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On glairine

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too long a time in contact with acids, for the purpose of separating the last traces of soda.

When styracine is treated with the caustic alkalies, it combines with them, and forms a solid mass consisting of agglomerated grains. By the application of heat, styracone distils, and cinnamic acid is obtained. Submitted to the action of chlorine, chlorinated styracine is obtained. By distilling this compound under the influence of chlorine, a volatile chlorinated liquid and a chlorinated crystallizable acid are procured; the latter very readily forms salts. With nitric acid, styracone forms oil of bitter almonds, hydrocyanic and nitrobenzoic acids; with chromic acid it gives hydruret of benzoil, benzoic acid and resin; with concentrated sulphuric acid, it yields cinnamic acid and a brown substance, soluble in water and insoluble in aqueous saline solutions.—*L'Institut*, Juin 6, 1849.

IDENTITY OF BROOKITE AND ARKANSITE.

We learn by a note from Professor Miller, dated the 2nd of May, that he has found an exact agreement between the forms and angles of a mineral from the United States, lately described by Professor Shepard, and named Arkansite, and the previously established species Brookite; and as both consist almost entirely of oxide of titanium, they must, we conclude, be regarded as varieties only of the same mineral.—ED.

ON THE ESTIMATION OF MOLYBDIC ACID. BY M. H. ROSE.

Molybdic acid, MoO_3 , may be estimated in the state of sulphuret by precipitating its solutions, rendered acid, with sulphuretted hydrogen. This method possesses some inconveniences: on one hand, the precipitation always takes place slowly, and the washings, which have usually a blue colour, require to be heated with solution of sulphuretted hydrogen to precipitate the last portions of molybden: on the other hand, it is requisite to calcine the brown sulphuret of molybden obtained, in order to convert it into gray sulphuret MoS_2 , the weight of which serves for calculating the quantity of molybden.

M. H. Rose finds it more correct and convenient to estimate the molybdic acid by reducing it in a current of hydrogen gas to the state of perfectly fixed oxide of molybden. He uses in this operation a platina crucible, which has a tubulated cover, by which the hydrogen gas is conveyed. The heat of a spirit-lamp is to be employed, in order that the temperature may not be raised high enough to reduce any of the oxide of molybden to the metallic state. The weight of the oxide of molybden obtained serves for calculating that of the molybden or the molybdic acid.—*Journ. de Ph. et de Ch.*, Janvier 1849.

ON GLAIRINE. BY M. BONJEAN.

This substance is a vegeto-animal matter produced at the sulphurous spring of Aix in Savoy. According to M. Duby, who has examined it microscopically, it consists of extremely minute fragments of a plant, of an extraordinarily fine, close, undulating tissue,

which is insoluble in water, and has the appearance of an animal remain.

Glairine is produced by the immediate action of the air on the sulphurous water, and is deposited on the pavement of the pumps. It retains a large quantity of water, which it does not lose by long exposure to the air: it is not entirely expelled below 104° F. Thus dried it is quite colourless, completely inodorous, of a horny appearance, and is reduced to about one-tenth of its weight; when water is added to it, it is rendered again mucilaginous, becomes nearly of its original size, but remains inodorous. When dried and thrown upon burning charcoal, it gives the smell of burnt horn, without any trace of sulphurous acid, and the gases which it yields turn reddened litmus paper blue. The absence, in this experiment, of sulphurous acid seems to indicate that this substance contains no sulphur; it will soon be shown that it contains so little, that it can only be isolated by means of æther. Water, alcohol, oil of turpentine, nitric, hydrochloric, sulphuric, phosphoric, oxalic, acetic acids, &c., solution of chlorine, dilute alkalies, all dissolve a small quantity cold, and a little more when heated, but some of them occasion peculiar modifications in it. The nitric, concentrated hydrochloric acid, and liquid chlorine, immediately destroy the gray colour which it acquires out of water and restore its natural whiteness. Separated from these acids, it becomes more gray by exposure to the air; other acids do not decolorize it. Alkalies precipitate it from solution in acids in white flocculi which have a bluish reflexion. The nitric solution, filtered and evaporated to dryness in a small porcelain capsule, leaves a yellowish sharp residue, which is slightly acid, difficultly decomposable in a strong heat, and insoluble in water and in alcohol: glairine does not decompose nitric acid unless it be heated. When hydrochloric acid decolorizes glairine blackened by contact with the air, it assumes a yellow colour, derived from the formation of a persalt of iron. This shows that this organic matter contains peroxide of iron in combination, derived, unquestionably, from the carbonate of iron which the water holds in solution. Concentrated sulphuric acid, instead of decolorizing it, like the fore-mentioned acids, imparts to it the colour of wine dregs, which becomes lighter when acidulated water is added. The caustic alkalies do not act upon it when cold; but when heated a green colour results, which acids cause to disappear immediately. Bromine also decolorizes it; but at first it gives it a red colour, and the decoloration of the glairine is not perfect until all the bromine is volatilized. If it should retain a yellow tint from some remaining bromine, washing with distilled water renders it perfectly white. Iodine colours it brick-red; and this colour does not disappear, either by long exposure to the air or frequent washings. Alcohol and oil of turpentine dissolve a small quantity, and acquire a slight yellow tint; alcohol becomes sweetish, and its consistency is sensibly increased. If these two liquids be evaporated to dryness in a porcelain capsule, the lower portion is carbonized by slightly increasing the heat.

Glairine is totally insoluble in æther. If they be mixed in a well-stopped phial, and shaken occasionally during two or three days, the

æther when filtered leaves by evaporation small rounded grains of perfectly pure sulphur; they are yellow and brilliant, of the size of a pin's head, and when thrown on a burning coal burn with a fine blue flame and the disengagement of sulphurous acid.

When glairine is gradually heated on a platina crucible, it loses its interposed water slowly, and even begins to be decomposed before it has parted with the whole of it; towards the end of the calcination it exhales the odour of burnt horn, without any sensible disengagement of sulphurous acid, and leaves a coaly residue. It does not fuse, and it is difficult to incinerate it; it does not lose its odour by numerous washings with cold water, but imparts a very distinct one to it, with a sweetish taste, without giving it colour; long boiling takes away the greater part of it; the solution has a strong smell, and the residue is very small. This liquor when filtered is yellowish, has a sweetish animal taste, is not mucilaginous, and does not coagulate on cooling; when evaporated to a syrupy consistence in a porcelain capsule, it colours the sides of it strongly yellow. The residue is of a deep yellow, with a slight smell and bitterness; the sulphuric and nitric acids, whether concentrated or diluted, do not sensibly act upon it. When glairine is subjected to dry distillation in a glass retort placed in a reverberatory furnace, it swells at first, and boils in the water which it retains interposed. This water soon begins to distil by drops, is colourless, has a strong smell of animal matter, and the apparatus is filled with vapours. The odour of burnt horn soon replaces that of animal matter, and drops of a yellow colour then fall into the receiver. Lastly, when the heat becomes very strong, the retort contains charcoal, and the neck is covered with a black substance, of which a few drops only fall into the receiver with the yellow liquor and immediately solidify. The yellow distilled liquor has a strong burnt odour and taste, with slight bitterness. It reddens litmus feebly, and dissolves in all proportions in water and alcohol. Æther does not dissolve it, but separates a small quantity of yellow fatty matter, which it leaves by evaporation; it is insoluble in water, but very soluble in alcohol.

The coaly residue of the distillation treated with distilled water yielded a slightly alkaline solution; during distillation the gases disengaged restored the blue colour of reddened litmus. The dry residue of the distillation was a very light, black and friable charcoal, which yielded 0.75 of ash composed of silica, carbonate of lime, and peroxide of iron. No trace of iodine could be detected.

The preceding experiments on glairine lead to the following conclusions: it contains very little nitrogen and no iodine; it dissolves sparingly in water, alcohol, oil of turpentine, and rather more readily in concentrated acids, from which the alkalies precipitate it in bluish-white flocculi; heat in all cases increases the solvent power of the liquids; it is quite insoluble in æther, which isolates perfectly the small quantity of sulphur which it retains interposed between its molecules; it becomes rapidly of a more or less blackish-gray colour when taken from the water and exposed to the air; but it is sufficient to treat it with nitric or hydrochloric acid, bromine or

chlorine, to restore its natural whiteness: sulphuric acid, far from decolorizing it, imparts to it the colour of wine-lees; the concentrated alkalies render it green when heated, and the alkalies destroy it; when in water it has but very little odour, but as soon as taken from it, it acquires a most disgusting smell, which is not dissipated by long exposure to the air, at least while it retains a little water; nor is it got rid of by much washing with cold water, or by long boiling, although in the latter case the greater part of it disappears. Lastly, it becomes perfectly inodorous by thorough drying in a stove, assumes a horny appearance, and is reduced to about one-tenth of its weight.—*Journ. de Ph. et de Ch.*, Mai 1849.

ON GLAIRIDINE. BY M. BONJEAN.

The author observed that when the sulphurous waters above described become mixed with rain-water, another vegeto-animal matter appears, to which he has given the name of *glairidine*.

The principal characters of this substance are, that it is of a deep gray colour, instead of being colourless, like glairine; it is inodorous, and remains so even when exposed to the air. Long exposure to the air does not alter its colour; but if a glass bottle be immediately filled with it, it soon acquires a smell, which in a few days becomes as disagreeable as that of glairine taken from water. If it then be taken from the bottle and exposed to the air, it becomes quite inodorous, and dries perfectly in a few days; on the contrary, it has been shown that glairine does not lose its interposed water till exposed to a heated stove. Glairidine is not decolorized either by any acid or by liquid chlorine. Like glairine, it renders hydrochloric acid yellow on account of the peroxide of iron which it contains. Water, alcohol, oil of turpentine, and the acids, dissolve a small quantity of it; it is insoluble in æther; it separates sulphur, but in so minute traces, that to perceive them it is requisite to operate on a great quantity of the matter. The caustic alkalies do not render it green, either cold or hot. If it be thrown on a filter, it retains a little water; and when afterwards dried on a stove, it loses only two-thirds of its weight. In this state, instead of having a horny appearance, like glairine, it presents a uniform, friable, solid mass, and does not swell in water. The water which runs through the filter is as inodorous as the substance itself, and it contains a very small quantity of *zoïdine*. When decomposed in a glass tube, it exhales the odour of burnt horn, and yields gases which strongly restore the blue colour of reddened litmus. Lastly, glairidine yielded by analysis very evident traces of iodine, which, as already stated, glairine did not.—*Ibid.*

ON ZOÏDINE. BY M. BONJEAN.

The author has given this name to a new substance from two Greek words, expressive of its azotized nature and its violet colour. In order to obtain it, it is requisite to employ very white glairine, which cannot be procured except when the sulphurous waters are in a state of perfect purity, and nearly at their maximum of sulphuration. This substance exists in the state of strongly iridescent scales of a fine deep violet colour; it has neither taste nor smell; it is un-