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2. Spontaneous Combustion of Chlorine and Olefiant Gas.

It has long been known that chlorine and hydrogen in mixture are liable to explode, when struck by the direct rays of the sun, and an instance is related in the *American Journal* (vol. iii, p. 34), in which these two gases exploded, even in the diffuse light of a cloudy and snowy day. I have not met with any account of a similar action on the part of chlorine and olefiant or heavy carburetted hydrogen. It is well known that when mingled, in about equal volumes, they combine quietly, and become condensed into the peculiar aromatic, oily-looking substance, since called chloric ether. This effect I had so often witnessed, and had never seen any material variation in the result, that I was not prepared to look for any thing else. But in an experiment of this kind, (January 5, 1826,) happening to mingle the chlorine with the olefiant gas in such a manner, that the latter gas was uppermost, the combination went on more silently than when the reverse order was observed; and the oily matter was gradually precipitated, but was less abundant in quantity than usual. Repeating the experiment, in the same manner, the gases had remained in contact a few minutes, apparently without mingling much, except at their surfaces; the chlorine preserving its peculiar colour and the other gas its edulous transparency; when, suddenly, a bright flash pervaded the whole glass, which was of the capacity of five or six quarts; it was raised out of the water with a slight report—a dense deposit of white coal lined the glass and floated on the water of the mixture, until the chlorine disappeared. The appearance was much like those which are exhibited when a rag dipped in oil of turpentine is placed in a jar of chlorine gas.

Reflecting on the circumstances, I was led to believe that the peculiar effect, in this case, arose from the fact, that, owing to the great difference in the specific gravity of the two gases, the action took place principally at the two surfaces of contact, and thus the chlorine acting upon a comparatively thin stratum of inflammable gas, the two became so heated, as to pass into vivid combustion. Every new occurrence in practical chemistry, which may involve danger, ought to be exactly stated, that we may be aware of contingencies not otherwise anticipated. (*American Journal of Science.*)

MINERALOGY.

This substance was discovered in the Salt Works of Bapstines, about five leagues from Madrid, by M. Reddy, a Spanish manufacturer. The crystalline form is described by M. Cordier, and the analysis is by M. Casaseca, Professor of Chemistry at

Madrid, and a pupil of M. Thenard, in honour of whom he has named it.

The forms of the crystals are easily ascertainable, but the planes are too uneven to admit of accurate measurement; the planes obtained by fracture are, however, even, and the primary form of the crystal is determinable with considerable accuracy; the cleavage is threefold, and in one direction the laminae are perfectly smooth and brilliant. The primary form (fig. 1), indi-



Fig. 2.



Fig. 3.



cated by cleavage, is a right prism with a rhombic base, the angles of which are nearly 125° and 55° ; taking the mean of several measurements, the height of the lateral planes is to that of the terminal as 13 to 15; the cleavage is most distinct in the direction of the base.

There are two varieties of the crystal; first, the octahedron, (fig. 2) and this is formed by a decrement of two rows of molecules in height, on the edges of the bases of the primary prism. The octahedron is symmetrical, and very flat in the direction of the small diagonal of the bases of the primary prism. Its vertical section in the direction of the greater diagonal of the base is a slightly acute rhomb, the smaller angle of which coincides with the summit of the crystal.

The second variety (fig. 3) is the preceding crystal, with the summits replaced by a rhombic plane parallel to the bases of the primary form.

The crystals would probably be doubly refractive, but they are not sufficiently transparent to admit of this point being determined. The specific gravity is nearly the same as that of glauuberite, viz. about 2.73.

The chemical characters of the crystals are, that, when exposed to the air, they become opaque, and the surface is covered with a powder which is readily removed. According, however, to M. Gasqson, this is not owing to the loss of water, but to the absorption of a small quantity, for the salt is perfectly anhydrous, losing scarcely any weight by exposure to a strong heat; and this little is probably derived from the slight efflorescence at the surface already noticed. Thenardite is perfectly soluble in water; the solution when saturated is slightly alkaline. When put into dilute sulphuric acid, it effervesces, owing to the evolution of carbonic acid gas. Examined by the usual re-agents,

it is vitriol.

it appeared to contain only sulphate and carbonate of soda, and in the following proportions :

Sulphate of soda 99.78

Carbonate of soda. 0.22

100.00

(Journal de Pharmacie.)

MISCELLANEOUS.

4. Remarks on Boulders. By Peter Dobson.

I have had occasion to dig up a great number of boulders, of red sandstone, and of the conglomerate kind, in erecting a cotton manufactory; and it was not uncommon to find them worn smooth on the under side, as if done by their having been dragged over rocks and gravelly earth, in one steady position. On examination, they exhibit scratches and furrows on the abraded part; and if among the minerals composing the rock, there happened to be pebbles of felspar, or quartz, (which was not uncommon,) they usually appeared not to be worn so much as the rest of the stone, preserving their more tender parts in a ridge, extending some inches. When several of these pebbles happen to be in one block, the preserved ridges were on the same side of the pebbles, so that it is easy to determine which part of the stone moved forward, in the act of wearing.

I have caused blocks, with the above appearances, and weighing 15 tons, to be split up; and there are now a number of good specimens about the place, that will weigh from 10 to 50 cwt., dug out of the earth 200 feet above the stream of water in the vicinity.

These boulders are found, not only on the surface, but I have discovered them a number of feet deep, in the earth, in the hard compound of clay, sand, and gravel.

One block of more than 30 cwt., marked and worn as above described, was dug out of a well, at the depth of 24 feet; a part of which is still to be seen.

Boulders, with these marks upon them, I have observed, not only in this town, but in Manchester, Ellington, and Wilbraham.

I think we cannot account for these appearances, unless we call in the aid of ice along with water, and that they have been worn by being suspended and carried in ice, over rocks and earth, under water.

It is stated in the Edinburgh Encyclopedia, vol. xiii. p. 426, that "fields of ice sometimes rise from the bottom, and bring with them masses of rock, of several hundred tons weight. These masses of stone are imbedded in the ice, they are carried along with the ice, and deposited on shores at a great distance from their original situation."