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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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JOHN THOMSON, EDINBURGH
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changing in age to that of the male. Mr John Hunter had previously noticed this change in the hen-pheasant and pea-hen, in a Memoir published in the Philosophical Transactions, also unnoticed by M. Saint-Hilaire; and Mr Butter has collected a number of instances, not only among the *Gallinæ*, but also among the *Palmipedes* and *Waders*, of similar changes. A figure of the common domestic hen in the plumage of the male, illustrates Mr Butter's paper; and the circumstance of the female of this species when aged, essaying to crow like the cock, is a fact known in every poultry-yard in this country. A vulgar prejudice permits not the change in plumage to be carried further; for a *crowing hen* being accounted unlucky, the death of the animal always follows this incipient change. A specimen of a pea-hen beginning to assume the male plumage, is, we believe, in the Museum of the University of Edinburgh. Mr John Hunter regards this change in the female plumage as monstrous; but Mr Butter, with more appearance of truth, is disposed to consider "that this change of plumage in old hens, is not confined to one, two, or three different species, but that probably the same disposition is common to numbers of the feathered race;"—"and that the change is almost always natural, produced either by the effects of age, of sterility, or other causes which tend to work some changes in the constitution of birds."

ART IV.—*On Zinkenite, a New Mineral Species.* By Dr GUSTAVUS ROSE. Communicated by the Author.

THE shape of the crystals of Zinkenite most nearly resembles Plate I. Fig. 3, which is a regular six-sided prism (*M*,) terminated by obtuse six-sided pyramids, (*P*,) whose faces are set on the edges of the prism.

The following are the principal measures of the angles, calculated from the admeasurement given = 150° 36′, upon the supposition of the prism being a regular one.

M on *M* = 120° 0′.
P on *M* = 102° 42′.
P on *P* (adjacent) = 165° 26′.
P on *P* (over the apex) = 150° 36′.

The faces marked *M* are usually deeply striated in a longitudinal direction; the inclined faces, though not streaked, are uneven, and by no means smooth. The fracture is uneven, and does not present any traces of cleavage. The lustre is very bright metallic; the colour of the crystals themselves, and of their powder, is steel-grey.

The hardness is between 3.0 and 3.5, a little more considerable than that of calcareous spar. The specific gravity I found = 5.303, at a temperature of 10° R. Another experiment gave 5.310, at a temperature of 10½°.

The crystals are aggregated in groups presenting a columnar composition; they occur on massive varieties of the same species, in massive quartz. Their length often exceeds half an inch, their breadth two or three lines, but frequently they are also very thin, and form together fibrous masses.

When heated alone before the blowpipe on charcoal, the Zinkenite briskly decrepitates, and melts as easily as the grey antimony. Small metallic globules are formed, which are entirely volatile, on the blast being continued, while the charcoal is covered with a white coating of oxide of lead, and at a little greater distance from the globules with a white perfectly volatile coating of oxide of antimony. In the mattress it decrepitates and melts; near the assay a small quantity of the same kind of black sublimate is formed, as when we treat the grey antimony in the same manner; at a little greater distance, a yellow substance is deposited, which becomes white on cooling, and may be entirely volatilized. When heated in a glass tube, it decrepitates and melts; a dense white smoke fills the tube, and is condensed in the colder parts of the tube, but this deposit cannot be entirely volatilized. Near the assay a melted yellow mass of oxide of lead is visible. The air passing through the tube has a strong smell of sulphurous acid. With soda, the mineral yields many globules of metallic lead.

Zinkenite is found in the antimony mine of Wolfsberg, near Stolberg, in the south-eastern part of the Hartz.

Several years ago, the specimens of the mineral described above, were given to me by Mr Zinken, the director of the Anhalt mines; in compliment to him, I propose the name of

Zinkenite. Mr Zinken himself has given an account of most of its characters in his "*Description of the Eastern Harts,*" along with some experiments by the blowpipe, proving the mineral to contain sulphur, antimony, and lead, with a little copper. I had delayed publishing the description of the species, chiefly because I expected to receive a farther supply of specimens, which might have allowed of a more exact determination of the regular forms. I am inclined to think that the six-sided prism *M* is not a regular one, but an assemblage of several individuals, after the same law, which occurs in arragonite. The exact admeasurement of the angles is very difficult, particularly on account of the numerous longitudinal striæ. In some crystals, however, where these striæ begin only at some distance from the edge, I constantly found the angle to exceed 120°, and the mean of two, the most distinct I met with, was 120° 39′. If no attention be given to the striæ, the angles will be found varying from 118½° to 124½°. The crystalline form of each of the individuals, taken separately, seems therefore to be a rhombic prism of 120° 39′, (*M*) terminated by two planes (*P*,) making over the edge an angle of 150° 36′ with each other. They are set on the obtuse edges of the prism, as in Fig. 4. The mode of their regular composition is represented in Fig. 5. Two individuals are joined to a third in such a manner, that their planes *M′* and *M″* coincide with the planes *M* and *M*, of that individual to which they are attached. Supposing the individuals to be prolonged beyond their faces of composition, a form will ensue, resembling a six-sided prism; but on two faces, opposite to each other, there will be slightly salient angles of 178° 3′, while the six angles are each equal to 120° 39′. Of the six terminal edges between the faces marked *P*, four are equal to 165° 30′ each; and two others slightly differing from them correspond to the obtuse salient angles formed on two of the lateral planes of the prism. The inclination of *P* on *M* is = 102° 42′. I found by measurement 102° 34′—102° 49′. The difference among the terminal edges would be decisive, if we were not prevented from observing it, by the unevenness of the faces. Generally I could measure only one of them, and in no instance all the six; they were found about 165° 40′ to

165° 50′. With a somewhat higher degree of precision, I sometimes found the inclination of two faces over the apex = 150° 36′, as is given above. Besides the alternation of particles of the individuals, the striæ may likewise be owing to some additional faces, which replace the acute edges of the prism, and have therefore nearly the same situation as the faces of the six-sided prism.

Zinkenite bears a high degree of resemblance to the grey antimony, though it is at once distinguished from it by the bright cleavage of the latter, parallel to the short diagonal of a rhombic prism of about 90½°, by its lower degree of hardness, which is equal only to 2.0, or the hardness of rock-salt, and by its lower specific gravity, which, according to Mohs, is only = 4.620. As to colour, hardness, and fracture, it greatly resembles Bournonite, but it differs in its regular form, though belonging to the same system of crystallization, besides some slight, yet easily perceptible shades, even in the colour, which is darker in Bournonite, and approaches to blackish lead-grey, while the hardness is somewhat lower, only 2.5 to 3.0 of the scale of Mohs, a little below calcareous spar.

ART. V.—*On the Case of a Lady Born Blind, who received Sight at an Advanced Age by the Formation of an Artificial Pupil.** By JAMES WARDROP, Esq. F. R. S. Edin. Surgeon Extraordinary to the King.

THE lady, whose case forms the subject of this paper, was observed, during the first months of her infancy, to have something peculiar in the appearance of her eyes, and an unusual groping manner, which made her parents suspect that she had defective vision. When about six months old, she was placed under the care of a Parisian oculist, who performed an operation on both her eyes, with a view to afford her sight. The operation on the right eye was, however, followed by

* This Article is abridged, though very slightly, from the original Memoir, which will appear in the next part of the Philosophical Transactions. —ED.