Note on the Iodobromite of A. v. Lasaulx

IN the *Fahresberichte für Mineralogie* for 1878 A. v. Lasaulx has described a new silver haloid mineral, having the composition Ag_2Br_2 , Ag_2Cl_2 , AgI , or $\text{Ag}_5\text{Cl}_2\text{Br}_2\text{I}$, which he cites as the first instance of the three haloids occurring crystallised together in nature. Several chloro-bromides of silver have been found in Chili in the silver mines of Chañarcillo, and, according to Dana, an iodobromide has also been detected. The present mineral, which should be called *chlorobromiodide*, was found associated with beaudantite in a mine in the district of Ems, Nassau, in the form of small yellow or olive green octohedrons never exceeding 3 mm. in size. The crystals are very malleable, and can be pressed flat with the blade of a knife, and they possess a good deal of lustre. On analysis they were found to contain:—

Silver	...	...	...	59.96
Iodine	...	...	...	15.05
Bromine	...	...	...	17.30
Chlorine	...	...	...	7.09
				99.40

In 1876 I prepared some of this substance artificially by fusing together the chloride, iodide, and bromide in the proportions of $\text{AgI } 26.1692$, $\text{AgBr } 41.8708$, $\text{AgCl } 31.9600$, which gives an ultimate composition of:—

Silver	...	...	...	60.1336
Iodine	...	...	...	14.1435
Bromine	...	...	...	17.8176
Chlorine	...	...	...	7.9053
				100.0000

The substance was prepared with other chlorobromiodides of silver in order to see the extent to which iodide of silver (which contracts considerably when heated from 142° to 145.5°C.) modifies the coefficient of expansion of the chloride and bromide, which do not present similar anomalies. The results obtained are given in the *Proc. of the Royal Society*, vol. xxv. p. 294, 1877, "On the Effects of Heat on some Chlorobromiodides of Silver," and they are of additional interest now that the substance has been found in nature.

The compound artificially prepared is a brittle yellowish-brown solid, giving a bright primrose-yellow powder, which turns green on exposure to light. (It is noticeable that some of the crystals found by Lasaulx were yellow, others green.) It is a crystalline solid which emits loud harsh noises while cooling from the molten condition. The fusing point is 330°C. The sp. gr. 6.152 when cooled quickly, but when fused and allowed to cool slowly in hot paraffine, the sp. gr. fell to 6.066 . A. v. Lasaulx makes the sp. gr. of the mineral as low as 5.713 . The artificially prepared compound was found to possess a coefficient of cubical expansion for $1^\circ \text{C.} = 0.00012216$ between 0°C. and 125.5° . Between 125.5° and 131.5° it underwent slight contraction, while between 131.5° and the fusing point the coefficient was 0.00015882 . It possesses two points of similar density, the one at 131.5°C. , the other at or about 123°C. The volumes calculated from the coefficients, taking volume at 0°C. as unity, were found to be:—

Volume at	$0^\circ \text{C.} = 1.000000$
" 125.5°	$= 1.015331$
" 131.5°	$= 1.015037$
" 330°	$= 1.046666$ (solid)
" 330°	$= 1.104050$ (liquid)
" 750°	$= 1.177979$

It is presumable that the other artificially-prepared chlorobromiodides described in the paper cited above will also be found in silver mines.

G. F. RODWELL

Inherited Memory

HAVING had my attention called, of late, to the subject of the migration of birds, I have of course been interested in the discussion between Dr. Weismann and Prof. Newton, and I cannot help fancying that I have hit on the "missing link" which connects the theory of the former with the facts of the latter.

Are there not scientific men (and is not Dr. Carpenter one of them) who consider that when we say an event has made "such an impression on us that we shall never forget it"—we are not merely using a metaphor, but stating a fact? Now if something analogous to "making an impression" on the brain really takes place whenever we commit anything to memory—is it not possible

that if the impression be deeply fixed, the impressed brain may be transmitted by the parent to the offspring, who thus "inherits" its ancestor's memory?

When we remember that birds take the same journey year after year, generation after generation, century after century, nay, even for ages after ages, I think we shall feel that there are more marvellous things in nature than what I am asking you to consider, namely, the possibility that the young bird at last inherits a knowledge of the way, and is capable of performing the journey alone.

If "inherited memory" be accepted as a fact, what a flood of light is thrown on many puzzles which have hitherto been classed as "instincts"; such as the building of birds' nests; the pointing of pointer puppies, the knowledge possessed by young animals of right and wrong food, and of friends and enemies; I am not sure that it will not even throw light on some mysteries in human nature. When I was a child I had a dread of wolves (a very common thing with children), and I find the dread reproduced in one of my own children. Yet wolves have been so long extinct in England that we should probably have to go back many generations before we met with the nurses who quieted crying children by threatening to give them to the wolves. May not this be a case of "inherited memory?"

A. B.

Intellect in Brutes

SOME years ago the late Hon. Marmaduke Maxwell, of Terregles, took me to his stable to show me a cat which was at the time bringing up a family of young rats. The cat some weeks previously had a litter of five kittens, three were taken away and destroyed shortly after their birth; next day it was found that the cat had replaced her lost kittens by three young rats which she nursed with the two remaining kittens; a few days afterwards the two kittens were taken away, and the cat very shortly replaced them by two more young rats, and at the time I saw them, the young rats—which were confined in an empty stall—were running about quite briskly, and about one-third grown. The cat happened to be out when we went into the stable, but came in before we left; she immediately jumped over the board into the stall, and lay down; her strange foster-family at once ran under her and commenced sucking. What renders the circumstance more extraordinary is, that the cat was kept in the stable as a particularly good rat-ter.

Cargen, Dumfries, May 9

P. DUDGEON

Phosphorescence

IN regard to the effect of heat on phosphorescence, your correspondent in last week's number will find that almost similar phenomena have been observed by Dr. Draper, who treats of the whole subject very fully and satisfactorily in his "Scientific Memoirs."

G. S. THOMSON

Clifton, May 18

AN INDUCTION-CURRENTS BALANCE¹

IMMEDIATELY upon the announcement of Arago's discovery of the influence of rotating plates of metal upon a magnetic needle (1824), and Faraday's important discovery of voltaic and magneto-induction (1831), it became evident that the induced currents, circulating in a metallic mass, might be so acted upon either by voltaic or induced currents as to bring some new light to bear on the molecular construction of metallic bodies.

The question was particularly studied by Babbage, Sir John Herschel, and by M. Dové,² who constructed an induction balance, wherein two separate induction coils, each having its primary and secondary coils, were joined together in such a manner that the induced current in one coil was made to neutralise the induced current in the opposite coil, thus forming an induction balance, to which he gave the name of differential inductor. In those days physicists did not possess the exquisitely sensitive galvanometers and other means of research that we possess to-day, but sufficiently important results were

¹ "On an Induction-Currents Balance, and Experimental Researches made therewith." By Prof. D. E. Hughes. Read at the Royal Society, May 15.

² De la Rive, "Treatise on Electricity," vol. i. chap. v. (London, 1853)