Experiments on a Mineral Substance formerly supposed to be Zeolite; with some Remarks on two Species of Uran-glimmer. *By the Rev.* William Gregor. *Communicated by* Charles Hatchett, *Esq. F.R.S.* Read July 4, 1805. [*Phil. Trans.* 1805, *p.* 331.]

The mineral substance treated of in this paper, is similar to that of which Mr. Davy, some months ago, gave an account, under the title of Hydrargyllite or Wavellite. That which is now described by Mr. Gregor is produced from a mine called Stenra Gwyn, in the county of Cornwall.

Two species of this substance, the author says, are found in the above-mentioned mine; the first, and most common, consists of an assemblage of minute and delicate crystals, in radiated tufts, attached to quartz crystals. These crystals are in general white and transparent; sometimes, however, they have a yellowish hue. They vary considerably in their size, but seldom exceed a quarter of an inch in length.

Among these crystals are frequently seen two kinds of crystalline laminæ; one of them being in the form of parallelopipedons, with truncated angles, and of a green colour; the other forming an assemblage of square plates, varying in thickness, and the angles of which are not always coincident; these are of a bright wax yellow. This last kind is also found adhering to the sides of quartz crystals, in the cavities of granite.

The other species of the substance here treated of, consists of crystals closely compacted together in the form of mammillary protuberances, generally of the size of small peas, and forming a stratum about one eighth of an inch thick, upon quartz, in the cavities or fissures of compact granite. The striæ of these mammillæ diverge from a centre, like zeolite.

The detached crystals of the first species are easily reduced to powder. Their specific gravity, at 56° Fahr., was found to be 2·22. The second, or more compact species, is sufficiently hard to scratch calcareous spar: its specific gravity, at the temperature of 55°, was 2·253.

The crystals of the first species, when suddenly exposed to the action of the blowpipe, decrepitate; if gradually exposed to its action, they grow opake, but show no signs of fusion, even under the strongest heat. Both species, when exposed for some time to a red heat, experience a diminution in weight of about 30 per cent.

Some other experiments upon these substances are related, and a very minute account of the mode in which they were analysed is given; of this we must necessarily confine ourselves to give merely the results.

Fifty grains of the crystals of the first species yielded alumina $29\frac{1}{3}\frac{1}{2}$ grs.; silica, $3\frac{2}{3}\frac{2}{2}$ grs.; oxide of iron, $\frac{3}{3}\frac{3}{2}$ grs.; lime, $\frac{6}{3}\frac{6}{2}$ grs.; volatilized matter, $14\frac{1}{3}\frac{2}{2}$ grs.

The sum total of these is	$47\frac{2}{3}\frac{2}{2}$ grs.
Consequently the loss was	$2\frac{3}{3}\frac{0}{2}$ grs.
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The silica and the lime, Mr. Gregor considers as essential to the composition of this mineral, as he has always discovered them, even in the purest specimens.

In order to examine the nature of the volatilized matter, the author submitted some of the crystals to distillation. A fluid passed over into the receiver, and a white crust was formed in the arch and neck of the retort. The fluid had an empyreumatic smell, very similar to that observed in the fluid distilled from the white crust that surrounds flint. It changed litmus paper to a faint reddish hue. A variety of experiments were made upon the white crust, from the results of which it appeared, that it consisted in part, at least, of an acid, which did not seem to be either the phosphoric or fluoric; nor did its properties entirely agree with those of the oxalic acid, although many of them were similar to those of that acid. A part of the forementioned crust, which firmly adhered to the neck of the retort, was found to contain a portion of lead; this, Mr. Gregor ascribes to the action of the acid on the retort.

Some of the Barnstaple mineral was also tried, and was found likewise to produce the above-mentioned white crust. Mr. Gregor now makes some remarks on the yellow and green crystals already mentioned as accompanying the mineral here treated of, which he says he at first considered as similar to the two species of Uran-glimmer examined by Klaproth. The specific gravity of the yellow crystals, at 45° Fahr., was 2·19. Exposed to the blowpipe, they decrepitated violently. They are taken up by phosphate of ammonia and soda without effervescence, and communicate a light emerald green colour to the fused globule. By exposure to a red heat they become of a brassy colour, and lose nearly a third part of their weight.

Several other experiments upon them are related, but their scarcity has, Mr. Gregor says, precluded him from operating on a quantity sufficient for a regular analysis. But he has detected in them oxide of lead, lime, and silica, which have not hitherto been considered as ingredients of Uran-glimmer.

The substance also, which in his experiments was held in solution by ammonia, had some peculiar properties which appeared to distinguish it from uranium.

The green crystals, the author says, do not differ from the yellow, except in containing a little of the oxide of copper.

The Croonian Lecture on the Arrangement and mechanical Action of the Muscles of Fishes. By Anthony Carlisle, *Esq. F.R.S. F.L.S.* Read November 7, 1805. [*Phil. Trans.* 1806, *p.* 1.]

The muscles of fishes, Mr. Carlisle says, are constructed very differently from those of the other natural classes of animals. The medium in which fishes reside, the form of their bodies, and the instruments employed for their progressive motion, give them a character peculiarly distinct from the rest of the animal creation. Their skeleton is simple, and their proportion of muscular flesh is remark-