

Analyses of various Mineral Substances.

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[Read June 28th, 1888.]

Diatomite from Mull.

THE samples analysed came from the bottom of a small loch. No. 1 was of a yellow-gray colour, even in texture, and readily broken down between the fingers.

No. 2 was distinctly red, and marked with dark spots. It broke down readily, and was more dense than No. 1.

No. 3 sample was red in colour, with dark brown and red particles throughout the mass.

The analyses of the samples as received gave:—

	No. 1.	No. 2.	No. 3.
Moisture	2·421	3·114	3·021
Organic Matter	5·074	6·155	6·368
Ferric Oxide	11·809	38·057	26·836
Calcic Oxide	1·188	1·301	0·531
Soluble Silica	0·489	1·078	0·829
Insoluble Silica	78·085	49·291	61·998
Carbonic Anhydride, &c.	0·934	1·004	0·487
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	100·000	100·000	100·070

The insoluble silica was found to be, when examined under the microscope, a mixture of sand and diatoms. On separation the following figures were obtained:—

Percentage on substances as received:—

Diatoms	75·254	46·579	55·887
Sand	2·831	2·712	6·111
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	78·085	49·291	61·998

When calculated, free from moisture and organic matter, the results become:—

	No. 1.	No. 2.	No. 3.
Ferric Oxide	12·954	42·929	30·029
Calcic Oxide	1·304	1·467	0·594
Diatoms	82·622	52·543	62·426
Sand	3·108	3·059	6·927
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	99·988	99·998	99·976

Specific gravity (Water, 1000) ...	1879	1448	1889
Weight of 1 cubic foot ...	85·98 lbs.	90·24 lbs.	86·56 lbs.
Cubic feet of Material to 1 ton ...	26·06 c. ft.	24·82 c. ft.	25·85 c. ft.

These results show that this deposit is much less pure than those at Loch Kinnord, in Aberdeenshire,¹ Skye,² Gress in Lewis,³ &c.

Elaterite.

No. 1 Sample was obtained from Derbyshire, and is the usual elastic body.

No. 2 Sample was also from Derbyshire.

No. 3 Sample is a mineral pitch obtained by Mr. Morrison from the Strathpeffer shales near Dingwall. It is more like a pitch and less elastic than the Derbyshire specimens:—

	No. 1.	No. 2.	No. 3.
Carbon	83·624	82·798	81·186
Hydrogen	11·186	11·925	13·372
Oxygen, &c.	4·781	4·916	4·453
Nitrogen	0·172	0·115	0·127
Sulphur	0·237	0·246	0·862
	100·000	100·000	100·000

Bornite and Malachite from Kishorn.

These samples were forwarded to me by Mr. Wm. Morrison, of Dingwall, and were obtained by him from the limestone rocks at Kishorn, Loch Carrow, Ross-shire. The ores were formerly worked for copper, and the mines were quite recently explored by parties in view of working.

Malachite.

Cupric Oxide	71·86 per cent.
Carbonic Anhydride	18·27 „
Water	9·86 „

Bornite.

Copper	60·02 per cent.
Iron	16·08 „
Sulphur	23·86 „

Galena and Sphalerite from Tyndrum, Perthshire.

The Galena was worked many years ago for smelting into lead. The analysis gave:—

Metallic Lead	82·56 per cent
Silver	0·15 „

¹ *Min. Mag.* Vol. VI., p. 87.

² *Min. Mag.* Vol. VII., p. 35.

³ *Min. Mag.* Vol. VI., p. 87.

It is therefore rich in silver.

The *Sphalerite* gave :—

Zinc	...	...	...	61·86	per cent.
Sulphur	...	...	...	32·15	„
Gangue	...	...	...	5·99	„
				100·00	

Fichtelite.

No. 1 Sample was obtained under the bark of semi-fossil pine logs in a moss near Handforth, Cheshire, and was given me by J. Plant, Esq., of Salford Royal Museum.

No. 2 Sample was found in a peat moss in Shielding, Ross-shire. The whole of this district was at one time covered with pine forest.

		No. 1.	No. 2.
Carbon	...	86·782	87·143
Hydrogen	...	12·175	12·082
Oxygen, &c.	...	1·043	0·775
		100·000	100·000

The general characters are similar to those given in Dana's Mineralogy.