

Mineralogical Chemistry.

Roumanian Petroleums. By ALFONS O. SALIGNY (*Chem. Centr.*, 1900, 60; from *Bul. Roumanie*, 8, 351–365).—In the original paper, the physical and chemical properties of 12 kinds of Roumanian

petroleum are described and tabulated. The flash points of the various fractions are given, and their suitability for use as burning oils is also discussed. These petroleum contain very variable amounts of volatile oils, and ethylisobutane and isopropane were found in the fractions boiling below 70°. E. W. W.

Melonite from South Australia. By ALFRED J. HIGGIN (*Trans. Roy. Soc. South Australia*, 1899, 23, 211—212).—This mineral, previously only known from California, has now been found with quartz and calcite at Worturpa, South Australia. The thin lamellæ have a brilliant metallic lustre; the cleavage planes are silver-white to reddish-brown. $H = 1.5$; sp. gr., 7.6. Analyses I and II agree with the formula Ni_2Te_3 (compare this vol., ii, 22).

	Te.	Ni.	Au.	Insol.	Total.
I.	74.49	22.99	0.329	2.091	99.90
II.	71.500	21.274	0.018	7.319	100.11

Traces of bismuth and lead are present. On dissolving the mineral in nitric acid, the gold is left as bright spangles. L. J. S.

Titaniferous Magnetites. By JAMES F. KEMP (*School of Mines Quart.*, 1899, 20, 323—356; 21, 56—65).—Titaniferous magnetites, with the exception of the occurrences in sands, are almost invariably found associated with rocks of the gabbro type, and have originated by a process of segregation from the magma. The mineral, as a rule, contains vanadium, chromium, nickel and cobalt, which together may amount to several per cent. (compare *Abstr.*, 1899, ii, 109). Phosphorus and sulphur are low, or entirely absent. A description is given of the occurrence of titaniferous magnetites in each country of the world. Numerous references and analyses are quoted. Although abundant in certain regions, the mineral is not at present worked as an ore. L. J. S.

Manganese Nodules from New South Wales. By WILLIAM M. DOHERTY (*Rept. Australian Assoc. Adv. Sci.*, 1898, 7, 339).—In the scrub-land near Onybygambah, on the Tweed river, are scattered about numerous spherical nodules which are dark and shining, with the appearance of seeds, or dull black; they are soft, and of the size of a pea to that of a Barcelona nut. Analyses gave:

MnO_2 .	Fe_2O_3, Al_2O_3 .	$MgCO_3$.	Organic Matter.	Gangue.
24.70	11.20	2.00	12.00	49.60
25.00	8.70	2.60	12.80	50.20
40.60	14.00	3.10	10.00	32.10

L. J. S.

Egyptian Soda Valleys. By G. SCHWEINFURTH and L. LEWIN (*Jahrb. Min.*, 1900, i, 236—237; from *Zeit. Ges. Erdkunde*, 1898, 33, 1—25).—The following analyses of the natural soda, as exported, are given. I. Dirty white nodular concretions. II and III. "Natrûn Sultani," which separates out on the floor of the lakes. IV. Hopper-shaped crystals of salt on the surface of the lakes.

	I.	II.	III.	IV.	V.
$\text{Na}_2\text{CO}_3 + \text{NaHCO}_3$...	85·86	80·56	87·98	0·212	66·80
NaCl	7·00	10·40	4·00	98·00	18·44
Na_2SO_4	1·20	3·72	0·59	0·506	11·40

Analysis V is of material found in a tomb near Thebes, dating from 1500—1600 B.C. The lakes are probably supplied by Nile water, and it is suggested that the soda is formed by the interaction of calcium hydrogen carbonate and sodium sulphate, the latter being derived by the interaction of sodium chloride and gypsum. L. J. S.

Formation of Oceanic Salt Deposits, particularly of the Stassfurt Beds. XV. Formation of Glauberite at 25°. By JACOBUS H. VAN'T HOFF and D. CHIARAVIGLIO (*Chem. Centr.*, 1900, i, 59—60; from *Sitzungsber. Akad. Wiss. Berlin*, 1899, 810—818. Compare this vol., ii, 76).—At Leopoldshall, glauberite is found in isolated masses in the older rock salt 30 metres below the potassium chloride stratum, and under the kieserite region. The mineral also occurs in the upper layers of the kainite zone, and single crystals are found in the lower portions of the kieserite bed. When a solution of calcium chloride is mixed with a solution of sodium sulphate, and the mixture stirred and evaporated at 100°, the separation of gypsum is followed by the formation of needles of the compound, $\text{Na}_2\text{Ca}(\text{SO}_4)_2 + 2\text{H}_2\text{O}$, which are then, however, rapidly replaced by rhombohedra of glauberite, the latter change being complete when the liquid has been concentrated. The mother liquor was removed by means of alcohol. Calculations from experimental data and graphical representation of results show that glauberite is formed, together with the following minerals, at 25°: rock salt, epsomite, $\text{MgSO}_4 + 7\text{H}_2\text{O}$; picromerite, $\text{MgK}_2(\text{SO}_4)_2 + 6\text{H}_2\text{O}$; blödite, $\text{MgK}_2(\text{SO}_4)_2 + 4\text{H}_2\text{O}$; thenardite, Na_2SO_4 ; and aphthitalite, $\text{K}_3\text{Na}(\text{SO}_4)_2$, and also that glauberite is not formed when sea water is evaporated at 25°. When crystals of glauberite are left in contact with sea water which is beginning to deposit sodium chloride or magnesium sulphate at 25°, they gradually disappear and gypsum is formed. E. W. W.

Formation of Oceanic Salt Deposits, particularly of the Stassfurt Beds. XVI. Hydrate of Magnesium Potassium Sulphate, $\text{Mg}_4\text{K}_2(\text{SO}_4)_5 + 5\text{H}_2\text{O}$. By JACOBUS H. VAN'T HOFF and N. KASSATKIN (*Chem. Centr.*, 1900, i, 368; from *Sitzungsber. Akad. Wiss. Berlin*, 52, 951—953).—In order to ascertain the conditions of the formation of langbeinite, $\text{Mg}_2\text{K}_2(\text{SO}_4)_3$, obtained by removing water from a mixture of magnesium and potassium sulphates, the progress of dehydration of a system, $\text{MgSO}_4 \cdot 6\text{H}_2\text{O} + \text{MgK}_2(\text{SO}_4)_2 \cdot 4\text{H}_2\text{O}$, prepared by concentrating at 47·2° was followed. A hydrate of magnesium potassium sulphate, $\text{Mg}_4\text{K}_2(\text{SO}_4)_5 + 5\text{H}_2\text{O}$, was formed; it is a double salt of the hydrate, $\text{MgSO}_4 + \frac{5}{4}\text{H}_2\text{O}$ (*Abstr.*, 1899, ii, 759). It is also formed when a mixture of hexahydrated magnesium sulphate and leonite are heated at 72·5°. Its formation is easily recognised by means of the dilatometer or the thermometer, and depends on the mutual action of the salts, for solutions of these salts, when heated alone, do not show any such change. When a solution containing

magnesium sulphate (4 mols.) and potassium sulphate (1 mol.) is evaporated, leonite first separates, then the new compound in well formed needles, and finally the leonite disappears and the whole mass solidifies.

E. W. W.

Formation of Oceanic Salt Deposits, particularly of the Stassfurt Beds. XVII. A Relationship between the Composition of Solutions of Sodium Chloride and Potassium Chloride saturated at 25°. By HAROLD A. WILSON (*Chem. Centr.*, 1900, i, 368—369; from *Sitzungsber. Akad. Wiss. Berlin*, 52, 954—955).—In the diagram representing the relations of solubilities in the case of saturation with potassium chloride in presence of chlorides and sulphates of magnesium and potassium (*Sitzungsber. Akad. Wiss. Berlin*, 1898, 820), it is seen that, in the plane which indicates saturation with sodium chloride and potassium chloride, the data have a very simple relationship. If the composition is expressed in molecules of Na_2Cl_2 (*a*), K_2Cl_2 (*b*), MgCl_2 (*c*) and MgSO_4 (*d*) per 1000 molecules of water, then $b + c/5$ is a constant, that is, by the entry of each double molecule of potassium chloride, 1/5th of a molecule of magnesium chloride is expelled.

The following data are quoted :

	Saturation with		
	K_2Cl_2 .	MgCl_2 .	$\text{K}_2\text{Cl}_2 + \frac{\text{MgCl}_2}{5}$.
NaCl and KCl.....	19·5	0	19·5
NaCl, KCl and aphythalite	20	0	20
NaCl, KCl and carnallite	5·5	70·5	19·6
„ „ glaserite and picromerite.....	16	18·5	19·7
„ „ picromerite and leonite	14·5	25·5	19·6
„ „ leonite and $\text{MgSO}_4 + 6\text{H}_2\text{O}$	13	30·5	19·1
„ „ $\text{MgSO}_4 + 6\text{H}_2\text{O}$ and $\text{MgSO}_4 + 5\text{H}_2\text{O}$	6·5	63	19·1
„ „ $\text{MgSO}_4 + 5\text{H}_2\text{O}$ and carnallite:.....	6	68	19·6
„ „ and $\text{MgSO}_4 + 6\text{H}_2\text{O}$	7·8	55·8	19
„ „ picromerite and $\text{MgSO}_4 + 6\text{H}_2\text{O}$...	9·5	42·5	18
„ „ in 20 per cent. MgCl_2	9·5	47·5	19

E. W. W.

Constitution and Classification of Silicates. By VASILE C. BUTUREANU (*Jahrb. Min.*, 1900, i, Ref. 184—186; from *Bul. Soc. Sci. Fis. Bucuresci*, 1896, 60—73, 129—139, 254—279).—The following is the classification given :

I. Neutral silicates.

a. Orthosilicates. General formula, $(\text{SiO}_4)_n(\text{M}'_4)_n$.

(1). Simple.

(2). Condensed.

b. Metasilicates. General formula, $(\text{SiO}_3)_n(\text{M}'_2)_n$.

(1). Simple.

(2). Condensed.

c. Polysilicates. Derived from meta- or ortho-silicic acid: general formulæ $\text{Si}_n\text{O}_{3n+1}\text{M}'_{2n+2}$, $\text{Si}_n\text{O}_{3n}\text{M}'_{2n}$, $\text{Si}_n\text{O}_{3n-1}\text{M}'_{2n-2}$, &c.

II. Basic silicates.

III. Acid silicates.

IV. Silicates with water of crystallisation.

V. Mixed silicates ; for example, borosilicates, titanosilicates, &c.

Structural formulæ for each mineral species are given in the original.

L. J. S.

Augite from Yoneyama, Japan. By C. IWASAKI (*Zeit. Kryst. Min.*, 1900, 32, 302 ; from ? [separate copy, 5 pp.]).—Augite crystals, up to 1 cm. across, occur in a weathered olivine-augite-andesite at Yoneyama, Prov. Echigo. A short, crystallographic description is given ; sp. gr. 3·42. Analysis by Yoshida gave :

SiO ₂ .	Fe ₂ O ₃ .	Al ₂ O ₃ .	FeO.	CaO.	MgO.	K ₂ O.	Na ₂ O.	Total.
53·56	2·75	0·26	8·69	30·16	1·70	0·21	2·64	99·97.

L. J. S.

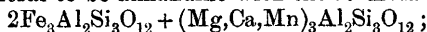
Westanite, Pyrophyllite and Kaolinite from Westana, Sweden. By MATS WEIBULL (*Jahrb. Min.*, 1900, i, Ref., 197—198 ; from *Geol. För. Förh.*, 1898, 20, 57—66).—A microscopical examination of Blomstrand's westanite shows it to consist of pyrophyllite derived by the alteration of andalusite. Pyrophyllite also occurs at Westana as colourless to yellow, six-sided crystals embedded in kaolinite. The optical properties of these crystals are given ; sp. gr. 2·768. At about 600°, the material loses 5·11 per cent. of water, and none is lost below this temperature. The alteration of andalusite to pyrophyllite is expressed by the equation, $(AlO)_2SiO_3 + 3H_2SiO_3 = 2(AlH)(SiO_3)_2 + 2H_2O$.

The granular kaolinite, in which the pyrophyllite is embedded, gave the following results on analysis, agreeing with the usual formula $H_4Al_2Si_2O_9$,

SiO ₂ .	Al ₂ O ₃ .	MgO.	K ₂ O, Na ₂ O.	H ₂ O.	Total.	Sp. gr.
45·41	40·59	0·07	traces	13·90	99·97	2·598

L. J. S.

[Minerals in] the Pegmatites of the Upper Veltlin. By GOTTLÖB ED. LINCK (*Jenaische Zeit. Naturwiss.*, 1899, 33, 345—360).—The crystalline schists between Sondalo and Bormio are penetrated by pegmatite masses containing quartz, plagioclase, muscovite, biotite and garnet with apatite, tourmaline, dumortierite, chrysoberyl, prehnite, zoisite, epidote and chlorite ; descriptions are given of each of these minerals, and analyses of the following. Plagioclase is white and cloudy : I, from Val Lenasco, corresponds with $Ab_{31}An_5$; II, from Val Donbastone, with $Ab_{13}An_3$; optical determinations are also given. Garnet occurs as light coffee-brown crystals of the form $n\{211\}$; analysis by W. Schimpff of material from Val Donbastone gave III, showing the mineral to be almandine with the formula



the slight excess of silica and alumina is due to alteration. Dumortierite occurs at Val Donbastone as columnar crystals 5 cm. in length ; it is pistachio-green or rarely bluish-green, and resembles epidote in appearance. The prism angle is 110°54', and there is a prismatic

cleavage. $H=7$. It is strongly pleochroic; optical determinations are given. Analysis by W. Schimpff gave IV; boron is also present.

	SiO ₂	Al ₂ O ₃	FeO	MnO	CaO	MgO	Na ₂ O	Loss on ignition	Total	Sp. gr.
I.	65·39	21·36	—	—	2·64	—	[10·61]	—	100	2·616—2·617
II.	64·12	22·48	—	—	4·23	—	[9·17]	—	100	2·623—2·625
III.	36·98	24·58	29·68	1·14	0·35	7·78	—	—	100·51	4·010
IV.	36·81	57·27	—	—	1·66	1·38	—	1·31	98·45	3·22

L. J. S.

Ransätite. By MATS WEIBULL (*Jahrb. Min.*, 1900, i, Ref., 187; from *Geol. För. Förh.*, 1898, 20, 53).—A re-examination of the supposed new mineral ransätite (Abstr., 1897, ii, 268) shows it to be an impure manganese garnet enclosing quartz, pyrophyllite, chloritoid, kyanite and ore particles (hæmatite?).

L. J. S.

Tourmaline from Elba. By E. MANASSE (*Jahrb. Min.*, 1900, i, Ref., 192; from *Proc. Verb. Soc. Toscana Sci. Nat.*, 1898, 11, 104—107).—A finely crystalline, light ash-grey substance in a tourmaline-bearing granite from the Grotto d'Oggi, Elba, was found, on microscopical examination and chemical analysis, to be tourmaline. In the analysis, the loss on ignition represents water and silicon fluoride.

SiO ₂	Al ₂ O ₃	FeO(MnO)	B ₂ O ₃	CaO	MgO	Na ₂ O	K ₂ O	Loss on ignition	Total
38·30	37·54	12·20	7·47	trace	0·47	1·42	0·32	3·72	101·44

L. J. S.

Kieselguhr from County Antrim. By JAMES HOLMS POLLOK (*Sci. Proc. R. Dublin Soc.*, 1899, 9, N.S., 33—36).—Deposits of kieselguhr, resting on peat and covered only by vegetation, occur on both banks of the Lower Bann from Toome Bridge, where the river emerges from Lough Neagh, right down to Coleraine at the mouth. At Toome Bridge, the deposit is 4 feet thick. After cutting and drying in the sun, the material is pure white, porous and very light (sp. gr. of the mass, 0·5422). The material is probably now being deposited when the river overflows its banks, the diatoms, which are mostly cubical in shape, being brought down from Lough Neagh. Analyses gave:

	Soluble		Al ₂ O ₃	Fe ₂ O ₃	CaO	MgO	Alka- lis.	Organic matter, comb. Mois- ture.		Total
	SiO ₂	SiO ₂						water.	ture.	
I.	70·9	—	9·8	5·4	1·5	0·1	—	12·0	—	99·7
II.	57·12	15·89	8·55	2·09	1·14	0·83	0·28	7·71	6·39	100·00

L. J. S.

Illinois Gulch Meteorite. By H. L. PRESTON (*Amer. J. Sci.*, 1900, [iv], 9, 201—202).—This iron was found in 1899, 4 feet below the surface, in Illinois Gulch, Deer Lodge County, Montana. It weighs about 2435 grams, and measures 63 × 104 × 105 cm. No distinct figures are brought out by etching. A little troilite and

possibly some rhabdite are present. Analysis by Mariner and Hoskins gave:

Fe.	Ni.	Co.	Si.	P.	C.	Total.
92·51	6·70	0·16	trace	0·62	0·01	100·00
L. J. S.						

Composition and Properties of the Mineral Waters of Australasia. By ARCHIBALD LIVERSIDGE, WILLIAM SKEY, and G. GREY (*Rept. Australian Assoc. Adv. Sci.*, 1898, 7, 87—108).—A collection of all the available analyses that have been made.

L. J. S.
