

## Mineralogical Chemistry.

**Composition of Silver Amalgam from Sala.** By HJALMAR SJÖGREN (*Zeit. Kryst. Min.*, 1902, 36, 192; from *Geol. För. Förh.*, 1900, 22, 187—190).—Two varieties of silver amalgam occur at Sala in Sweden, of which the following analyses by R. Mauzelius are given. I, Crystals the size of a pea or bean rich in faces are found in cavities filled with mercury. The mineral is of a brilliant silver-white colour; it is brittle and has a conchoidal fracture. II, Impure massive material filling crevices; this tarnishes yellow, has a hackly fracture, and is only slightly brittle:

	Ag.	Hg.	Cu.	Zn.	Fe.	S.	Insol. (silicate)	Total.	Sp. gr.	Formula.
I.	26.48	73.44	—	—	—	—	—	99.92	13.71	Ag <sub>2</sub> Hg <sub>3</sub>
II.	27.25	63.86	1.38	1.37	1.97	[3.21]	0.96	100.00	11.56	Ag <sub>5</sub> Hg <sub>6</sub>
										L. J. S.

**Ferghana Naphtha.** By K. CHARITSCHKOFF (*J. Russ. Phys. Chem. Soc.*, 1902, 34, 395—397).—The author has examined naphtha from Liakan in the Province of Ferghana. It yields about 23.8 per cent. of kerosine, 2.6 of paraffin, and practically no 'benzine'; the percentage of sulphur is 0.57.  
T. H. P.

**Discovery of Gold Tellurides in Western Australia.** By ARTHUR G. HOLROYD (*Trans. Australian Inst. Mining Eng.*, 1897, 4, 186—193).—The important discovery of tellurides of gold at Kalgoorlie in the East Coolgardie gold-field was announced by the author in *The Kalgoorlie Miner* of May 29th, 1896. The mineral species recognised are calaverite and sylvanite; native tellurium is also recorded. Analyses of the calaverite gave:

Au.	Ag.	Te.
44	traces	55
39.2	3	54

The gold set free by the oxidation of the tellurides is amorphous ("mustard-gold") or finely crystallised ("sponge-gold"). L. J. S.

[**Calaverite and Coloradoite from Western Australia.**] By EDWARD S. SIMPSON (*Ann. Prog. Rep. Geol. Survey, Western Australia* for 1897, 1898, 46—50).—Calaverite from several mines at Boulder [Kalgoorlie] is massive and has a pale brass-yellow colour. Some specimens are described as having a perfect cleavage in one direction [these are probably sylvanite.—L. J. S.], whilst others have an uneven to sub-conchoidal fracture. Analyses (II by G. J. Rogers) gave results agreeing with the formula AuTe<sub>2</sub>. Other specimens contained 41.28 and 37.10 per cent. of gold:

	Te.	Au.	Ag.	S.	Cu.	Fe.	Pb, Bi, Zn.	Total.	Sp. gr.
I.	57.27	41.37	0.58	—	—	—	—	99.22	9.311
II.	59.69	38.70	1.66	0.09	0.21	0.18	traces	100.53	—

The telluride of mercury, coloradoite, is recorded from this locality.

It is massive with a conchoidal fracture, dark lead-grey colour and brilliant metallic lustre; sp. gr. 9·21. It is associated with free gold, cinnabar, calaverite and small rhombic crystals of another telluride of gold, perhaps krennerite. L. J. S.

[Coloradoite from Western Australia.] By EDWARD S. SIMPSON (*Ann. Prog. Rep. Geol. Survey, Western Australia* for 1898, 1899, 57—59).—Analysis of material from Boulder similar to that before described (compare preceding abstract) gave:

Hg.	Ag.	Au.	Te.	Total.
50·40	0·12	trace	[49·48]	100·00

From these results, the formula  $\text{Hg}_2\text{Te}_3$  is deduced. The formula at present accepted for this mineral, namely,  $\text{HgTe}$ , is based on Genth's analyses of material from Colorado which showed 2·9—46·8 per cent. of impurities; it is pointed out that the mean of these analyses agrees better with the new formula than with the old. L. J. S.

Zincite from Poland. By J. A. ANTIPOFF (*Zeit. Kryst. Min.*, 1902, 36, 176; from *Verh. k. russ. min. Ges.*, 1900, 38, prot. 41—42).—A mineral, thought to be calamine, from the Olkuschsk mine is shown by the following analysis and the crystalline form to be zincite, a mineral now recognised for the first time as occurring in Russia:

ZnO.	PbO.	CO <sub>2</sub> .	Fe <sub>2</sub> O <sub>3</sub> .	Insol.	Organic matter.	Total.
91·47	5·26	2·85	0·11	0·12	trace	99·81.

This corresponds with ZnO, 88·25;  $\text{PbCO}_3$ , 6·41;  $\text{ZnCO}_3$ , 5·03 per cent. L. J. S.

A Uranium Mineral Resembling Voglite. By J. A. ANTIPOFF (*Zeit. Kryst. Min.*, 1902, 36, 175; from *Verh. K. russ. min. Ges.*, 1900, 38, prot. 38—41).—The mineral is found as fine scales on, and embedded in, calcite at the Utsch-Kirtan pass, 120 kilometres from Margelan in Gov. Ferghana. It appears to be isotropic; sp. gr. 3·35. Analysis of isolated scales gave the results under I; neglecting iron and calcium, this gives the formula  $(\text{CO}_3)_2(\text{UO}_2)\text{Cu}, 10\text{H}_2\text{O}$ , near to that of the Bohemian voglite. Analysis of the calcite with the enclosed mineral gave II; here the ratio of  $\text{U}_2\text{O}_3$ :CuO is different from that in analysis I:

	H <sub>2</sub> O.	CO <sub>2</sub> .	U <sub>2</sub> O <sub>3</sub> .	Fe <sub>2</sub> O <sub>3</sub> .	CuO.	CaO.	P <sub>2</sub> O <sub>5</sub> .	SiO <sub>2</sub> .	Total.
I.	42·13	10·88	35·45	1·12	9·71	1·35	trace	—	100·64
II.	4·83	32·35	11·72	4·22	3·41	40·12	0·54	3·18	100·37
III.	—	—	78·25	12·09	8·41	—	—	—	98·75

When the mineral is treated with hydrochloric acid, small, yellowish-green scales remain; this insoluble residue has the composition given under III, corresponding with the formula  $\text{U}_2\text{O}_3, \text{CuO}$ . Such a compound has not before been observed in nature, but has been prepared by Debray. L. J. S.

Separation of Glauber Salt [Mirabilite] in the Kara-bugas. By NICOLAI S. KURNAKOFF (*Zeit. Kryst. Min.*, 1902, 36, 174—175; from *Verh. K. russ. min. Ges.*, 1900, 38, prot. 26—27. Compare Abstr.,

1899, ii, 303).—The solubility relations of glauber salt ( $\text{Na}_2\text{SO}_4 \cdot 10\text{H}_2\text{O}$ ) are as follows. In pure water, 5.02 per cent. at  $0^\circ$  and 16.8 per cent. at  $17.9^\circ$ ; in water containing 10 parts of sodium chloride, 4 per cent. at  $0^\circ$  and 14 per cent. at  $17.9^\circ$ . A saturated solution of sodium chloride and glauber salt contains:

	$\text{Na}_2\text{SO}_4$ .	$\text{NaCl}$ .
At $0^\circ$ .....	1.77	32.85 per cent.
„ $17.9^\circ$ .....	11.10	33.22 „

Analysis of the water of the Kara-bugas Gulf of the Caspian Sea gave:

$\text{NaCl}$ .	$\text{Na}_2\text{SO}_4$ .	$\text{MgCl}_2$ .	$\text{CaSO}_4$ .
10.55	4.80	5.30	0.45

On comparing these results with the solubilities given above, it will be seen that in summer, when the mean temperature is  $18$ – $20^\circ$ , the water is not saturated with salts, but that in winter (mean temp.  $3$ – $5^\circ$ ) glauber salt will separate. At no time of the year is the water saturated with sodium chloride, so that the glauber salt separates out alone.

L. J. S.

**Scheelite from Maderanerthal, Switzerland.** By CARL SCHMIDT (*Zeit. Kryst. Min.*, 1902, 36, 160–161).—The second crystal of scheelite that has been found in the Maderanerthal is described. It is an isolated, colourless, and transparent crystal measuring 3.5 cm. in length. The angle  $(111) : (11\bar{1})$  is  $49^\circ 27'$ . Analysis by Hinden gave:

$\text{CaO}$ .	$\text{MoO}_3$ .	$\text{WO}_3$ .	Total.
19.45	0.49	79.53	99.47

No connection can be traced between the small variations in the angles of scheelite and the amount of molybdenum present.

L. J. S.

**Hydrated Aluminium Silicates.** By KONSTANTIN D. GLINKA (*Zeit. Kryst. Min.*, 1902, 36, 188–189; from *Verh. russ. min. Ges.*, 1900, 37, 311–332. Compare Abstr., 1900, ii, 89).—The precipitate obtained when halloysite or kaolin is treated with potassium hydroxide and the solution neutralised with hydrochloric acid has the composition  $\text{K}_2\text{Al}_2\text{Si}_2\text{O}_8 \cdot 2\frac{1}{2}\text{H}_2\text{O}$ . A precipitate having the same composition is also obtained when gibbsite is treated with potassium hydroxide, mixed with a solution of silica in potassium hydroxide, and the mixture acidified.

L. J. S.

**Analcite in Liassic Clay from Lebre.** By JOHANNES FROMME (*Jahresber. Ver. Naturwiss. Braunschweig*, 1902, 13, 5 pp.).—Small crystals of analcite with the forms  $n\{211\}$  and  $a\{100\}$  occur, together with blende, marcasite, dolomite, calcite, barytes and gypsum, in geodes in Liassic clay at Lebre, near Brunswick. The minerals have been formed in the order just named, and the sulphates have been derived by the oxidation of the sulphides. Analysis I is of crystals of analcite isolated from the carbonates by the action of a 10 per cent. solution of hydrochloric acid; by the action of the acid, the crystals have been decomposed on the surface and coated with a film of silica, and this partly explains the excess of silica shown in the analysis.

Other crystals not treated in this manner gave the partial results under II; the excess of silica is here due to quartz grains enclosed in the crystals, which remain as a gritty residue when the crystals are decomposed by a 38 per cent. solution of hydrochloric acid.

	SiO <sub>2</sub> .	Al <sub>2</sub> O <sub>3</sub> .	Fe <sub>2</sub> O <sub>3</sub> .	CaO.	MgO.	K <sub>2</sub> O.	Na <sub>2</sub> O.	H <sub>2</sub> O.	Total.
I.	58.59	20.61	0.48	0.40	0.04	0.98	11.02	8.26	100.38
II.	57.20	21.71	—	—	—	—	—	—	—
III.	54.35	21.92	0.57	1.42	—	0.28	12.54	9.17	100.25

Analysis III (by Ohlmer) is of analcite from Frombach. L. J. S.

**Ilvaite from Siorarsuit, Greenland.** By O. B. BÖGGILD (*Meddelelser om Grønland*, 1902, 25, 43—89).—A crystallographic description, illustrated with thirty-two figures, is given of the brilliant black crystals of ilvaite which occur somewhat abundantly in augite-syenite, sodalite-syenite, and foyaite at Siorarsuit, near Julianehaab, in South Greenland. The natural and artificially produced etch-figures conform with orthorhombic symmetry. The strong pleochroism may even be observed in the light reflected from the surface of the crystals. Sp. gr. 4.0065. Analysis by C. Christensen gave the following results, agreeing with the usual formula,  $\text{HCaFe}''_2\text{Fe}'''\text{Si}_2\text{O}_9$ .

SiO <sub>2</sub> .	Fe <sub>2</sub> O <sub>3</sub> .	FeO.	MnO.	CaO.	H <sub>2</sub> O.	Total.
29.62	19.48	33.28	2.20	14.38	2.24	101.20

The following table compares the variation in the axial ratios with the amount of manganese present:

	MnO per cent.	$a:b:c$ .
Elba .....	0.74—1.55	0.6665:1:0.4427
Kangerdluarsuk.....	1.97	0.6744:1:0.4484
Siorarsuit .....	2.20	0.6766:1:0.4449
Herbornseelbach .....	6.78—8.68	0.6795:1:0.4576

L. J. S.

**Brunsvigite, a new Leptochlorite from the Radauthal.** By JOHANNES FROMME (*Tsch. Min. Mitth.*, 1902, 21, 171—177).—A chloritic mineral of wide distribution in the gabbro of the Radauthal, Harz, is described under the new name *brunsvigite*. It occurs as cryptocrystalline and fine scaly masses in veins of quartz, calcite and various mineral sulphides, in which it fills crevices or forms small, radially fibrous aggregates. It is green to dark leek-green, and optically uniaxial and negative; the hexagonal scales have a perfect cleavage parallel to the basal plane. Sp. gr. = 3.01. The following analysis gives the formula  $6\text{SiO}_2, 2\text{Al}_2\text{O}_3, 6\text{FeO}, 3\text{MgO}, 8\text{H}_2\text{O}$ , which is written, in accordance with Tschermak's theory of the chlorites, as  $\text{Sp}_5\text{At}_3\text{At}'_2$ , or  $5(\text{Si}_2\text{Mg}_3\text{H}_4\text{O}_9), 3(\text{SiAl}_2\text{Mg}_2\text{H}_4\text{O}_9), 2(\text{SiAl}_2\text{MgH}_4\text{O}_8)$ . The mineral is most closely related to metachlorite, which it closely resembles in appearance and sp. gr.

SiO <sub>2</sub> .	Al <sub>2</sub> O <sub>3</sub> .	Fe <sub>2</sub> O <sub>3</sub> .	FeO.	MnO.	CaO.	MgO.	H <sub>2</sub> O.	Moisture.	Total.
27.88	15.81	1.77	31.92	0.51	0.20	9.52	11.97	0.15	99.73

L. J. S.

**Composition of Water in Salt-lakes in the Crimea.** By NICOLAI S. KURNAKOFF (*Zeit. Kryst. Min.*, 1902, 36, 174; from *Verh. K. russ. min. Ges.*, 1900, 38, prot. 24—26).—The author has previously shown that the ratio of  $\text{MgSO}_4 : \text{MgCl}_2$  in the waters of many marine salt-lakes in the Crimea is always 0·5—0·7. In salt-lakes which receive part of their water from continental areas, this ratio is less, and in typical continental salt-lakes it is very nearly zero. Analyses of the water of different salt-lakes of the Perekop group gave the percentages under I—III. Water (anal. IV) from the Genitschesk salt-lake, which is situated near the sea, is also of the same character, and is therefore largely collected from a continental area :

	$\text{CaSO}_4$ .	$\text{CaCl}_2$ .	$\text{MgSO}_4$ .	$\text{MgCl}_2$ .	$\text{NaCl}$ .	$\text{MgSO}_4 : \text{MgCl}_2$ .
I.	0·05	1·98	—	18·27	8·01 per cent.	0
II.	0·05	—	1·95	7·33	24·33 „	0·266
III.	0·13	1·39	—	10·26	12·80 „	0
IV.	0·05	—	3·21	9·21	14·34 „	0·349

L. J. S.

**Volcanic Dust which fell on Barbados after the St. Vincent Eruption.** By JOHN SMITH FLETT (*Abstr. Proc. Geol. Soc.*, 1902, 117).—The dust which fell on Barbados on May 7th, 1902, after the volcanic eruption at St. Vincent, is a fine, grey, gritty powder, all of which passes through a sieve with 30 meshes to the inch. It contains plagioclase-felspar (generally idiomorphic labradorite) coated with a thin film of glass, hypersthene, brownish monoclinic augite, both frequently in perfect crystals, magnetite, apatite, possibly zircon, and fragments of a brown glass. Analysis by W. Pollard gave :

$\text{SiO}_2$ .	$\text{TiO}_2$ .	$\text{Al}_2\text{O}_3$ .	$\text{Fe}_2\text{O}_3$ .	$\text{FeO}$ .	$\text{MnO}$ .	$(\text{CoNi})\text{O}$ .	$\text{CaO}$ .
52·81	0·95	18·79	3·28	4·58	0·28	0·07	9·58
$\text{MgO}$ .	$\text{K}_2\text{O}$ .	$\text{Na}_2\text{O}$ .	$\text{P}_2\text{O}_5$ .	$\text{SO}_3$ .	$\text{Cl}$ .	$\text{H}_2\text{O}$ .	Total.
5·19	0·60	3·23	0·15	0·33	0·14	0·37	100·35

L. J. S.