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also be permitted to remark in general, that this exception appears to me so remarkable a one that I should be anxious to examine whether there may not yet be found some means of explaining it. The progress of research has tended to diminish the points of resemblance between light and *simple* heat. Even the fact of the radiation of heat itself seems very likely to possess little *real* analogy with the propagation of light. The mode in which heat is in general propagated through screens has been so satisfactorily traced, and shown to be so essentially distinct in its nature from direct radiation, as to make it a very extraordinary circumstance, that in this one instance the heat should possess a new mode of action: and more especially when this property is connected with the *transparency* of the screen; a quality to which heat is in no other case found to bear any reference. These considerations would show the propriety of a careful examination into every circumstance which is likely to afford any solution of the anomaly. Without pretending to enter at present into such an examination, I will content myself with barely suggesting one or two points which might possibly be further inquired into with advantage:—1*st*, The accuracy and fitness of air thermometers in researches of this nature. 2*d*, The laws by which the absorption and subsequent radiation of heat is regulated in bodies extremely small, and thence in screens of great tenuity, whether consisting of fixed substances, or perpetually renewed films of fluid. 3*d*, Whether the difference of the *conducting* powers of bodies continues to display itself when the substances are reduced to a state of great tenuity, as in the instance of a film of charcoal coating a glass screen. How far any of these causes may be found adequate to explain any part of the difficulty I do not in the least pretend to say. I leave the consideration of them to those who may be better able to follow up the inquiry.

ART. XIV.—*On Johannite, a New Mineral Species.* By W. HAIDINGER, Esq. F. R. S. E. &c. Communicated by the Author.

THE forms of Johannite belong to the hemiprismatic system.

I have observed only two varieties, which are represented in Fig. 12 and 13, Plate II.

Although the crystals are pretty regularly formed, and possess sharp edges, yet they are so very minute, and grouped together in botryoidal concretions, that it becomes very difficult to find out the true form, and still more so to measure the angles. The latter I succeeded only in measuring by approximation as follows: Inclination of *a* on *a*, adjacent = 111°, of *a* on *b* = 118°, of *a* on *c'* or *a'* on *c* = 87° 28′, of *b* on *c* = 128° 32′, of *b* on *d* = 134° 5′, of *b* on *e* (over *c*) = 101° 15′

I did not succeed without rather unlikely hypotheses, in ascertaining the dimensions of any pyramid, which might be considered as the fundamental form of the species. I have preferred, therefore, to put down the measures of the angles, as I obtained them by the application of the reflective goniometer; while larger and more complicated forms of crystals may be discovered hereafter, which may allow of a more easy and exact determination of all the geometrical relations of the series of crystallization.

On account of the smallness of the crystals, cleavage is observed with great difficulty; yet I perceived traces parallel to the faces marked *a*, also parallel to another face, which replaces the sharp edges between *b* and *c*; in other directions, there is imperfect conchoidal fracture.

The surface of the crystals is smooth, the faces *b*, *d*, *c*, *e*, are slightly streaked, parallel to their edges of combination.

The Johannite possesses vitreous lustre; its colour is a fine bright grass-green, which becomes pale siskin-green in the streak. The crystals are semitransparent.

It is sectile, the hardness = 2.0...2.5, rather more considerable than that of hexahedral rock-salt. The specific gravity I found = 3.191, at 59° F.

It is slightly soluble in water, and occasions a faint taste, more bitter than astringent.

Johannite belongs to the order *Salt*, in the first class of the system of Mohs. As it will become necessary in future to dispose, into genera and species, the whole contents of this order, and to apply consequently systematic denominations to them all, I shall not now by a hasty determination unnecessa-

rily increase the number of such names. At all events, it does not belong to the genus vitriol salt. The denomination of *Vitriol of Uranium*, proposed by John,* recalls to our memory alchemistical ideas, which are long and deservedly forgotten.

It is with the highest gratification that I propose the name of *Johannite* for the present species; for no mineralogist ever had an opportunity, in paying a compliment to a distinguished patron of his science, to apply to a new species the name of the brother of his prince. I am indebted for this peculiar favour to his Imperial Highness the Archduke John of Austria. I have endeavoured to remind the latest of future admirers of one of his favourite sciences of a name, upon which we dwell with pleasure in the history of the present age, and thus to preserve, as long as the progress of science shall be attributed to the labours of our own contemporaries, the recollection of my regard to him.

The specimens which I examined I first saw at Joachimsthal, in Bohemia, when I visited that celebrated mining town in spring 1826 with Mr Robert Allan, in the collection of a mining officer, Mr Peschka. This collection having been purchased by Count Caspar Sternberg, and presented to the National Museum at Prague, I was fortunate enough to obtain the specimens for examination in spring 1829. I had long ago wished to give the name of Johannite to a species found in the Austrian dominions, and had likewise requested his Imperial Highness's permission to do so; and I found this species the more agreeable to my purpose, as its green colour contains an allusion to the Alps, the favourite abode of its imperial namesake.

I have been frequently indebted to Professor Zippe for various interesting minerals for examination. I am under particular obligations to him in the present case, he himself having already published several valuable papers, and the determination of a new species being particularly interesting.

The species itself deserves to be considered as new in mineralogy, although John has already published an analysis of it; yet both physical and chemical properties were so imperfectly described, that it is impossible to infer from them alone

* *Chemische Schriften*, Bd. vi. p. 254.

the identity of Johannite with his vitriol of uranium. I owe my full conviction of it, only to the verbal communication of Mr Peschka, whom I called for expressly for that purpose.

Johannite exposed in a glass tube to the flame of the spirit lamp, gives off a considerable portion of water, whereby a dark-brown residue is left, which is friable, and still shows traces of the original crystallization of the mineral.

When melted on charcoal with carbonate of soda, and placed on a bright surface of silver, and afterwards wetted, a black spot of sulphuret of silver is formed on that surface. Also a smell of sulphuretted hydrogen is disengaged. If kept somewhat longer in the reducing flame of the blowpipe, and then again melted with carbonate of soda in the reducing flame, globules of copper are obtained.

Johannite forms with borax a fine green glass, both in the oxidating and in the reducing flame. In the latter, the globule sometimes also appears red and opaque on cooling, from the protoxide of copper.

When treated with salt of phosphorus, only the green tints appear, owing chiefly to copper in the oxidating flame, and to uranium in the reducing flame. By a long continued blast of the reducing flame, the globule becomes covered with a black metallic surface, if much of the Johannite has been employed. By an addition of tin, the red colour of the protoxide of copper is obtained.

In a solution of Johannite in nitric acid, caustic ammonia produces a yellow precipitate, but becomes blue itself from copper. The residue comports itself with salt of phosphorus like pure oxide of uranium.

Johannite appears, therefore, to contain sulphuric acid, water, and the oxides of copper and uranium. We expect to hear even of the exact ratio of these ingredients from Professor Berzelius, to whom Mr Selfström was kind enough to take a specimen from me.

This species is as rare as it is beautiful. The only specimens hitherto known were found in opening some old works near the mine of Elias at Joachimsthal, in Bohemia, in the year 1819, as a coating of fragments of uranium-ore.

Free sulphuric acid, as is likewise supposed by John, pro-

bably owing to the decomposition of some species of pyrites, is no doubt the cause of the formation of the present species. In the specimens which I examined it is accompanied by acicular crystals of gypsum.

Art. XV.—*Notice of a mass of Meteoric Iron recently discovered in Bohemia.**

The locality where this mass of meteoric iron was found, is the slope of a hill near the castle of Bohumilitz, in the circle of Prachin in Bohemia, the estate of Baron Malowetz of Skalitz. A ploughman, having on the 19th September 1829, accidentally alighted upon it with his plough, and supposing the mass, which was afterwards found to weigh 103 pounds, to be an ordinary stone, he endeavoured to lift it, and throw it out, but being surprised with the great weight, he thought it must be a precious metal. A small bit of it, however, having been detached by a blacksmith with a hammer, it was recognized to be iron. Dr Charles Claudi, an eminent lawyer of Prague, the proprietor of the neighbouring estate of Cykin, paying a visit to the baron, was shown the mass, and as there are no iron-works in the vicinity, he argued that it might have had a meteoric origin. This was fully confirmed by Professor Steinmann's discovery of nickel in it, and by the peculiar structure which is likewise detected in other kinds of meteoric iron by etching a polished surface. Upon the application of these gentlemen, Baron Malowetz presented the whole of this highly remarkable object to the National Museum at Prague.

There can be no doubt that this mass of iron has lain a long time in the soil, the plough having passed over it for ages; and it must be ascribed only to the heavy rains of last summer, that, much soil having been washed away, it came at last within the reach of the plough. Its having been a long time exposed to the agency of air and weather, is also testified by a thick crust of oxide of iron, with which it was covered when first dug out.

* Abstract of several papers in the *Jahrbücher des böhmischen Museums*. No ii. 1830.