



VIII. On some newly discovered Siberian minerals

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To cite this article: A. Lévy Esq. M.A. F.G.S. (1827) VIII. On some newly discovered Siberian minerals , Philosophical Magazine Series 2, 1:1, 26-28, DOI: [10.1080/14786442708674200](https://doi.org/10.1080/14786442708674200)

To link to this article: <http://dx.doi.org/10.1080/14786442708674200>



Published online: 10 Jul 2009.



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cuit of metal; the former was completely exploded, but the latter substance was scattered only. When the water tube formed a part of the circuit, every other part arranged as before, the gunpowder ignited, but the gold leaf was undisturbed by the discharge of the jars.

Similar experiments were made with gunpowder and needles, gunpowder and æther, gunpowder and tow, prepared as above. When the circuit was completely metallic, the needles were magnetized, or the æther, the tow, &c. were fired: but the gunpowder was in no instance ignited. When the water tube formed a part of the circuit, the gunpowder was, in every case, ignited; but the other substances remained unaffected.

Hence we may conclude, that in order to magnetize pieces of steel, to explode metals, to ignite æther, or tow, with resin, &c. by electricity; *quantity* and *velocity*, or *momentum* of the fluid is required. But to ignite gunpowder, *quantity* and *time* are indispensable. That is, when the quantity is constant: to produce the former effects requires *velocity*, to produce the latter effect, *time*.

I remain Sir,

Your obedient servant,

Artillery Place, Woolwich,
Nov. 24th, 1826.

W. STURGEON.

VIII. *On some newly discovered Siberian Minerals.* By
A. LÉVY, Esq., M.A. F.G.S.

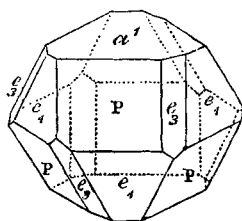
MR. MENGE has lately discovered in Siberia several rare species of minerals, which hitherto had not been found in that country, already so rich in that department of natural history. Among the newly discovered species are mentioned Tantalite, Gadolinite, and Zircon. However, from the characters of the specimens of these, which Mr. Heuland has just received and added to his private collection, it appears that the uncommonly well defined and detached crystals, which had been thought to belong to the first, present a form quite incompatible with those of that species, but agree perfectly with the description given by Professor Mohs of the substance he has called Axotomous iron ore, which is isomorphous with specular iron*. The form of the crystals from Siberia, in Mr. Heuland's collection, offer only two varieties; one of them is represented by fig. 1, and the other differs only from it by the absence of the faces marked e_3 .

* I believe that the suggestion of Professor Mohs, that Crichtonite and Axotomous iron ore belong to the same species, will prove to be the truth; and I hope soon to be able to give the results of the comparative examination I have made of the two minerals.

This

This form, from the relative position of its planes, and the angles they measure, may be derived from an acute rhomboid, the planes of which would be the planes P of the figure, and measuring the same angle, or very nearly the same angle, as the primitive rhomboid of specular iron. The faces e_3 , as shown by the figure, are not repeated symmetrically on each side of the faces

Fig. 1.



P; so that there are only six of them, and they are disposed in such a manner that each of the three planes e_3 of the upper part of the crystal is parallel to one of the planes e_3 of the lower part. This regular want of symmetry is precisely the character offered by the crystals of axotomous iron ore. It is what Professor Mohs has expressed in saying that the regular forms of this substance are hemi-rhombohedral with parallel faces.

The crystals represented by fig. 1. are of a dark iron black colour; their planes are sufficiently brilliant for the use of the reflective goniometer, but however do not afford very good reflections. There are on some of them indices of cleavage in a direction perpendicular to the axis. They act upon the magnetic needle, but not so powerfully as specular iron. Their size vary from more than an inch in diameter to about one-fourth of an inch, their thickness is generally less than their breadth. Sometimes are found adherent to them small crystals or fragments of white felspar. Their exact locality, as well as that of the other minerals above mentioned, is the neighbourhood of Lac Ilmen, west of Miask, in the government of Ecatherinebourg in Siberia.

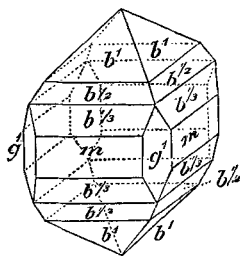
The specimen sent as Gadolinite presents a very large crystal said to belong to that species, placed on flesh-coloured cleavelandite, or perhaps rather labradorite, as one of the two faces of cleavage, inclined to each other at an angle of about $93^\circ 30'$, is striated parallel to its intersection with the other; a character which I believe belongs to the last-mentioned substance. The form of the crystal is that of an obtuse rhombic prism, the acute lateral edges of which are emarginated by narrow planes, without any distinct termination. The faces of the prism are rough, and small crystals of light brown zircon are disseminated on them as well as in the matrix. The crystal is so engaged, that the incidence of the faces cannot be measured even with the common goniometer. The fracture is of a deep black with a resinous lustre.

The zircons have come in crystals, detached and also disseminated

minated on groups of milky white opaque felspar, most of the crystals of which are covered with a thin dark iron black coating, and mica in large laminae. These crystals offer only two varieties; one of which is represented by fig. 2, and the other differs from it by the absence of the planes $b\frac{1}{2}$.*

They generally present both summits. The planes m and b^1 are very brilliant, the planes $b\frac{1}{2}$ and $b\frac{1}{3}$ dull, and the planes g^1 slightly undulated and of a highly vitreous lustre. Their colour varies from grayish white to a deep brown. Some are transparent; others only translucent or opaque. Some of the crystals are as large as a walnut, generally much smaller, but very well defined.

Fig. 2.



IX. *Observations on the Solar Eclipse, November 29th, 1826.*
By the Rev. BADEN POWELL, M.A. F.R.S.

*To the Editors of the Philosophical Magazine and Annals of
Philosophy.*

THE curious observations of Mr. Wiseman during the solar eclipse of September 1820, recorded in the Memoirs of the Astronomical Society (Part I. p. 140.) tend to show that during the eclipse there was a deficiency of the red rays of the sun and the heating power accompanying them. This conclusion is considered to be corroborated by the further observation of a diminution in the space occupied by the red rays in the prismatic spectrum formed at the same time. The facts are stated to have been anticipated by Mr. Wiseman; but the principle on which he anticipated them is not mentioned.

As there is nothing said in the paper alluded to, which can lead us to determine how far the effects may depend upon the *magnitude* of the eclipse, it will be doubtless a point of interest, not only on the occurrence of an eclipse of equal magnitude to verify the facts; but also in other cases to ascertain whether, or in what degree, similar effects are produced.

With this object in view, I made a few observations during the eclipse of November 29th. The weather was favourable only for one short interval in the early part of the eclipse,

* Since writing the above, I have observed another variety which besides the modifications of fig. 2. presents the planes, which Haüy has designated by α .

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