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A VIEW OF THE PROGRESS OF DISCOVERY

IN NATURAL PHILOSOPHY, CHEMISTRY, MINERALOGY, GEOLOGY, BOTANY, ZOOLOGY, COMPARATIVE ANATOMY, PRACTICAL MECHANICS, GEOGRAPHY, NAVIGATION, STATISTICS, ANTIQUITIES, AND THE FINE AND USEFUL ARTS.

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WILLIAM BLACKWOOD, EDINBURGH:
AND T. CADELL, LONDON.

M.DCCC.XXV.

phuret of copper. If the ore has been too much roasted, there remains too little sulphuret of iron to collect all the cupreous particles throughout the whole mass of the slags; and the smelters must add in this case some of the rich ore not roasted.

The metallic compounds are roasted six times; and, by this operation they are transformed into a mixture of magnetic oxide of iron, and oxide of copper. This mass is now melted either with quartz, or with the quartzy ore, and their result is a silicate of the protoxide of iron and black copper. In the process followed in the Hartz for refining copper, much protoxide of that metal is formed, in the middle of which large crystals of arsenious acid are found, but never, as far as I know, any oxide of antimony.

The purpose of refining iron is to separate along with the carbon, all those substances which might have a bad influence on the quality of the wrought iron. In this view part of the pig-iron is first oxydised; the oxide of iron combines with the silica, which either is introduced by the charcoal, or produced by the decomposition of the silica contained in the iron, and forms a silicate. If the quantity of oxide of iron is too great, this oxide again acts upon the melted iron, or it combines with the silicate, and forms a sub-silicate, which being very fusible, will mix entirely with the melted mass, and burn its carbon, because the affinity between the oxide and silica is greater for forming a silicate than an embrolicate, and to discharge the rest of the oxide, when in contact with the carbon at the temperature of the refining furnaces.—(*Ann. de Chim.* tom xxiv. p. 355; *Ann. des Mines*, tom ix. p. 176.)

ART. XXII.—*Notice respecting Euchroite, a New Mineral Species.* By WILLIAM HAIDINGER, Esq. F.R.S.E. Communicated by the Author.

A MINERAL has lately been brought to this country under the name of *Euchroite*, of which a short notice will find here

its proper place, as it does not seem to have yet been described even in the foreign journals.

Form, prismatic. $P = 119° 7'$, $81° 47'$, $120° 54'$. ($a : b : c = 1 : \sqrt{0.928} : \sqrt{0.344}$). Approximation.

Simple forms. $P - \infty$ (P); $P + \infty$ (M) $= 117° 20'$; $(\breve{P}r + \infty)^5$ (s) $= 95° 12'$; $(\breve{P}r + \infty)^3$ (i) $= 78° 47'$; $\breve{P}r$ (n) $= 87° 52'$; $\breve{P}r + \infty$ (k.)

Combinations, 1. $P - \infty . \breve{P}r . P + \infty . (\breve{P}r + \infty)^3$. Plate III. Fig. 29. 2. $P - \infty . \breve{P}r . P + \infty . (\breve{P}r + \infty)^5 . (\breve{P}r + \infty)^3 . \breve{P}r + \infty$. Fig. 30.

Cleavage, indistinct, parallel to the horizontal prism s, and to the vertical prism m, very much interrupted. Fracture, small conchoidal, uneven. Surface, the vertical prisms striated parallel to their common edges of intersection, the horizontal prism smooth, $P - \infty$ often rounded, as if a drop of the solution had remained after the complete formation of the crystal.

Lustre, vitreous. Colour, bright emerald-green. Streak, pale apple-green. Double refraction, considerable. Semi-transparent, translucent.

Rather brittle. Hardness $= 3.5 \ldots 4.0$ (very near the same as fluor). Sp. gr. $= 3.389$. As the specimen employed was not entirely free from the oxide of iron, it is possible that the specific gravity is a little higher, though this can be but very inconsiderable.

Observations.

1. The specimen of Euchroite to which the preceding description refers, was purchased last summer by Mr. Allan when in London, from Mr. Sowerby, who had received the mineral from Mr. Bartsch of Vienna. It has been found at Libethen in Hungary, and occurs in crystals of considerable size, in fissures in the common quartzose mica slate of that locality. Some of the crystals in Mr. Allan's specimen are upwards of three lines in every dimension, though the most perfect crystals are much smaller. They are in no small degree like those of Dioptase, and will enter the genus Emerald-malachite of Mohs.

2. Bucharoite contains a considerable proportion of water and copper. An exact indication of the rest of the ingredients in its remarkable chemical composition, will be given in the next number of this Journal, Dr. Turner having, at my request, kindly undertaken an examination of it.

Art. XXIII.—CONTRIBUTIONS TO POPULAR SCIENCE.

No. III. On the Structure of Rice Paper. *

The substance commonly known by the name of *Rice Paper* is brought from China in small pieces, about two inches square, and tinged with various colours. It has been for some time used as an excellent substitute for drawing paper, in the representation of richly coloured insects, and other objects of natural history, and has been employed in this city with still more success in the manufacture of artificial flowers.

Although rice paper has a general resemblance to a substance formed by art, yet a very slight examination of it with the miscroscope is sufficient to indicate a vegetable organisation. In order to observe and trace the nature of its structure, it was necessary to give it some degree of transparency; and I expected to accomplish this by the usual process of immersing it in *water* or in *oil* of the same refractive power. This operation, however, instead of increasing the transparency rendered the film more opaque, and suggested the probability that, like Tabasheer, it was filled with air; and that the augmentation of its opacity arose, as in the case of that silicious concretion, from the partial absorption of the fluid.

In order to expel the air from the cells in which it seemed to be lodged, I exposed a piece of the rice paper to the influence of boiling olive oil. The heat immediately drove the air in small bubbles from the cells near the margin; but it was with some difficulty that it was forced to quit the interior

* From an unpublished MS. by Dr. Brewster, read before the Royal Society of Edinburgh, on the 4th March, 1822.