 mm from St Marie-aux-Mines, Vosges, France, are anorthic, *a* 13.50, *b* 14.10, *c* 6.95 Å,  $\alpha$  90°,  $\beta$  92°,  $\gamma$  119°, *Z* = 2; *D* 2.60;  $\alpha$  1.559,  $\beta$  1.562,  $\gamma$  1.572,  $\beta$ : [001] 6 to 22°, *2V* $\gamma$  60°;  $\text{NaCa}_5\text{H}_5(\text{AsO}_4)_5\cdot 4.3\text{H}_2\text{O}$ . Named for Miss Elizabeth McNear of Geneva.
- Macphersonite.** A. Livingstone and H. Sarp, 1984. *M.M.* 48, 277. Very pale amber tabular (on *b*) crystals, resinous to adamantine lustre, with perfect {010} cleavage, coarse or fine polysynthetic twinning or as contact twins from Leadhills Dod, Leadhills, Lanarkshire, Scotland (in the Heddle collection); and also colourless to white masses from the Argentolle mine, nr. Saint-Prix, Saône et Loire, France, *H* 2½–3. Orthorhombic, *Pcab*, *a* 10.37, *b* 23.10, *c* 9.25 Å, *Z* = 8; *D* 6.55 and 6.50, calc. 6.65 and 6.60 respectively; a polymorph of leadhillite and susannite. X-ray powder pattern said to be distinct from those of leadhillite and susannite, whereas the latter two are virtually identical. Biaxial negative, *2V* $\alpha$  35–36°,  $\alpha$  1.87,  $\beta$  2.00,  $\gamma$  2.01. Composition ideally  $\text{Pb}_4\text{SO}_4(\text{CO}_3)_2(\text{OH})_2$ . Named for Dr H. G. Macpherson, Keeper of Minerals at the Royal Scottish Museum, Edinburgh.
- Mapimite.** F. [P.] Cesbron, M. Romero S[anchez], and S. A. Williams, 1981. *Bull.* 104, 582. Tablets on {001}, bounded by {110} and (rarely) {111} from the Ojuela mine, Mapimi, Durango, Mexico, are monoclinic, *Cm*, *a* 11.425, *b* 11.296, *c* 8.667 Å,  $\beta$  107° 44', *Z* = 2; *D* 2.95;  $\alpha$  1.672, clear pale yellow,  $\beta$  1.678 || [010], greenish yellow,  $\gamma$  1.712, deep Prussian blue; *2V* $\gamma$  50°. Named for locality.
- Margaritasite.** K. J. Wenrich, P. J. Modreski, R. A. Zielinski, and J. L. Seeley, 1982. *A.M.* 67, 1273. A Cs-rich analogue of carnotite occurs in the U ore of the Margaritas deposit, Peña Blanca district, Chihuahua, Mexico. Monoclinic, *P2<sub>1</sub>/a*, *a* 10.514, *b* 8.425, *c* 7.25 Å,  $\beta$  106.01°, *Z* = 2. Material intermediate between margaritasite and carnotite does not appear to occur. (Cs,K,H<sub>3</sub>O)<sub>2</sub>(UO<sub>2</sub>)<sub>2</sub>(VO<sub>4</sub>)<sub>2</sub>·H<sub>2</sub>O, with Cs 1.38, K 0.29. Named for deposit. [M.A. 83M/3663.]
- Mathiasite.** S. E. Haggerty, J. R. Smyth, A. J. Erlank, R. S. Rickard, and R. V. Danchin, 1983. *A.M.* 68, 494. From Jagersfontein, Orange Free State, S. Africa. Rhombohedral, *R3*, *a* 9.098 Å,  $\alpha$  69.34°. Composition [K(Ti,Cr,Fe,Mg,Zr)<sub>21</sub>O<sub>38</sub>], with some Ba, Ca, and Sr replacing K. Crichtonite group. Named for M. Mathias.
- Metaköttigite.** K. Schmetzer, G. Amthauer, V. Stähle, and O. Medenbach, 1982. *N. Jahrb. Min. Monatsh.* 506. As minute bluish-grey crystals in oriented intergrowths with köttigite at the Ojuela mine, Mapimi, Mexico. Triclinic, with *a* 7.96(2), *b* 9.44(2), *c* 4.72(1) Å,  $\alpha$  95.6(2),  $\beta$  97.0(2),  $\gamma$  107.8(2)° from powder data. Composition  $(\text{Zn,Fe}^{3+})(\text{Zn,Fe}^{3+},\text{Fe}^{2+})_2(\text{AsO}_4)_2\cdot 8(\text{H}_2\text{O,OH})$ , the natural (Zn,Fe) analogue of symplectite, dimorph of köttigite. Named for relationship with köttigite. [A.M. 68, 1039.]
- Metastudtite.** M. Deliens and P. Piret, 1983. *A.M.* 68, 456. Pale yellow fibres from Shinkolobwe, Shaba, Zaïre, are orthorhombic, *a* 6.51(1), *b* 8.78(2), *c* 4.21(1) Å, and are the lower hydrate of studtite, matching synthetic  $2[\text{UO}_4\cdot 2\text{H}_2\text{O}]$ ;  $\alpha$  1.640(2),  $\beta$  1.658(2),  $\gamma$  1.760(2). [M.A. 83M/5062.]
- Molybdofofnacite.** O. Medenbach, K. Abraham, and W. Gebert, 1983. *N. Jahrb. Min. Monatsh.* 289. At Tsumeb, SW Africa, as light green transparent prisms and laths up to 300  $\mu\text{m}$  long and 50  $\mu\text{m}$  wide, elongated on *b*, yellow streak, adamantine lustre, conchoidal fracture, *H* 2–3. Monoclinic, *P2<sub>1</sub>/c*, *a* 8.100(5), *b* 5.946(3), *c* 17.65(1) Å,  $\beta$  109.17(5)°, *Z* = 4; *D* calc. 6.6;  $\alpha$  2.05(2),  $\gamma$  2.15(2), *Z* = *b*. Composition ideally  $\text{Pb}_2\text{CuOH}(\text{As,P})\text{O}_4(\text{Mo,Cr})\text{O}_4$ , the Mo dominant analogue of fornacite. Named for its relationship with fornacite.

- Monazite-(Nd).** Z. Maksimovic and G. Pantó, 1980. *Bull. Acad. Serbe Sci.* **72**, 35. (Nd,Ce,La...)<sub>4</sub>(P,S)<sub>4</sub>O<sub>16</sub>.
- Muchuanite.** Zhang Rubo, Gong Xiasheng, Zhou Zhendong, Fan Langming, and Shuai Dequan, 1981. *Geochimica*, 120. Black flakes in a sandstone near Muchuan Co., Sichuan, China, give X-ray powder data indexed on a trigonal cell,  $P3m1$ ,  $a$  3.16,  $c$  43.60 Å, containing  $7[\text{Mo}_{0.95}\text{S}_2 \cdot 0.58\text{H}_2\text{O}]$ . Interpreted as two molybdenite- $2\text{H}_1$  layers and one 3R layer stacked according to the sequence  $\text{A}_1\text{B}_2\text{A}_1\text{B}_1\text{C}_1\text{A}_1\text{B}_2$ . G. Y. Chao, 1982 (A.M. **67**, 856) notes that a seven-layered structure cannot be reconciled with space group  $P3m1$ , and the  $c$  dimension derived from two  $2\text{H}_1$  and one 3R layers does not allow interspace for water molecules: 'most likely an altered molybdenite- $2\text{H}_1$  perhaps mixed with jordisite'.
- Mumbite.** V. I. Stepanov, V. V. Bukanov, and A. V. Bykova, 1982. *Dokl. Earth Sci. Sec.* **263**, 130, from *Dokl. Akad. Nauk SSSR*, **263**, 183. Unnecessary name for plumbomicrolite (23rd List).
- Mundrabillaite.** P. J. Bridge and R. M. Clarke, 1982. *M.M.* **47**, 80. Tiny crystals with a number of phosphates, oxalates, etc., from the Petrogale cave, Western Australia, reported as  $(\text{NH}_4)_2\text{Ca}(\text{HPO}_4)_2 \cdot \text{H}_2\text{O}$  by Bridge in 1977 (*M.M.* **41**, 33) but not named, are fully described and named for the nearby Mundrabilla station. X-ray powder data match those of the synthetic compound, probably monoclinic,  $a$  8.643,  $b$  8.184,  $c$  6.411 Å,  $\beta$  98.0°;  $D$  2.05;  $Z = 2$ ;  $\alpha$  1.522(2),  $\beta$  1.544(2),  $\gamma$  1.552(2). [*M.A.* 83M/1955; *A.M.* **69**, 407.]
- Munirite.** K. A. Butt and K. Mahmood, 1983. *M.M.* **47**, 391. Greenish white crystals from Siwalik sandstones in the Bhimber area, Azad Kashmir, Pakistan, are probably orthorhombic,  $a$  10.43,  $b$  15.72,  $c$  7.48 Å,  $D$  2.43;  $\alpha$  1.692  $\parallel$  [001],  $\beta$  1.757  $\parallel$  [100],  $\gamma$  1.800  $\parallel$  [010],  $2V_x$  c. 75°. Analysis gave  $\text{NaVO}_3 \cdot 0.77\text{H}_2\text{O}$ ; the X-ray powder pattern is very close to that of  $\text{NaVO}_3 \cdot 1.9\text{H}_2\text{O}$  (Lukács and Strausievič, 1962). Since  $\text{NaVO}_3 \cdot 2\text{H}_2\text{O}$  (Norblad, 1875) readily loses water, it is concluded that munirite is partly dehydrated  $\text{NaVO}_3 \cdot 2\text{H}_2\text{O}$  and that the water is zeolitic. Named for Munir A. Khan. [*M.A.* 83M/5063.]
- Nabaphite.** S. V. Baturin, Yu. A. Malinovskii, and N. V. Belov, 1982. *Dokl. Akad. Nauk SSSR*, **266**, 624; A. P. Khomyakov, Yu. P. Menshikov, and L. I. Polezhaeva, *ibid.* 707 (Набафит). A cubic mineral, decomposed by water, from Yukspor Mt., Khibina massif, Kola peninsula,  $P2_13$ ,  $a$  10.711(9) Å,  $D$  2.3,  $Z = 4$ ; {100} cleavage;  $n$  1.504(1),  $\text{NaBaPO}_4 \cdot 9\text{H}_2\text{O}$ . Named for composition. The Ba analogue of nastrophite (this List). [*M.A.* 83M/3664.]
- Nahpoite.** L. C. Coleman and B. T. Robertson, 1981. *C.M.* **19**, 373. Fractures in maričite nodules from the Big Fish River area, Yukon Territory, are filled with a water-soluble mineral, Monoclinic,  $a$  5.47(1),  $b$  6.84(1),  $c$  5.45(1) Å,  $\beta$  116° 20(5)'.  $2[\text{Na}_2\text{HPO}_4]$ ;  $\alpha'$  1.490,  $\gamma'$  1.505. Named for composition. [*A.M.* **67**, 856; *M.A.* 83M/0747; *M.A.* 84M/0890; *Zap.* **112**, 696.]
- Namibite.** O. von Knorring and Th. G. Sahama, 1981. *Schweiz. Min. Petr. Mitt.* **61**, 7. Dark green platy crystals from Khorixas (= Wel-Witschia), SW Africa, are monoclinic,  $a$  11.864(8),  $b$  3.696(4),  $c$  7.491(5) Å,  $\beta$  109° 42';  $D$  obs. 6.86(3), calc. 6.76,  $Z = 2$ ;  $\alpha \gg 2.1$ , yellow-green,  $\beta$  pistachio green,  $\gamma$  dark green,  $\alpha$  [100] c. 12°,  $2V_x$  moderate,  $r \gg v$ . Named for the Namib desert. [*A.M.* **67**, 857.]
- Naphoite (Нафойт).** A. P. Khomyakov, Yu. P. Menshikov, M. D. Dorfman, 1982. *Dokl. Akad. Nauk SSSR*. **264**, 191. Miscopying and mistransliterating error for nahpoite (this List). *Zap.* **112**, 696 (1983) gives name correctly as Нафойт.
- Nastrophite.** A. P. Khomyakov, M. E. Kazakova, G. N. Popova, and Yu. A. Malinovskii, 1981. *Zap.* **110**, 604. (Настрофит). Crystals up to 2 mm from Alluaiv Mtn. (also Karnasurt Mtn.), Lovozero massif, Kola peninsula, are cubic,  $P2_13$ ,  $a$  10.559 Å,  $Z = 4$ ;  $D$  2.05.  $\text{Na}(\text{Sr},\text{Ba})\text{PO}_4 \cdot 9\text{H}_2\text{O}$ , with Sr:Ba about 4. Named from natrium, strontium, phosphorus. Compare nabaphite (this List). [*A.M.* **67**, 857; *M.A.* 82M/3355.]
- Natrobistantite.** A. V. Voloshin, Ya. A. Pakhomovskii, V. I. Stepanov, and F. N. Tyusheva, 1983. *Min. Zh.* **5**, 82 (Натровистантит). From the Kok-togoy granite pegmatites, Xinjiang, China, as bluish-green octahedra, very minute grains are colourless, crystals 1–5 mm. Adamantine lustre; with other bismuth oxides and vanadates. Cubic,  $Fd3m$ ,  $a$  10.502 Å,  $Z = 4$ ;  $D$  obs. 6.1–6.2, calc. 6.32. Isotropic; reflectances given. Composition  $(\text{Na},\text{Cs})\text{Bi}(\text{Ta},\text{Nb},\text{Sb})_4\text{O}_{12}$ , isostructural with cesstibantite, and belongs to microlite (pyrochlore) group. Named for chemical composition. (Locality in Russian paper given as Кёктогой, Сянь-Цзиань, China.)
- Natrodufrenite.** F. Fontan, F. Pillard, and F. Permingeat, 1982. *Bull.* **105**, 321. As pale blue-green spheres of compact radiating fibres up to 0.5 cm dia. at Rochefort-en-Terre, Morbihan, France, described by Lacroix, 1910. (*Min. France*, **4**, 437) as dufrenite but differing from normal dufrenite. Accepting P. B. Moore's 1980 (*A.M.* **55**, 135) structural formula  $4[\text{XYZ}_5(\text{PO}_4)_3(\text{OH})_6 \cdot 2\text{H}_2\text{O}]$ , natrodufrenite has  $X = \text{Na}$ ,  $Y = \text{Fe}^{3+}$ ,  $Z = (\text{Fe}^{3+}, \text{Al})$ , with probably some  $\text{H}_2\text{O}$  in  $X$  and some  $(\text{OH})_4$  replacing  $\text{PO}_4$ ;  $a$  25.83(2),  $b$  5.150(3),  $c$  13.772 Å,  $\beta$  111° 32';

- D* 3.20;  $\alpha'$  1.756(5), pale yellow,  $\gamma'$  1.775(5) || elongation, dark green. [M.A. 83M/1956.]  
 Natrovivanite. Error for natrobivanite (this List).
- Nefedovite.** A. P. Khomyakov, G. N. Nechelyustov, and G. I. Dorokhova, 1983. Zap. **112**, 479 (Нефедовит). At Yukspor Mtn. and in the valley of the Kuniok River, Khibin alkaline massif, Kola Peninsula, USSR, as irregular grains, colourless and transparent, from 0.1–0.5 mm and as aggregates up to 5 mm, conchoidal fracture; microhardness 440 kgs/mm<sup>2</sup> or 4 $\frac{1}{2}$  on Mohs scale. Triclinic, pseudotetragonal,  $P\bar{1}$ , or  $P1$ ,  $a$  5.401,  $b$  11.647,  $c$  16.484 Å,  $\alpha$  134.99,  $\beta$  90.04,  $\gamma$  89.96°,  $Z = 2$ ; the pseudocell has  $a'$  11.65,  $c'$  5.40 Å; uniaxial positive  $\alpha = \beta$  1.571,  $\gamma$  1.590;  $D$  obs. 3.01, calc. 3.05. Composition Na<sub>5</sub>Ca<sub>4</sub>(PO<sub>4</sub>)<sub>4</sub>F. Named for E. I. Nefedov (1910–76), Russian scientist.
- Nekrasovite.** V. A. Kovalenker, T. L. Evstigneeva, V. S. Malov, N. V. Trubkin, A. I. Gorshkov, and V. R. Heinke, 1984. *Min. Zh.* **6**, 88. At the Kairagach orebody, northern part of the Kuramin Mts., eastern Uzbekistan, as pale brownish-pink tiny spheres in tetrahedrite. Cubic,  $P\bar{4}3n$ ,  $a$  10.73(5) Å,  $Z = 1$ ; isotropic; reflectances given;  $D$  calc. 4.62; composition ideally Cu<sub>26</sub>V<sub>2</sub>Sn<sub>6</sub>S<sub>32</sub>, colusite group. Named for Professor I. Y. Nekrasov, Russian mineralogist and geochemist.
- Nelenite.** P. J. Dunn and D. R. Peacor, 1984. *M.M.* **48**, 271. (Formerly known as ferroschallerite, a variety of schallerite, 10th List). From the Franklin mine, Franklin, Sussex Co., New Jersey, USA, as a brown mineral with vitreous lustre, perfect {0001} cleavage, which easily distinguishes it from schallerite. Hexagonal,  $R\bar{3}m$ , with  $a$  13.418,  $c$  85.48(8) Å by analogy with schallerite, but has a one-layer monoclinic cell,  $C2/m$ , with  $a$  23.240,  $b$  13.418,  $c$  7.382 Å,  $\beta$  105.21°;  $D$  obs. 3.46,  $D$  calc. 3.45; uniaxial negative  $\epsilon$  1.700,  $\omega$  1.718. Composition (Mn,Fe)<sub>16</sub>Si<sub>12</sub>O<sub>30</sub>(OH)<sub>14</sub>As<sup>3+</sup>O<sub>6</sub>(OH)<sub>3</sub>, a member of the friedelite group, a polymorph of schallerite. Named for J. A. Nelen, chemist at the Smithsonian Institution, Washington.
- Nd-churchite.** E. K. Podporina, V. V. Burkov, and K. N. Danilova, 1983. *Dokl. Akad. Nauk SSSR*, **268**, 195. Superfluous name. Analysis and X-ray powder data are normal. [A.M. **69**, 211.]
- Niahite.** P. J. Bridge and B. W. Robinson, 1983. *M.M.* **47**, 79. Crystals up to 0.5 mm long in newberyite in the Niah Great Cave, Sarawak, Malaysia, are orthorhombic,  $a$  5.68,  $b$  8.78,  $c$  4.88 Å;  $D$  2.39,  $Z = 2$ ; NH<sub>4</sub>(Mn,Mg)PO<sub>4</sub>·H<sub>2</sub>O, with Mn:Mg  $c.$  3.5;  $\alpha$  1.582(2),  $\beta$  1.604(2),  $\gamma$  1.609(2),  $2V_\alpha$  54°. X-ray powder data match closely those for NH<sub>4</sub>MgPO<sub>4</sub>·H<sub>2</sub>O. [M.A. 83M/1957; A.M. **69**, 408.]
- Nickelbussengotite.** V. I. Kudryashova, 1982. Zap. **111**, 233. Erroneous back-transliteration of nickelbousingaultite.
- Ohmilite.** T. Mizota, M. Komatsu, and K. Chihara, 1983. A.M. **68**, 811, naming the mineral described without name by M. Komatsu, K. Chihara, and T. Mizota, 1973 (*Mineral. J.* **7**, 298) and refining its crystal structure. Spherulites of fine needles in serpentinite from Ohmi, Niigata prefecture, Japan are monoclinic,  $P2_1/m$ , with  $a$  10.979(6),  $b$  7.799(5),  $c$  7.818(4) Å,  $\beta$  100.90(3)°,  $Z = 2$ ;  $D$  3.38; composition Sr<sub>3</sub>(Ti,Fe<sup>3+</sup>)(Si<sub>2</sub>O<sub>6</sub>)<sub>2</sub>(O,OH)·2–3H<sub>2</sub>O;  $\alpha$  1.649,  $\gamma$  1.715 || [010],  $\beta$  near[100].
- Ojuelaite.** F. [P.] Cesbron, M. Romero S[anchez], and S. A. Williams, 1981. *Bull.* **104**, 582. Fibres, elongated on [001], from the Ojuela mine, Mapimi, Durango, Mexico, are monoclinic,  $P2_1/c$ , with  $a$  10.247,  $b$  9.665,  $c$  5.569 Å,  $\beta$  94° 22',  $Z = 2$ ;  $D$  3.39;  $\alpha$  1.696 || [010],  $\beta$  1.730,  $\gamma$  1.798 || [001]. Named for locality.
- Orickite.** R. C. Erd and G. K. Czamanske, 1983. A.M. **68**, 245. A brass-yellow hexagonal mineral found near Coyote Peak, Orick, Humboldt Co., California, has  $a$  3.695,  $c$  6.16 Å,  $Z = 4$ ; strongly anisotropic in reflected light; composition near CuFeS<sub>2</sub> with small amounts of Na, K, and oxygen. Probably has a distorted wurtzite-type structure. [M.A. 83M/5060.]
- Orthojoaquinite.** W. S. Wise, 1982. A.M. **67**, 811. The orthorhombic polymorph of joaquinite described by J. Laird and A. L. Albee, 1972 (A.M. **57**, 85), and by E. Dowty, 1975 (A.M. **60**, 872) is named. Compare bario- and strontio-orthojoaquinite (this List).
- Oursinite.** M. Deliens and P. Piret, 1983. *Bull.* **106**, 305. At Shinkolobwe, Shaba, Zaire, as pale yellow acicular crystals forming radial aggregates, associated with soddyite, kasolite, schoepite, and other uranium minerals. Orthorhombic,  $Aba2$ , or  $Abam$ , with  $a$  12.74,  $b$  17.55,  $c$  7.050 Å;  $Z = 4$ ;  $D$  calc. 3.674; biaxial positive,  $\alpha$  1.624,  $\beta$  1.640,  $\gamma$  1.650,  $2V$  76°;  $\beta = c$ . Composition CoO·2UO<sub>3</sub>·SiO<sub>2</sub>·6H<sub>2</sub>O, probably isostructural with uranophane. Named for spiny appearance. (oursin = sea-urchin in French). [M.A. 84M/0889.]
- Pääkkönenite.** Correct spelling of päkkönenite (32nd List).
- Panasqueiraite.** A. M. Isaacs and D. R. Peacor, 1981. C.M. **19**, 389. The hydroxyl analogue of isokite occurs at Panasqueira, Portugal. Monoclinic,  $Cc$  or  $C2/c$ ,  $a$  6.535(3),  $b$  8.753(4),  $c$  6.919(4) Å,  $\beta$  112.33(4)°,  $Z = 4$ ;  $D$  3.27(1);  $\alpha$  1.590(2),  $\beta$  1.596(2),  $\gamma$  1.616(2) || [010];  $\alpha$ : [001]

- 22°,  $2V$ , 51(2)°. Composition  $\text{CaMgPO}_4(\text{OH},\text{F})$ . Named for locality. [M.A. 84M/0891.]
- Paraumbite.** A. P. Khomyakov, A. A. Voronkov, Yu. S. Kobayashv, and L. I. Polezhaeva, 1983. Zap. **112**, 461 (Параумбит). In a spur of Mt. Eveslogchorr, E. Khibin massif, Kola Peninsula, as colourless or white aggregates, turbid, as thin plates translucent, vitreous or pearly lustre, perfect {010}, less perfect {100} cleavage,  $H$  4½. Orthorhombic,  $a$  19.34,  $b$  13.29,  $c$  14.55 Å, marked pseudo-cell with  $c'$  7.28 Å,  $Z = 4$ ;  $D$  obs. 2.50, 2.60, 2.67, calc. 2.94 for  $7\text{H}_2\text{O}$  (too high). Composition  $\text{K}_3\text{Zr}_2\text{H}(\text{Si}_3\text{O}_9)_2 \cdot n\text{H}_2\text{O}$   $n \approx 7$ , or  $(\text{K},\text{H})_2\text{ZrSi}_3\text{O}_9 \cdot n\text{H}_2\text{O}$  by analogy with umbite (this List); the structure will have to be determined to establish correct chemical formula. Named by analogy with umbite for Lake Umb, near the occurrence.
- Petersite.** D. R. Peacor and P. J. Dunn, 1982. A.M. **67**, 1039. Hexagonal prisms up to 0.1 mm from Laurel Hill, Secaucus, New Jersey, USA, have  $a$  13.288(5),  $c$  5.877(5) Å,  $Z = 2$ ;  $D$  3.41. Composition  $(\text{Ca},\text{Fe}^{2+},\text{Y},\text{Ln})_2\text{Cu}_{12}(\text{PO}_4)_6(\text{OH})_{12} \cdot 6\text{H}_2\text{O}$ , with 2½% Y and Ce, 1% Nd, Sm, and La as oxides.  $\omega$  1.666(4),  $\varepsilon$  1.747(4). Named for T. and J. Peters. A phosphate analogue of mixite. [M.A. 83M/1959.]
- Phaunouxite.** H. Beri, M. Catti, G. Ferraris, G. Ivaldi, and F. Permingeat, 1982. Bull. **105**, 327; M. Catti and G. Ivaldi, *Acta Cryst.* **B38**, 4–10. Anorthic crystals intergrown with raenthalite from Gabe Gottes vein, St Marie-aux-Mines, Vosges, France, are named from Phaunoux, the French name for the Raenthal.  $a$  12.563,  $b$  12.181,  $c$  6.205 Å,  $\alpha$  88.94°,  $\beta$  91.67°,  $\gamma$  113.44°,  $Z = 2$ ;  $D$  2.28;  $\alpha$  1.532,  $\beta$  1.542,  $\gamma$  1.556; composition  $\text{Ca}_3(\text{AsO}_4)_2 \cdot 11\text{H}_2\text{O}$ . [M.A. 83M/1960; A.M. **68**, 850.]
- Phosphofibrite.** K. Walenta and P. J. Dunn, 1984. *Chemie der Erde*, **43**, 11. At the Clara mine, Central Black Forest, Germany, as yellow to pale green, translucent radial aggregates of fibres  $c$  0.5 mm, vitreous lustre,  $H$  4. Orthorhombic,  $Pbmn$  or  $Pnmm$ ,  $a$  14.4,  $b$  18.76,  $c$  10.4 Å,  $Z = 2$ ;  $D$  obs. 2.90, calc. 2.94; biaxial negative, moderate  $2V$ ,  $\alpha$  1.755,  $\gamma$  1.790, composition  $\text{KCuFe}_{15}^3+(\text{PO}_4)_{12}(\text{OH})_{12} \cdot 12\text{H}_2\text{O}$ . Named for composition and habit.
- Piypite.** L. P. Vergasova, S. K. Filatov, E. K. Serafimova, and G. L. Starova, 1984. *Dokl. Akad. Nauk SSSR*, **275**, 714. (Пи́йпит). As sublimate forming emerald green moss-like aggregates in the northern part of Tolbachin Volcano, Kamchatka, after the eruption of 1975–6. The crystals are sometimes hollow and may contain solid and gaseous inclusions. Perfect {100} cleavage, vitreous lustre,  $H$  2½. Tetragonal,  $I4/mmm$ ,  $I\bar{4}2m$ ,  $I\bar{4}m2$ ,  $I4mm$ , or  $I422$ , with  $a$  13.60,  $c$  4.95 Å (refined from powder data). Setting of the unit cell said to have been altered from that submitted to IMA (82–97).  $Z = 4$ ,  $D$  obs. 3.10, calc. 3.0; uniaxial positive,  $\omega$  1.583,  $\varepsilon$  1.695. Composition  $\text{K}_2\text{Cu}_2\text{O}(\text{SO}_4)_2$  with some halite, etc. Named for Professor B. I. Piyp, volcanologist. Compare caratiite (this List).
- Plumbotellurite.** E. M. Spiridonov and O. I. Tananaeva, 1982. *Dokl. Akad. Nauk SSSR*, **262**, 1231. (Плюмботеллурит). Pseudomorphs after altaite from the Zhana-Tyube deposit, Kazakhstan, USSR, give X-ray data matching those of  $\alpha$ - $\text{PbTeO}_3$ . Orthorhombic,  $a$  8.423,  $b$  13.739,  $c$  9.199 Å,  $Z = 12$ ;  $D$  7.2; grey to brown,  $\alpha$  2.19,  $\beta$  2.23,  $\gamma$  2.35,  $2V$ ,  $c$  50°. A dimorph of anorthic fairbankite (31st List); cf. the incompletely described dunhamite and microdunhamite (18th List and A.M. 1947, **32**, 701). [A.M. **67**, 1075; M.A. 82M/4673.]
- Plumbotsumite.** P. Keller and P. J. Dunn, 1982. *Chemie der Erde*, **41**, 1. Irregular tabular crystals on alamosite from the Tsumeb mine, SW Africa, are orthorhombic pseudo-hexagonal,  $C222_1$ ,  $Z = 10$ ; {001} cleavage.  $\alpha$  1.922 || [001],  $\beta$  1.933,  $\gamma$  1.938 || [100],  $2V$ , 32°.  $\text{Pb}_5\text{Si}_4\text{O}_8(\text{OH})_{10}$ . Structure to be determined. Named for *plumbum* and the locality. [A.M. **67**, 1075; M.A. 82M/3357.]
- Pokrovskite.** O. K. Ivanov, Yu. A. Malinovskii, and Yu. V. Mozzherin, 1984. Zap. **113**, 90 (Покровскит). As thin white fibres with flesh-coloured hue and dull lustre from the Zlatogor stratified intrusion, near Zlatogorok, central Kazakhstan, USSR.  $H$  3. Monoclinic,  $P2_1/a$ , with  $a$  9.43,  $b$  12.27,  $c$  3.395 Å,  $\beta$  96.60°,  $Z = 4$ ;  $D$  obs. 2.27–2.32 and 2.51–2.52 for aggregate, and for crystals extracted from thin sections, respectively. Biaxial negative,  $2V \approx 18^\circ$ ,  $\alpha$  1.537,  $\beta = \gamma = 1.619$ ;  $D$  calc. 2.58. Composition  $\text{Mg}_2\text{CO}_3(\text{OH})_2 \cdot 0.5\text{H}_2\text{O}$ . Insoluble in water but soluble in 5% HCl with effervescence. Turns brown when heated. Named for Pavel Vladimirovich Pokrovski (1912–79), Urals mineralogist.
- Potosiite.** M. Wolf, H.-J. Hunger, and K. Bewilogua, 1981. *Freiberger Forschungsh.* **364**, 113. A new member of the cylindrite-franckeite group, occurs intergrown with quartz, in crystals 5–10  $\mu\text{m}$  in the Andacabe deposit, Potosi, Bolivia. Triclinic,  $P1$  or  $P\bar{1}$ , with  $a$  188.06,  $b$  70.10,  $c$  17.28 Å,  $\alpha$  90°,  $\beta$  92.2°,  $\gamma$  90° by electron diffraction.  $D$  calc. 6.20. There are two interpenetrating sublattices, one pseudotetragonal, the other pseudo-hexagonal, with  $a$  5.88,  $b$  5.84,  $c$  17.28, and  $a$  6.26,  $b$  3.70,  $c$  17.28 Å respectively and both with  $\alpha = \gamma = 90^\circ$ ,  $\beta$  92.2°. Composition  $\text{Pb}_{24}\text{Sn}_9\text{Fe}_4\text{Sb}_8\text{S}_{56}$  or  $48\text{PbS} \cdot 18\text{SnS}_2 \cdot 7\text{FeS} \cdot 8\text{Sb}_2\text{S}_3$ . Named for locality. [A.M. **68**, 1249.]

- Pumpellyite-(Mn<sup>2+</sup>)**. A. Kato, S. Matsubara, and R. Yamamoto, 1981. *Japan. Bull. Miner.* **104**, 396. As minute pale greenish-pink crystals up to 0.1 mm with perfect {001} cleavage, at the Ochiai mine, 3½ km W. of Barazawa, Kohsai-cho, Nakakoma-gun, Yamanashi pref. Japan. Monoclinic, *A2/m*, with *a* 8.923, *b* 5.995, *c* 19.156 Å,  $\beta$  97.8°, *Z* = 4; *D* calc. 3.34. Biaxial negative with positive elongation,  $\alpha$  1.752 pale pink,  $\beta$  1.795,  $\gamma$  1.800 brownish-pink, *2V* 40°. Near (Ca,Mn)<sub>8</sub>(Mn,Mg)<sub>4</sub>Al<sub>6</sub>Mn<sub>2</sub>Fe<sup>3+</sup>Si<sub>12</sub>O<sub>42</sub>(OH)<sub>14</sub>, the Mn<sup>2+</sup> analogue of pumpellyite (11th List). [A.M. **68**, 1250.]
- Rayite**. K. Basu, N. S. Bortnikov, A. Mookherjee, N. N. Mozgova, A. A. Tsepin, and L. N. Vyal'sov, 1983. *N. Jahrb. Min. Monatsh.* 296. At Rajpura-Dariba, Rajasthan, India, grey tabular grains 30  $\mu$ m and 0.5 mm patches are white in reflected light with greenish or bluish tints, have metallic lustre and occur with galena, meneghinite, and owyheeite. Reflectances are given. Monoclinic, *C2/c*, with *a* 13.60(2), *b* 11.96(3), *c* 24.49(5),  $\beta$  103.94(12)° by analogy with semseyite; *D* calc. 6.13. Composition ideally Pb<sub>8</sub>(Ag,Tl)<sub>2</sub>Sb<sub>8</sub>S<sub>21</sub>, structurally similar to semseyite. Named for the late Santosh K. Ray, Head of Geology Department at President College, Calcutta, India. [A.M. **69**, 211.]
- Rebulite**. T. Balić-Žunić, S. Šćavničar and P. Engel, 1982. *Z. Krist.* **160**, 109. A dark grey mineral from Allchar, Macedonia, Yugoslavia, is monoclinic, *P2<sub>1</sub>/c*, *a* 7.441, *b* 7.363, *c* 32.052 Å,  $\beta$  105.03°. *D* 4.81. Crystals with {100}, {001}, and {111}. 4[Tl<sub>5</sub>Sb<sub>5</sub>As<sub>8</sub>S<sub>22</sub>]. Associated with simonite (this List). No etymology given. Not submitted to IMA. [A.M. **68**, 644, 1254.]
- Reinhardbraunsite**. H.-M. Hamm and G. Hentschel, 1983. *N. Jahrb. Min. Monatsh.* 119. In contact-metamorphosed and metasomatized Ca-rich xenoliths in the scoriae of the Ettringer Bellerberg volcano, Laacher See, Germany, as pale pink translucent to transparent crystals, monoclinic, *P2<sub>1</sub>/a*, with *a* 11.458(2), *b* 5.052(1), *c* 8.840(2),  $\beta$  108.91(1)°, *Z* = 2; *D* obs. 2.85, calc. 2.885; *H* 5–6, with distinct cleavage and twinning || (001);  $\alpha$  1.606(2),  $\beta$  1.617(2),  $\gamma$  1.620, *2V<sub>x</sub>* 44–50°. Ideally Ca<sub>5</sub>(SiO<sub>4</sub>)<sub>2</sub>(OH,F)<sub>2</sub>, the natural equivalent of artificial 'calciochondrodite' (22nd List). Named after Reinhard Brauns (1861–1937), former Professor of Mineralogy at the University of Bonn, Germany.
- Retzian-(La)**. P. J. Dunn, D. R. Peacor, and W. B. Simmons, 1984. *M.M.* **48**, 533. Reddish-brown transparent crystals up to 0.5 mm with faces {001}, {010}, {110}, and {150}, vitreous lustre, no cleavage and uneven fracture, from the Sterling Hill mine, Ogdensburg, Sussex Co., New Jersey, USA, are orthorhombic (pseudo-hexagonal), *Pban*, *a* 5.670(7), *b* 12.01(1), *c* 4.869(8) Å, *Z* = 2; *D* obs. > 4.2, calc. 4.49; biaxial positive,  $\alpha$  1.766(5),  $\beta$  1.773(5),  $\gamma$  1.788(5). Ideally Mn<sub>2</sub>La(AsO<sub>4</sub>)(OH)<sub>4</sub>, the La analogue of retzian (1st List), and retzian-(Nd) (this List). Named in accordance with Levinson's rule (1966).
- Retzian-(Nd)**. P. J. Dunn and B. D. Sturman, 1982. *A.M.* **67**, 841. Clove-brown prisms and aggregates, on and in rhodochrosite, also on willemite-franklinite-calcite and on manganocalcite, in different parts of the Sterling Hill mine, Sussex Co., New Jersey, USA. Orthorhombic, *Pban*, *a* 5.690(5), *b* 12.12(1), *c* 4.874 Å, *Z* = 2; *D* obs. > 4.2, calc. 4.45. Composition Mn<sub>2</sub>(Nd, Ce, La, etc.)<sub>2</sub>(OH)<sub>4</sub>AsO<sub>4</sub>, the Nd-analogue of retzian (1st List). Type retzian (Moss mine, Sweden) is re-examined, and redefined with Ce (not Y) dominant.  $\alpha$  1.774(2),  $\beta$  1.782(2),  $\gamma$  1.798(2); *2V*(+) 69°. Prism axis [100], forms (5) as for retzian, twinning (stellate 3- and 6-lings) rare. Compare retzian-(La), this List.
- Rhodplumbsite**. A. D. Genkin, L. N. Vyal'sov, T. I. Evstigneeva, I. P. Laputina, and G. V. Basova, 1983. *Min. Zh.* **5**, 87 (Родплюмсит). In a small Pt nugget from a placer in the Urals, with iridosmine, Rh- and Pt-bearing osmiridium and Cu-bearing platinum. Hexagonal, *R3m*, *a* 5.73, *c* 14.00 Å, *Z* = 3; *D* calc. 9.74; strongly birefringent in reflected light, pleochroic cream-pink to greyish-blue, *R<sub>w</sub>* 51.7%, *R<sub>e</sub>* 36.8% at 580 nm in air. Composition Rh<sub>3</sub>Pb<sub>2</sub>S<sub>2</sub>. Named for composition. [M.A. 84M/0892.]
- Richelsdorfite**. P. Süsse and G. Schnorrer-Köhler, 1983. *N. Jahrb. Min. Monatsh.* 145. In the Richelsdorf Mtns., Hessen, Germany, in sandstone, as incrustations on blocks of Kupferschiefer, and in baryte cavities; also at St Andreasberg, Harz Mts. in quartz cavities; as tiny tabular turquoise to sky-blue crystals or spheroidal aggregates up to 2 mm across, vitreous lustre, perfect {001} cleavage, *H* 2. Monoclinic, *C2/m*, *a* 14.17(6), *b* 14.42(3), *c* 13.57(5), *Z* = 4; *D* obs. 3.20, calc. 3.27; biaxial negative, *2V* 69°,  $\alpha$  1.698(3),  $\beta$  1.765(3),  $\gamma$  1.799(4). Composition Ca<sub>2</sub>Cu<sub>5</sub>SbCl(OH)<sub>6</sub>AsO<sub>4</sub>·6H<sub>2</sub>O. Named for one of the two localities.
- Santaclaraitite**. R. Erd and Y. Ohashi, 1984. *A.M.* **69**, 200. From Franciscan chert, Diablo Range, Santa Clara, and Stanislaus Counties, California, as pink and tan veins and masses with four unidentified Mn silicates and other minerals. Crystals are lamellar or prismatic, flattened on {100}; good {100} and {010} cleavage, *H* 6½. Triclinic, *B1*, with *a* 15.633(1), *b* 7.603(1), *c* 12.003(1) Å,  $\alpha$  109.71°,  $\beta$  88.61(1)°,  $\gamma$  99.95(1)°, *V* 1322.0 Å<sup>3</sup>, *Z* = 4; biaxial negative,  $\alpha$  1.681,

- $\beta$  1.696,  $\gamma$  1.708,  $2V_x$  83(1)°. Composition.  $\text{CaMn}_4[\text{Si}_5\text{O}_{14}\text{OH}](\text{OH})\cdot\text{H}_2\text{O}$ , a hydrated rhodonite chemically, it dehydrates to bustamite at about 550°C in air. Its structure consists of 5-tetrahedra-repeat single chains and is related to those of rhodonite, nambulite, marsturite, babingtonite, and inesite. Named for locality.
- Sayrite.** P. Piret, M. Deliens, J. Piret-Meunier, and G. Germain, 1983. *Bull.* **106**, 299. Small yellow to red-orange prisms elongated on *b* and flattened on {102} from Shinkolobwe, Shaba, Zaïre, have distinct {102} cleavage, and are monoclinic,  $P2_1/c$ ,  $a$  10.704,  $b$  6.960,  $c$  14.533 Å,  $\beta$  116.81°,  $Z = 2$ ;  $D$  calc. 6.76; biaxial with  $\beta$  1.94,  $\gamma$  1.95,  $2V$  large. Composition  $\text{Pb}_2(\text{UO}_2)_5\text{O}_6(\text{OH})_2\cdot 4\text{H}_2\text{O}$ , ideally  $2\text{PbO}\cdot 5\text{UO}_3\cdot 5\text{H}_2\text{O}$ . Named for David Sayre, American crystallographer.
- Schulenbergite.** R. von Hodenberg, W. Krause, and H. Täuber, 1984. *N. Jahrb. Min. Monatsh.* **17**. At the Glücksrad mine, near Oberschulenberg, Harz Mts., Germany, pale greenish-blue tabular crystals often forming rosette-like clusters are trigonal,  $P3$  or  $P\bar{3}$ , with  $a$  8.249,  $c$  7.183 Å,  $Z = 1$ ;  $D$  obs. 3.28, calc. 3.38;  $\omega$  1.640,  $\varepsilon$  1.623. Composition ideally  $(\text{Cu,Zn})_7(\text{SO}_4/\text{CO}_3)_2(\text{OH})_{10}\cdot 3\text{H}_2\text{O}$ . Named for locality.
- Schumacherite.** K. Walenta, P. J. Dunn, G. Hentschel, and K. Mereiter, 1983. *Tschermak's Min. Petr. Mitt.* **31**, 165. Minute yellow crystals, tabular on {010}, with conchoidal fracture, adamantine lustre,  $H$  3, from quartz-bearing veins at Schneeberg, Saxony, are triclinic,  $P\bar{1}$ , with  $a$  10.05(3),  $b$  7.46(3),  $c$  6.90(3) Å,  $\alpha$  87.7(3)°,  $\beta$  115.3(3)°,  $\gamma$  111.5(3)°,  $Z = 2$ ,  $D$  calc. 6.90; R.I. variable  $\gamma_{\text{max}}$ . 2.42; biaxial ?positive, very large  $2V$ . Ideally  $\text{Bi}_3\text{O}(\text{OH})(\text{VO}_4)_2$ , the vanadate analogue of preisingerite (32nd List). Named for Dr Ing. F. Schumacher (1884–1975).
- Scotlandite.** W. H. Paar, R. S. W. Braithwaite, T. T. Chen, and P. Keller, 1984. *M.M.* **48**, 283. According to specimen label, from the Susanna vein, Leadhills, Scotland; chisel-shaped or bladed crystals, elongated along *c*, with tendency to form radiating clusters, pale yellow, greyish white or colourless, sometimes transparent, adamantine lustre, pearly on cleavage planes. Cleavage distinct on {100}, less distinct on {010}.  $H < 2$ . Monoclinic,  $P2_1$  or  $P2_1/m$ ,  $a$  4.542(2),  $b$  5.333(2),  $c$  6.143(2) Å,  $\beta$  106.22(4)°,  $Z = 2$ ;  $D$  obs. 6.37, calc. 6.40; biaxial positive,  $\alpha$  2.035,  $\beta$  2.040,  $\gamma$  2.085,  $2V$  35° 24'. Ideally  $\text{PbSO}_3$ , the first naturally occurring sulphite mineral. Named for locality.
- Seglerite.** M.A. 84M/0897. Error for segelerite (28th List).
- Shafranovskite.** A. P. Khomyakov, Z. V. Vrublevskaya, B. B. Zvyagin, N. A. Mateeva, and G. O. Piloyan, 1982. *Zap.* **111**, 475 (Шафрановскит). A yellowish-green to dark green mineral from the Khibina and Lovozero massifs, Kola Peninsula, USSR, is trigonal,  $a$  14.58,  $c$  21.01 Å;  $D$  2.78;  $\omega$  1.587,  $\varepsilon$  1.570. Composition  $6[(\text{Na,K})_6(\text{Mn}^{2+}, \text{Fe}^{2+})_3\text{Si}_9\text{O}_{24}\cdot 6\text{H}_2\text{O}]$ . Named for I. I. Shafranovskii. [M.A. 83M/1961.]
- Shahovite.** V. I. Kudryashova, 1982. *Zap.* **111**, 693. Erroneous transliteration of shakhovite (32nd List).
- Sheelite.** error for scheelite through back-transliteration from Шеелит. A. S. Marfunin, transl. V. V. Schiffer, *Spectroscopy, Luminescence and Radiation Centers in Minerals*. (Uniform all through.)
- Simonite.** P. Engel, W. Nowacki, T. Balić-Žunić, and S. Ščavničar, 1982. *Z. Krist.* **161**, 159. Light red crystals with rebulite (this List) from Allchar, Macedonia, Yugoslavia, are monoclinic,  $P2_1/n$ ,  $a$  5.948(2),  $b$  11.404(6),  $c$  15.959(5) Å,  $\beta$  90.15(1)°,  $Z = 4$ ;  $\text{TiHgAs}_3\text{S}_6$ . No etymology given, but apparently named for a son of P. Engel. [A.M. 69, 211.]
- Sinkankasite.** D. R. Peacor, P. J. Dunn, W. L. Roberts, T. J. Campbell, and W. B. Simmons, 1984. *A.M.* **69**, 380. As colourless crystals, elongated on [001] and tabular on {100} up to 2–3 mm at the Barker pegmatite, Keystone, Pennington Co., South Dakota, USA, as an alteration product of triphylite, and at the Palermo pegmatite, North Groton, New Hampshire, USA; {100} parting along twin boundaries,  $H < 4$ . Triclinic,  $P\bar{1}$  or  $P1$ , with  $a$  9.58(4),  $b$  9.79(5),  $c$  6.88(4) Å,  $\alpha$  108.1(2)°,  $\beta$  99.6(3)°,  $\gamma$  98.7(3)°,  $V$  590(7) Å<sup>3</sup>,  $Z = 2$ ,  $D$  obs. 2.27, calc. 2.25. Biaxial negative,  $\alpha$  1.511,  $\beta$  1.529,  $\gamma$  1.544,  $2V$  calc. 84°. Optical determination fraught by multiple twinning. Ideally  $\text{H}_2\text{MnAl}(\text{PO}_4)_2(\text{OH})\cdot 6\text{H}_2\text{O}$ . Named for Dr John Sinkankas of San Diego, California.
- Sobolevite.** A. P. Khomyakov, T. A. Kurova, and N. I. Chistyakova, 1983. *Zap.* **112**, 456 (Соболевит). At Alluaiv Mtn., Lovozero massif, Kola Peninsula, USSR, brownish, platy {001} crystals up to 5 mm wide and 0.1–0.3 mm thick, with metallic-pearly lustre, perfect {001}, and distinct {110} cleavage are transparent in thin section, monoclinic,  $a$  7.074,  $b$  5.4087,  $c$  40.606 Å,  $\beta$  93.18°,  $Z = 2$ ;  $D$  obs. 3.03, calc. 3.00;  $\alpha$  1.627,  $\beta$  1.686,  $\gamma$  1.690. Composition  $\text{Na}_{14}\text{Ca}_2\text{MnTi}_3\text{P}_4\text{Si}_4\text{O}_{34}$  or  $\text{Na}_2\text{Ca}_2\text{MnTi}_3\text{Si}_4\text{O}_{18}\cdot 4\text{Na}_3\text{PO}_4$ . Named for Academician V. S. Sobolev (1908–82).
- Sosedkoite.** A. V. Voloshin, Yu. P. Melnikov, and Ya. A. Pakhomovskii, 1982. *Dokl. Akad. Nauk SSSR*, **264**, 442 (Соседкоит). A colourless mineral from granite pegmatites in the Kola Peninsula gives an X-ray powder pattern

- indexed by analogy with synthetic  $K_3Li_2Ta_5O_{15}$ , as orthorhombic,  $a$  17.25,  $b$  17.73,  $c$  3.95 Å.  $[(K,Na)_5Al_2(Ta,Nb)_{22}O_{60}]$ . Named for A. F. Sosedko. [M.A. 83M/3665.]
- Srilankite.** A. Willgallis, E. Siegmann, and T. Hettiaratchi, 1983. *N. Jahrb. Min. Monatsh.* 151. Opaque brown-black pebbles in placers at the Rakwana mine, Sabaragamuva province, Sri Lanka, are orthorhombic,  $Pbcn$ ,  $a$  4.708,  $b$  5.553,  $c$  5.019 Å,  $Z = 4$ ;  $D$  calc. 4.77; in thin sections translucent, dark-blue,  $2V_\alpha$  16(1)°. Composition  $(Ti,Zr)O_2$  with  $Ti:Zr = 2$ ; alternative formula  $ZrTi_2O_6$ . Named for the country. [A. Willgallis and H. Hartl, 1983. *Z. Krist.* 164, 59 (structure); A.M. 69, 212.]
- Strontiojoaquinite.** W. S. Wise, 1982. A.M. 67, 809. Material from Clear Creek, 5 miles NW of the original joaquinite locality, is, like joaquinite, monoclinic, but has the lanthanons replaced by Sr;  $a$  10.516,  $b$  9.764,  $c$  11.87 Å,  $\beta$  109° 17',  $Z = 4$ ; near  $(Na,Fe)BaTi(O,OH)SrSi_4O_{12} \cdot \frac{1}{2}H_2O$ ;  $\alpha$  1.710(2), colourless,  $\beta$  1.818(2) || [010] colourless,  $\gamma$  1.780(3), yellow;  $\alpha: [100]$  19°;  $2V_\gamma$  35 to 45°,  $r > v$  strong.
- Strontio-orthojoaquinite.** W. S. Wise, 1982. A.M. 67, 812. The orthorhombic Sr analogue of joaquinite, described by K. Chihara, M. Komatsu, and T. Mizota, 1974 (*Min. J.* 7, 395) from Ohmi, Niigata prefecture, Japan, is named. Compare orthojoaquinite (this List).
- Strontium-åkermanite.** C. Brisi and F. Abbatista, 1960. *Ann. Chim. (Roma)*, 50, 1061. (Stronzio-åkermanite). Artificial  $MgSr_2Si_2O_7$ , isostructural with åkermanite.
- Stronzio-åkermanite**, original form of strontium-åkermanite, q.v.
- Sturmanite.** D. R. Peacor, P. J. Dunn, and M. Duggan, 1983. C.M. 21, 705. Bright yellow flattened bipyramids on hematite and baryte from the Black Rock mine, S. Africa, are trigonal, prob.  $P31c$ ,  $a$  11.16(3),  $c$  21.79(9) Å,  $Z = 2$ ; perfect  $\{10\bar{1}0\}$  cleavage;  $D$  obs. 1.847, calc. 1.855; uniaxial positive  $\omega$  1.500,  $\epsilon$  1.505, in some crystals core negative,  $\epsilon$  1.497,  $\omega$  1.499. Composition  $Ca_6(Fe_{1.5}^{3+}Al_{0.3}Mn_{0.2}^{2+})_{2.0}(SO_4)_{2.3}[B(OH)_4]_{1.2}(OH)_{12} \cdot 25H_2O$ , the ferric iron, boron-containing analogue of ettringite. Named for B. Darko Sturman of the Royal Ontario Museum.
- Suzorite.** S. R. Locke, M. Fenton, and G. C. Hawley, 1974. *Proc. 1st Ind. Min. Int. Congr.* 41. Apparently a trade name for a mica or vermiculite.
- Sveite.** J. E. J. Martini, 1980. *Trans. Geol. Soc. S. Africa*, 83, 239. White crusts and efflorescences on the wall of the Autana Cave, Territorio Federal Amazonas, Venezuela, give powder data indexed on a monoclinic cell with  $a$  10.89,  $b$  13.04,  $c$  30.71 Å,  $\beta$  92° 10',  $Z = 6$ ;  $D$  2.0;  $\alpha$  1.503,  $\gamma$  1.535,  $2V$  small. Named from the initials of the Sociedad Venezolana de Espeleología. [A.M. 67, 1076; Zap. 111, 694; M.A. 83M/1964.]
- Swamboite.** M. Deliens and P. Piret, 1981. C.M. 19, 553. Small pale yellow pleochroic needles from the Swambo uranium deposit, Shaba, Zaire (36 km W. of Shinkolobwe), are monoclinic,  $P2_1/a$ , with  $a$  17.64(3),  $b$  21.00(5),  $c$  20.12(4) Å,  $\beta$  103.4(2)°,  $Z = 18$ , with a prominent pseudocell of  $a'$  8.82,  $b'$  7.00,  $c'$  6.67 Å,  $\beta$  102.0°,  $Z = 1$ ; good  $\{201\}$  cleavage;  $D$  obs. 4.0, calc. 4.064;  $\alpha$  1.640,  $\beta$  1.661,  $\gamma$  1.663,  $2V$  30° obs. 34° calc. Ideally  $U_{1/3}H_2(UO_2SiO_4)_2 \cdot 10H_2O$  from pseudocell related to uranophane group. Named for the occurrence. [A.M. 68, 1250.]
- Sweetite.** A. M. Clark, E. E. Fejer, A. G. Couper, and G. C. Jones, 1984. M.M. 48, 267. From a disused limestone quarry 200–300 m NW of Milltown, near Ashover, Derbyshire, colourless or whitish translucent bipyramids up to 1 mm, scattered over the surface of colourless fluorite cubes are tetragonal,  $P4_12_1$  or  $P4_32_1$ , with  $a$  8.222(5),  $c$  14.34(1) Å,  $Z = 20$ ;  $D$  obs. 3.33, calc. 3.41; uniaxial negative,  $\omega$  1.635,  $\epsilon$  1.628; composition  $Zn(OH)_2$ . The orthorhombic modification was also identified on one of the specimens. Named for Jessie M. Sweet (1901–79) curator at the BM(NH), London.
- Synchisite-(Nd).** B. Scharm and P. Kühn, 1983. *N. Jahrb. Min. Monatsh.* 201. Pale greyish blue authigenic mineral in cements of Upper Cretaceous U-bearing sandstones of northern Bohemia, Czechoslovakia, in the Stráž block, Holičky deposit, nr. Česká Lipa, is pseudo-hexagonal, C-centred orthorhombic, with  $a$  4.039,  $b$  6.984,  $c$  54.27 Å,  $Z = 12$ ;  $D$  calc. 4.14. Composition,  $Ca(Nd,Y,Gd\dots)F(CO_3)_2$ . Named for relationship with synchisite. [Zap. 111, 233 quotes Z. Maksimović and G. Pantó, 1978, as authors.]
- Tantite.** A. V. Voloshin, Ya. A. Pakhomovskii, and G. A. Perlina, 1983. *Min. Zh.* 5, 90 (Тантит). In granite pegmatites at the Kola Peninsula, with microcline, stibiotantalite, and holtite, as colourless transparent veinlets, tiny lenticles within microlite or as interstitial intergrowths up to 0.5 mm long and 0.02 mm wide, with adamantine lustre, no cleavage; grey-white in reflected light, anisotropic. Triclinic,  $a$  3.80(2),  $b$  3.79(2),  $c$  35.74(4) Å,  $\alpha$  90.92°,  $\beta$  90.18°,  $\gamma$  90°,  $Z = 6$ ;  $D$  calc. 8.45. Ideally  $Ta_2O_5$ . Named for composition. Relationship to tantalochra (tantallic ochre) of Nordenskiöld (1855) not known.

- Tausonite.** E. I. Vorob'ev, A. A. Konev, Yu. V. Malyshonok, G. G. Afonina, and A. N. Sapozhnikov, 1984. *Zap.* **113**, 86. (Таусонит). Brownish-red, ruby-red, red, orange or grey grains, and cubes and cubooctahedra up to 2 mm from the Murun syenite massif, W. Aldan shield, USSR, are translucent to transparent with adamantine lustre and  $H$  6–6½, belong to the perovskite group with  $a$  3.90–3.91 Å;  $D$  obs. 4.86, 4.875, calc. 4.83; isotropic, occasionally weakly anisotropic because of internal reflections. Composition  $SrTiO_3$  with a little Ca and Ba, X-ray powder pattern near that of loparite. Named for L. V. Tauson, Russian geochemist. See *Fabulite* (28th List), *artif.*
- Terskite.** A. P. Khomyakov, E. I. Semenov, A. A. Voronkov, and G. N. Nechelyustov, 1983. *Zap.* **112**, 226 (Терскит). In syenites at Mt. Alluaiv and Karnasurt, NW Lovozero massif, Kola Peninsula, USSR, as small equant or lamellar crystals, 1–5 mm, nearly colourless, transparent in thin section, orthorhombic (pseudotetragonal) with  $a$  14.12(6),  $b$  14.69(6),  $c$  7.51(3) Å,  $Z = 4$ ; biaxial negative,  $\alpha$  1.576,  $\beta$  1.582,  $\gamma$  1.584,  $2V$  53°;  $D$  obs. 2.71,  $D$  calc. 2.74. Composition  $Na_4ZrSi_6O_{16} \cdot 2H_2O$ . Named for Terskii Bereg, southern shore of Kola Peninsula.
- Thalifenisite.** V. I. Krudryashova, 1983. *Zap.* **111**, 228. Erroneous transliteration of thalifenisite (31st List).
- Tinsleyite.** P. J. Dunn, R. C. Rouse, T. J. Campbell, and W. L. Roberts, 1984. *A.M.* **69**, 374. As thin magenta-red layers on Fe-rich leucophosphate, with partings between the two species, at the Tip Top pegmatite mine, Custer, South Dakota, USA. Crystals are prismatic or tabular on  $\{101\}$ , have vitreous lustre, pink streak, colour due to some  $Mn^{3+}$ . Monoclinic,  $Pn$  or  $P2/n$  (not  $P2_1/n$  as in leucophosphate),  $a$  9.602(8),  $b$  9.532(6),  $c$  9.543(1) Å,  $\beta$  103.16(6)°,  $Z = 4$ ;  $D$  obs. 2.69(5), calc. 2.62; biaxial positive,  $2V$  86°,  $\alpha$  1.591,  $\beta$  1.597,  $\gamma$  1.604. Ideally  $KAl_2(PO_4)_2OH \cdot 2H_2O$ , the aluminium analogue of leucophosphate. Colour not diagnostic. Named for Frank C. Tinsley of Rapid City, South Dakota, mineral collector.
- Tobelite.** S. Higashi, 1982. *Mineral. J.* **11**, 138. White to yellowish-green clayey material in the Ohgidani deposit, Tobe, Ehime pref., Japan, gives X-ray powder data indexed on a monoclinic cell with  $a$  5.219(4),  $b$  8.986(3),  $c$  10.447(2) Å,  $\beta$  101.31(1)°;  $D$  2.58. Minute flaky crystals with perfect  $\{001\}$  cleavage. A dioctahedral ammonium mica,  $(NH_4,K)Al_2(Si_3Al)O_{10}(OH)_2$ ;  $\alpha$  1.555(2),  $\beta$  1.575(2),  $\gamma$  1.581(2),  $2V_x$  28°. Also found at the Horo pyrophyllite deposit, Toyosaka, Hiroshima prefecture. Named for locality. [*A.M.* **68**, 850.]
- Tolbachite.** L. P. Vergasova and S. K. Filatov, 1983. *Dokl. Akad. Nauk SSSR*, **270**, 415 (Толбачит). In high-temperature fumaroles of lava flows and secondary slag cones of the 1975–6 eruption of Tolbachik, Kamchatka, USSR, as brownish or golden brown incrustations, with melanothallite, dolerophane, tenorite, euchlorine, and a basic K, Cu sulphate-chloride, with silky lustre on fresh fractures. Monoclinic,  $C2/m$ ,  $a$  6.89(2),  $b$  3.31(1),  $c$  6.82(2) Å,  $\beta$  122.3(2)°,  $Z = 2$ ;  $D$  calc. 3.42; composition  $CuCl_2$ , matches data for synthetic material. Named for Mt. Tolbachik.
- Triangulite.** M. Deliens and P. Piret, 1982. *Bull.* **105**, 611. In a complex pegmatite at Kobokobo, Zaïre, bright yellow aggregates of flat, triangular or rhombohedral crystals up to 2 mm long are triclinic,  $P1$  or  $P1$ , with  $a$  10.39,  $b$  10.56,  $c$  10.60 Å,  $\alpha$  116.4°,  $\beta$  107.8°,  $\gamma$  113.4°,  $Z = 1$ ;  $D$  obs. 3.7,  $D$  calc. 3.68. The X-ray powder pattern said to be similar to that of mundite (32nd List), and of ranunculite (31st List). Optically biaxial positive,  $2V$  80°,  $\alpha$  1.639(calc.),  $\beta$  1.665,  $\gamma$  1.704. Mostly twinned about  $[011]$  and  $[011]$  by rotation. Does not fluoresce. Named for the triangular habit. [*A.M.* **69**, 212.]
- Tristramite.** D. Atkin, I. R. Basham, and J. F. W. Bowles, 1983. *M.M.* **47**, 393. Fine-grained aggregates of needles with uraninite at Wheal Trewavas and other mines in Cornwall with a rhabdophane structure; hexagonal,  $a$  6.913(3),  $c$  6.422(6) Å,  $Z = 3$ ,  $P6_222$ ;  $\omega$  1.644(2),  $\epsilon$  1.664(2);  $(Ca,U^{4+},Fe^{3+})[(PO_4)_2(SO_4)(CO_3)] \cdot 1\frac{1}{2}$  to  $2H_2O$ , with Ca and  $PO_4$  dominant. Named for Sir Tristram of Arthurian legend. [*M.A.* 83M/5065.]
- Tusionite.** S. A. Konovalenko, A. V. Voloshin, Ya. A. Pakhomovskii, S. A. Anan'ev, G. A. Perlina, D. L. Rogachev, and V. Ya. Kuznetsov, 1983. *Dokl. Akad. Nauk SSSR*, **272**, 1449 (Тусионит). In granite pegmatites at the upper reaches of the Tusion River, SW Pamir, USSR, as honey yellow or brownish yellow transparent to translucent tablets, often intimately intergrown with tetrawickmanite. Nearly colourless in thin section, vitreous lustre, perfect  $\{001\}$  cleavage. Trigonal,  $R\bar{3}$ , with  $a$  4.78,  $c$  15.26 Å,  $Z = 3$ ;  $D$  obs. 4.73, calc. 4.85; uniaxial negative,  $\omega$  1.854,  $\epsilon$  1.757;  $MnSn(BO_3)_2$ , isostructural with dolomite. Named for locality.
- Umbite.** A. P. Khomyakov, A. A. Voronkov, Yu. S. Kobyashev, and L. I. Polezhaeva, 1983. *Zap.* **112**, 461 (Умбит). From the valley of the Vuonnemiok River, E. Khibina alkaline massif; colourless or yellowish tabular crystals flattened on  $\{010\}$ , up to 3 mm long and 0.1–1 mm thick, have vitreous or pearly lustre, micaceous cleavage  $\{010\}$  and less distinct on  $\{100\}$ ;  $H$  4½.



- Orthorhombic,  $P2_12_12_1$ ,  $a$  10.208,  $b$  13.241,  $c$  7.174 Å,  $Z = 4$ ;  $D$  obs. and calc. 2.79;  $2V$  80°,  $\alpha$  1.596,  $\gamma$  1.619; near  $K_2(Zr_{0.8}Ti_{0.2})Si_3O_9 \cdot H_2O$ . Named for Lake Umb, 20 km E. of occurrence. See also paraumbite (this List).
- Uranocalcarite.** M. Deliens and P. Piret, 1984. *Bull.* **107**, 21. From Shinkolobwe, Shaba, Zaïre, as bright yellow acicular crystals forming radial aggregates, elongated along [001], flattened on {100}; transparent, vitreous lustre, no cleavage,  $H$  2-3. Orthorhombic,  $Pbnm$  or  $Pbn2_1$ ,  $a$  15.42(3),  $b$  16.08(4),  $c$  6.970(6) Å,  $Z = 4$ ;  $D$  obs. 4.03, calc. 4.10; biaxial negative,  $2V$  calc. 66°,  $\alpha$  1.660,  $\beta$  1.712,  $\gamma$  1.736; composition  $Ca(UO_2)_3CO_3(OH)_6 \cdot 3H_2O$ . Named for composition.
- Uranosilite.** K. Walenta, 1983. *N. Jahrb. Min. Monatsh.* **259**. As yellowish white needles intimately intergrown with studtite and uranophane on quartz and hematite from the Menzenschwand uranium deposit, southern Black Forest, Germany. Vitreous lustre, no cleavage. Orthorhombic,  $P2_12_12_1$ ,  $Pmmb$ , or  $Pmcb$ ,  $a$  11.60,  $b$  14.68,  $c$  12.83 Å,  $Z = 6$ ;  $D$  calc. 3.25; probably biaxial negative,  $\alpha$  1.570(2),  $\gamma$  1.584(2), positive elongation, slightly anomalous interference colours. Stable up to 900°C. Near  $UO_3 \cdot 7SiO_2$ . Named for composition.
- Ushkovite.** B. V. Chesnokov, V. A. Vilisov, G. E. Cherepivskaya, and M. G. Gorskaya, 1983. *Zap.* **112**, 42 (Ушковит). The Mg analogue of laueite occurs on the southern shore of Lake Bol'shoy Tatkul, Ilmen Mountains, USSR. Anorthic,  $a$  5.196(9),  $b$  10.70(2),  $c$  7.14(2) Å,  $\alpha$  108.06(1)°,  $\beta$  106.95(5)°,  $\gamma$  72.70(5)°,  $Z = 1$ ;  $\alpha$  1.584(2),  $\beta$  1.637(2),  $\gamma$  1.670(2).  $MgFe_2^+(PO_4)_2(OH)_2 \cdot 8H_2O$ . Named for S. L. Ushkov (1880-1951) Russian naturalist. [*M.A.* 84M/0895; *A.M.* **69**, 212.]
- Vozhminite.** N. S. Rudashevskii, Yu. P. Menshikov, A. A. Lentsi, N. I. Shumskaya, A. B. Lobanova, G. N. Goncharov, and A. G. Tutov, 1982. *Zap.* **111**, 480 (Вожминит). Brownish yellow material in the serpentinites of the Vozhmin massif, Karelia, gave an X-ray pattern indexed on a hexagonal cell with  $a$  16.46(4),  $c$  7.20(1) Å,  $Z = 18$ ;  $(Ni,Co)_4(As,Sb)_2S_{12}$ , with  $Ni \gg Co$ ,  $As \approx Sb$ . Named for locality. [*M.A.* 83M/1965.]
- Vuorelainenite.** M. A. Zakrzewski, E. A. J. Burke, and W. J. Lustenhouwer, 1982. *C.M.* **20**, 281. The 'vanadium spinel' from Outokumpu, Finland, described by J. V. P. Long, Y. Vuorelainen, and O. Kouvo, 1963 (*A.M.* **48**, 36 and 40) is fully described and named for Y. Vuorelainen. Cubic,  $a$  8.48(5) Å. Spinel group. [*A.M.* **68**, 472.]
- Vyuntspakhkite.** A. V. Voloshin, Ya. A. Pakhomovskii, Yu. P. Menshikov, A. S. Povarennikh, and D. L. Rogachev, 1983. *Min. Zh.* **5**, 89. (Вюнцпахкит). In amazonite pegmatites at Vyuntspakhk Mountain, Kola Peninsula, USSR, as colourless transparent crystals 0.5-0.7 mm long and 0.05-0.2 mm wide, in small cavities in fluorite, associated with xenotime and bastnäsite; adamantine lustre, no cleavage,  $H$  6-7. Monoclinic,  $P2_1/c$ , with  $a$  6.221,  $b$  14.763,  $c$  5.830 Å,  $\beta$  123.05°,  $Z = 1$ ;  $D$  obs. 4.02, calc. 4.04; biaxial positive,  $2V$  obs. 68°, calc. 66°,  $\alpha$  1.680,  $\beta$  1.692,  $\gamma$  1.720. Composition  $Y_4Al_2Si_5O_{18}(OH)_5$ . Named for locality. [Structure determined, 1984, *Kristallografiya*, **29**, 238.]
- Wadsleyite.** G. D. Price, A. Putnis, S. O. Agrell, and D. G. V. Smith, 1983. *C.M.* **21**, 29. As pale fawn coloured microcrystalline aggregates 0.5 mm in diameter in Peace River meteorite. Orthorhombic,  $Imma$ ,  $a$  5.70(2),  $b$  11.51(7),  $c$  8.24(4) Å,  $Z = 8$ ; *R.I.* 1.76;  $D$  calc. 3.84; natural  $\beta$ -(Mg,Fe) $_2SiO_4$ . Named for Dr A. D. Wadsley, crystallographer. [*A.M.* **68**, 1040.]
- Walentaite.** P. J. Dunn, D. R. Peacor, W. L. Roberts, T. J. Campbell, and R. A. Ramik, 1984. *N. Jahrb. Min. Monatsh.* 169. At the Elephant mine, nr. Pringle, Custer Co., South Dakota, USA, as bright yellow or brownish bladed crystals or aggregates, elongated on [001], flattened  $\perp b$ , so that {010} is dominant; with löllingite and frondelite  $H$  3. Orthorhombic,  $I222$ ,  $I2_12_12_1$ ,  $Imm2$ ,  $Imam$ , or  $Immm$ , with  $a$  26.24(6),  $b$  10.31(1),  $c$  7.38(1) Å,  $Z = 1$ ;  $D$  obs. =  $D$  calc. 2.72; biaxial positive,  $\beta$  1.738(4),  $\gamma$  1.779(4). Ideally  $H_4(Ca,Mn,Fe)_4Fe_{12}^+(AsO_4)_{10}(PO_4)_6 \cdot c. 28H_2O$ . Named for Dr Kurt Walenta, professor at Stuttgart University, Germany.
- Wallkilldellite.** P. J. Dunn and D. R. Peacor, 1983. *A.M.* **68**, 1029. At the Sterling Hill mine, New Jersey, USA, dark red crystals have perfect {0001} cleavage, similar to kraisslite (31st List), and mcgovernite (11th List); hexagonal with  $a$  6.506(7),  $c$  23.49(3) Å,  $Z = 2$ ;  $D$  obs. 2.85, uniaxial negative,  $\omega$  1.728(4). Ideally  $Ca_2Mn_3^+(AsO_4)_2(OH)_4 \cdot 9H_2O$ . Named from the *dell* of the Wallkill River in which ore deposit the mineral was first found.
- Wicksite.** B. D. Sturman, D. R. Peacor, and P. J. Dunn, 1981. *C.M.* **19**, 377. Nodules from 68° 28' 30" N., 136° 29' W. in the Big Fish River area, Yukon, include masses and plates  $\parallel$  {010} of a dark blue orthorhombic mineral,  $Pbca$ ,  $a$  12.896(3),  $b$  12.511(3),  $c$  11.634 Å,  $Z = 4$ ;  $D$  3.54;  $\alpha$  1.713(3), blue,  $\beta$  1.718(3)  $\parallel$  [100], greenish blue,  $\gamma$  1.728(3)  $\parallel$  [001], pale yellowish brown,  $2V$ , 66(2)°. Named for F. J. Wicks. [*A.M.* **67**, 1077; *M.A.* 84M/0896.]
- Wilcoxite.** S. A. Williams and F. P. Cesbron, 1983. *M.M.* **47**, 37. Anorthic crystals with  $a$ ,  $b$ ,  $m$ ,  $M$ , and  $Q(0\bar{1}1)$  occur at the Lone Pine mine, Catron Co., New Mexico.  $P\bar{1}$  or  $P1$ ,  $a$  14.90,  $b$

6.65,  $c$  6.77 Å,  $\alpha$  117° 26',  $\beta$  100° 35',  $\gamma$  89° 10',  $Z = 1$ ;  $D$  1.58;  $\alpha$  1.424,  $\beta$  1.436,  $\gamma$  1.438,  $2V_x$  48°. Named for W. Wilcox, discoverer of this mining district in 1879. Not to be confused with willcoxite (Genth, 1873). [A.M. 69, 408.]

**Willhelmvierlingite.** A. Mücke, 1983. *Aufschluss*, 34, 267. From the pegmatite of Hagendorf, Bavaria, Germany, as pale yellow to brown, fine-grained radial fibrous aggregates, with perfect {010} cleavage, pale-dark yellow pleochroism,  $H$  4. Orthorhombic,  $Pbca$ ,  $a$  14.80(5),  $b$  18.70(5),  $c$  7.31(2) Å,  $Z = 8$ ;  $D$  obs. 2.58, calc. 2.60; biaxial negative,  $\alpha$  1.637,  $\beta$  1.664,  $\gamma$  1.692,  $2V_{calc}$  45°. Composition  $(Ca,Zn)MnFe^{3+}OH(PO_4)_2 \cdot 2H_2O$ , the manganous analogue of segelerite (28th List). [M.A. 84M/0897 (seglerite, error for segelerite).]

**Willhendersonite.** D. R. Peacor, P. J. Dunn, W. B. Simmons, E. Tillmanns, and R. X. Fischer, 1984. A.M. 69, 186. From the San Venanzo quarry, Terni, Umbria, Italy, and also from the Ettringer Bellerberg, nr. Mayen, Eifel, Germany, as trellis-like twinned aggregates in cavities of Quaternary lavas, and as tabular crystals in a limestone xenolith respectively; colourless, transparent, with vitreous lustre.  $H$  3. Triclinic,  $P\bar{1}$ ,  $a$  9.23(2),  $b$  9.21(2),  $c$  9.52(2) Å,  $\alpha$  92.7(1)°,  $\beta$  92.4(1)°,  $\gamma$  90.1(1)°,  $Z = 2$ ,  $V$  808 Å<sup>3</sup>,  $D$  obs. 2.18, calc. 2.20.

Biaxial positive,  $\alpha$  1.505,  $\beta$  1.511,  $\gamma$  1.517,  $2V$  87°.  $KCaAl_3Si_3O_{12} \cdot 5H_2O$ , isostructural with chabazite. Named for Dr William Henderson Jr., who drew the authors' attention to the mineral.

**Xilingolite.** Hong Huidi, Wang Xiangwen, Shi Nicheng, and Peng Zhizhong, 1982. *Acta Pet. Min. et Anal.* 1, 14 (in Chinese). [A.M. 69, 409.] In a skarn-type iron deposit at the Chaobuleng district, Xilingola League, Inner Mongolia, China, as lead grey prismatic crystals up to 8 mm long, elongated along  $b$  with longitudinal striations, twinned on {001}. Monoclinic,  $C2/m$ ,  $Cm$ , or  $C2$ ,  $a$  13.65,  $b$  4.078,  $c$  20.68 Å,  $\beta$  93.0°,  $Z = 4$ ;  $D$  obs. 7.08, calc. 7.07; reflectances given, white with faint blue tinge in reflected light, distinctly pleochroic. Ideally  $Pb_{3+x}Bi_{2-2/3x}S_6$ , where  $x = 0.3$ . Not dimorphous with lillianite despite similarities in composition and unit cell dimensions. Named for locality.

**Zakharovite.** A. P. Khomyakov, M. E. Kazakova, Z. V. Vrublevskaia, B. B. Zvyagin, and G. O. Piloyan, 1982. *Zap.* 111, 491 (Захаровит). A hexagonal mineral from the Lovozero massif, Kola Peninsula, USSR.  $P3m1$ ,  $a$  14.58,  $c$  34.7 Å,  $Z = 9$ ;  $\omega$  1.565(2),  $\epsilon$  1.535(2). Composition  $Na_3Mn_5Si_{10}(OH)_5 \cdot 6H_2O$ . Named for Professor E. E. Zakharov (1902-80). [M.A. 83M/5066.]