NOTES ON SOME ADDITIONAL MINERALS RECENTLY DETERMINED, WITH NEW LOCALITIES FOR SPECIES KNOWN TO OCCUR IN TASMANIA.

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The present contribution to the mineralogy of this State is of somewhat unusual interest, inasmuch as it describes for the first time an apparently new compound, which, although of no commercial value, is of some scientific interest. It is in its way a humble congener of the more imposing crocoisite, for the occurrence of which, in such magnificent developments, this island has obtained a great repute among mineralogists in all parts of the world, but, like it, is simply of scientific importance.

The Lefroy meteorite, now mentioned for the first time, is, although of such remarkably small size, worthy of special note, and its detection in the prospector's dish adds another to the romantic discoveries of such objects from unknown space. The already long list of the different minerals recorded from time to time as being found in this State is still further augmented by the addition of no less than eighteen not heretofore published; respecting these concise notes are given. Several of these are of some scientific interest, and two or three would be of industrial importance if they could be discovered in sufficient quantity. Notes on additional localities for a few others which are already on record are given, with some remarks on peculiar features presented by some few others.

I have to record my obligation to Mr. J. D. Millen, A.S.T.C., M.S.C.I., Lond., metallurgical chemist, for so generously undertaking the analysis of Bellite and Hercynite, for without this work, especially difficult as regards the first mentioned, my task would have lost its most important features.

1 Barrandite.—(*Hydrous aluminium and iron phosphate.*)

Occurs as brown dull amorphous masses of small size, associated with vivianite, Lyndhurst, North-East Coast.

2 Bellite.—(*Chromo-arsenate of lead.*)

This extremely interesting and, it may be said, attractive new substance usually occurs in delicate tufts aggregated together, and velvet-like coated surfaces thickly lining and clustering in drusy

cavities in somewhat soft iron-manganese gossan. The coated surfaces are often met with of reasonable size, and have been obtained covering several square inches of the gossan, more especially where vughs and fractures occur. More rarely bunches of galena are wholly or partially covered by the substance. It is often in crypto-crystalline incrustations, occasionally pulverulent, and more rarely in bunches of hexagonal crystals of almost microscopic dimensions. The largest crystals so far observed were but three millimeters in length, but the outline was sharp and very distinct. The crystals are of adamantine lustre, and a remarkably bright red to crimson colour. Minute acicular patches of crystals are common, and under the lens are perfectly distinct, and thus afford very fine microscopic objects of considerable attractiveness. The bright crimson colour of the general mass is very characteristic, and by this feature it is noticeable by the most casual observer, even when not directly interested in mineralogy. It sometimes occurs in aggregates of extremely minute needles, much like velvet, of a distinct and bright yellow to orange colour, and in this form it also occasionally coats somewhat large surfaces. Chromiferous cerussite and more rarely crocoisite and mimetite are intimately associated with it. Although so noticeable, the coating of the substance is usually of such extreme thinness that it was only with the greatest difficulty and by using the utmost care that enough was secured to make a complete analysis. This was undertaken by Mr. J. D. Millen, A.S.T.C., M.S.C.I., Lond., metallurgical chemist to the Mt. Bischoff T. M. Co. The following is the result:—

Pb	O	=	61·680 per cent.
Cr	O_3	=	22·611 ,,
V_2	O_5	=	0·106 ,,
P_2	O_5	=	0·045 ,,
As_2	O_3	=	6·548 ,,
Al_2	O_3	=	0·012 ,,
Cl		=	0·516 ,,
S	O_3	=	0·054 ,,
Ag		=	trace
Si	O_2	=	7·587 ,,
			99·159

Moisture not determined. The hardness is 2·5; specific gravity approximately 5·5. Streak, pale yellow. Crystallographic system hexagonal. Before the blowpipe on coal it readily affords a bead of metallic lead with arsenical coating and odour. Imparts to salt of phosphorus bead in OF and RF a fine green, thus absolutely masking the reaction of V_2O_5 in the OF with this reagent. In the wet the reaction of V_2O_5 was only obtained with difficulty, following the method of Ohly (analysis of the rare metals). The powdered substance was mixed with sodium carbonate, then fused, and after the addition of potassium nitrate lixiviated with water, filtered, and the clear solution boiled with ammonium carbonate. Acidified with hydrochloric acid, and hydrogen sulphide passed through the filtrate, the precipitate gave arsenic and green solution. The filtrate with concentrated ammonium of equal volume and treated with hydrogen sulphide gave a black precipitate which on filtering the solution left a cherry-red solution = vanadium. This new mineral species has been named in compliment to my old and respected friend, Mr. W. R. Bell, the veteran prospector, whose exertion has done much to advance the mining industry of this State, and who moreover has always taken a great interest in its mineralogy and geology.

Locality—The upper workings of the Magnet Silver Mine, Magnet.

3 Cloanthite.—(*Nickel diarsenide.*)

A greyish white isometric nickel ore, remarkable for readily altering or sweating on the surface, when specimens are in a moist atmosphere, to the hydrated arsenate, which on giving off its excess of hygroscopic moisture apparently becomes annabergite. It occurs in limited quantity with other nickel minerals in the lower levels of the Long Tunnel Mine, Rocky River.

4 Energite.—(*Copper sulpharsenate.*)

Occurs in limited quantity with other ores of copper. North Lyell Mine, Mt. Lyell.

5 Excherite.—(*Basic calcium aluminium and iron silicate.*)

This variety of epidote appears to be somewhat abundant on the margin of the Upper Emu River, opposite the north-west shoulder of Valentine's Peak. The crystals are at times quite half an inch in length, but are commonly broken and decomposed. Flakes of molybdenite sometimes occur disseminated in the masses of the substances.

6 GENTHITE.—(*Hydrous basic nickel and magnesium silicate.*)

Found sparingly on Pentlandite, near Trial Harbour.

7 GIBBSITE.—(*Aluminium hydrate.*)

Forms a thin seam on what is apparently the wall of a copper-bearing lode. Clarke and Sice's Copper Mine, Blythe River.

8 HELIOPHYLLITE.—(*Arsenate of lead with chlorine.*)

In small crusts lining druses with crystalline glimmering and wax-like surfaces. Comet Mine, Dundas.

9 HERCYNITE.—(*Iron aluminate.*)

Occurs as fairly large lumps in tin drift. It is amorphous, dull, of a bluish black colour and fine granular.

Analysis by Mr. J. D. Millen.

Fe_2	O_3	=	46·91
Cu	O	=	·005
Si	O	=	·0892
Ca	O	=	·086
Cr_2	O_3	=	·049
Al_2	O_3	=	41·69
			99·37

Sp. gravity, 3·765. Hardness, 3·9. Locality, Moorina. (J. Rundle.)

10 HYDROMANGANOCALCITE.—(*Hydrous carbonate of calcium and manganese.*)

Occurs as a soft pink substance which readily absorbs moisture, and is thus easily reduced to powder. Heazlewood Silver Mine, Whyte River.

11 IRON.—(*Lefroy meteorite.*)

A small meteoric siderite was obtained by a prospector in testing a dish of alluvial drift for

gold in 1904. Its weight is 3·328 grains. Specific gravity, 7·847. It has the characteristic pittings and crust of such objects, and is beyond doubt of meteoric origin. Locality, Lefroy.

12 Leucophanite.—(*Silicate of calcium sodium glaucina with fluorine.*)

It would appear that this mineral, which has been hitherto overlooked, is fairly abundant at or in the vicinity of the Shepherd and Murphy Tin-Bismuth Mine, Bell Mount, Middlesex. It is closely associated with pyrite, both copper and iron, in the examples which have come into my hands. It crystallises in the orthorhombic system, with a constant hemihedral habit, and twinning is an occasional feature. The crystals are, as a rule, well-developed in clusters on the margin of a spheroid amorphous mass of the substance. They commonly average a centimetre in length, and are consequently recognised with extreme ease. The general mass presents a fairly uniform colour of a somewhat peculiar shade of olive green, with a vitreous lustre and glimmering reflection. The crystals are usually of a rather darker shade. A pronounced character of this mineral is that when heated it becomes highly phosphorescent with a distinct bright light, in which respect it resembles chlorophane. It is about 4 in hardness, with a white streak. To the petrologist this is a find of unusual interest, as the mineral is considered peculiar to the elœolite-syenites of Southern Norway, the classic locality for this remarkable series of rocks; and this has hitherto appeared to be its only recorded association. The indentification thus tends to show a wider distribution in this island of igneous rocks related to the varied complex so pronounced at Port Cygnet, and which have been fully described from time to time in the proceedings of this Society.

13 Manganite.—(*Hydrous manganese sesquioxide.*)

In small bunches of well-formed crystals. Hampshire Silver Mine, Hampshire Hills

14 Minium.—(*Lead plumbate.*)

Obtained as small encrusting patches of the usual bright red colour in the superficial workings of the Long Tunnel Mine, Castray River.

15 Niccolite.—(*Nickel Arsenide.*)
This ore has been obtained in small quantity near Trial Harbour, West Coast.

16 Pilotite.—(*Hydrated silicate of aluminium and manganese.*)
An altered variety of actinolite, known as "rock cork." It occurs in felted fibrous masses of a pale grey to almost white, in considerable quantity east of the "Red Face" at the Mt. Bischoff Tin Mine, Mt. Bischoff.

17 Plinthite.—(*Hydrous aluminium silicate.*)
An amorphous clay-like substance of a brown colour, with conchoidal fracture. Near Falmouth, East Coast.

18 Pimelite.—(*Hydrated magnesium and nickel silicate.*)
As an incrustation attached to other nickel minerals. Near Trial Harbour, West Coast.

19 Proustite.—(*Silver sulpharsenite.*)
At the Oonah Mine, Zeehan, this mineral, which is commonly known as "ruby silver," has been obtained in bunches of minute perfectly-formed rhombohedral crystals of remarkably bright red colour. They are implanted on cavernous masses of pyrites, and are readily detected by the contrast of colour. Under the low power of the microscope they form most attractive objects, the crystals being extremely sharp and distinct. They rarely exceed two to three millimetres in length. Minute crystals have also been noticed at the Magnet Mine.

20 Pyrargyrite.—(*Silver sulphantimonite.*)
At the Magnet Silver Mine this mineral has recently been obtained in small but perfectly-formed characteristic rhombohedral crystals nestled in cavities in the lode gangue associated with galena and blende in the southern working of the mine. They are dull black in colour, due to tarnish, but readily give the bright red streak as well as the conchoidal fracture when broken. The mineral in its compact and investing forms is not by any means rare, but the crystals are extremely so; in fact they appear to be first detected in this state.

21 Pyrostilpinite.—(*Silver sulphantimonite.*)
A rare ore of silver (containing 59.44 per cent. of ag) known as "fire-blende." It crystallises in the monoclinic system and is sometimes tabular, but its common habit is in imperfectly terminated sheaves or irregular bunches—like stylbite—but of almost microscopic dimensions. It is of a hyacinth-red colour, but is generally tarnished to an almost black discolouration. When free from discolouration it has an adamantine lustre and decided red streak. In minute vughs it may be detected in association with nests of small quartz crystals. When coating cleavages in its extremely silicious gangue it soon arrests attention by its peculiar habit of occurrence in radiating and irregular bunches, by which feature it may be known from proustite, although both have the same bright colour. Before the blow-pipe it fuses easily, giving off white antimonial fumes, and with soda affords a bead of silver. It occurs in limited quantity, but quite enough to make an appreciable difference in the bulk silver assays. Locality, the Long Tunnel Mine, Heazlewood. Associated with this is another silver mineral of an orange yellow colour with yellow streak. It affects a frondose habit, and is found in exceedingly limited quantity as aggregates in the cleavages of the gangue. It may be xanthoconite (a silver sulpharsenate, crystallising in the rhombohedral system), but the quantity is too small to make reasonably certain of its exact identification.

22 Quartz.—(*Silicon dioxide.*)
Mr. D. A. Porter, of Tamworth, N.S.W., has recently drawn my attention to an interesting occurrence of this mineral in a specimen associated with freibergite. Many of the extremely minute crystals attached thereto are "left handed" and others "right handed," and many of these show besides the "W" and "Y" trapezoids the rhombic face "S." This habit has not been detected in larger crystals from the same locality. The Hercules Mine, Mt. Read.

23 Scorodite.—(*Hydrous ferric iron arsenate.*)
This mineral was obtained by Mr. W. R. Bell in clusters of beautifully formed orthorhombic

crystals of remarkably high lustre. They were of small size, pale green in colour, and almost translucent.

24 Siciliophite.—(*Silicified serpentine.*)
This peculiar altered substance is extremely variable in colour, and occasionally almost opalescent. Near the Long Tunnel Mine, Castray River.

25 Smectite.—(*Hydrous basic aluminium silicate.*)
Obtained in patches of extreme softness almost gelatinous, but soon becomes somewhat harder. It has a metallic, almost silvery sheen. It separates into folice of extreme tenuity. North Lyell Mine, Mt. Lyell.

26 Steargillite.—(*Hydrous basic aluminium silicate.*)
A pale yellow to almost white substance with strongly conchoidal fracture, and slightly opalescent and smooth surface. Derby.

27 Stephanite.—(*Silver sulphantimonite.*)
Brittle silver ore. It is black and dull in general appearance, with a black streak. Found in thin irregular patches, implanted on a silicious gangue with "fire blende." Long Tunnel Mine, Castray River.

28 Stibicolite.—(*Hydrous antimony dioxide.*)
In limited quantity as a pale yellow pulverulent mass. British Zeehan Silver Lead Mine, Zeehan.

29 Tourmaline.—(*Boron aluminium iron silicate.*)
The variety zeuxite, which is rich in iron and of an intensely dark green colour, occurs in remarkably large felted masses at the Castray River.

30 Wurtzite.—(*Hexagonal zinc sulphide.*)
A rare zinc mineral differing in crystallisation from sphalerite. It is hemimorphic in habit, and by that character it may be recognised when in crystals. Usually it occurs in columnar masses. Hercules Mine, Mt. Read, and Magnet Silver Mine, Magnet.