

ARTICLE III.

Description of a Resinous Substance lately dug out of the Earth at Highgate. By Thomas Thomson, M.D. F.R.S.

DURING the late attempt to make a tunnel through Highgate-hill, in the neighbourhood of London, a very considerable number of curious fossils were discovered. The beds dug through consisted partly of gravel and partly of clay. The number of shells thrown out, and the round masses of limestone, could not escape the most careless observer; but one of the most remarkable substances detected was a resinous body, in shapeless masses of various sizes. Mr. Sowerby had the goodness to send me some specimens of this curious substance; and as I am not aware that any account of it has hitherto been published, I conceive that the following observations which I made upon the specimen that I received will prove acceptable to my chemical and mineralogical readers.

I. The colour of Highgate resin is of a dirty yellowish light brown. It is semitransparent. Its lustre is resinous, and its surface smooth; though not perfectly so; but having the appearance of having been rubbed, as would have happened had it been mixed with gravel upon the margin of the sea-shore, or a lake.— Brittle; not so easily broken as common resin; but much more so than copal; softer than copal; has a resinous and aromatic smell, especially when heated; this smell is peculiar, though it has some faint resemblance to the smell of camphor.

II. Its specific gravity at the temperature of 60° is 1.046. This agrees almost exactly with the specific gravity of copal as determined by Brisson; but on trying the specific gravity of copal, I found it 1.069. Hence either copal differs considerably in its specific gravity, or the resin called copal by Brisson was not the same to which we give that name in Britain.

III. When heated it melts, and may be rendered as liquid as water without alteration in its colour. It catches fire at the flame of a candle, and burns with a clear yellow flame, and emitting abundance of smoke, as is the case with other resins. At the same time it emits a strong aromatic odour.

IV. When in lumps it is insoluble in all the re-agents I tried, namely, water, alcohol, potash ley, acetic acid; except ether, nitric acid, and sulphuric acid, which act upon it more or less.

Ether renders it opaque, and white, and quite tender; so that it has lost its cohesion, and crumbles into powder upon the least pressure between the fingers. The ether at the same time dissolves a portion of it which it deposits, and becomes milky when agitated with water.

Nitric acid acts upon it slowly when assisted by heat, and partly dissolves it, and partly converts it into a red coloured substance. The acid itself becomes red, and when diluted with water lets the resin again fall in white flocks. These flocks when dry are in the state of a light yellow coloured powder, having a bitter taste. I could not dissolve it in water; but it dissolved in alcohol, at least as easily as the unaltered resin.

Sulphuric acid readily chars this resinous body when assisted by heat.

V. When reduced to the state of a fine powder alcohol readily dissolves a small portion of it, and lets it fall again when mixed with water; but alcohol is a bad solvent of this resinous body. The same observations apply to ether.

VI. I cannot find that either potash or subcarbonate of potash dissolve this resin, though boiled with it for some time in the state of powder. This is the property which distinguishes Highgate resin from every other with which I am acquainted. Even amber is partially acted upon by alkaline leys, and tinges them yellow very speedily.

VII. Nor do I find that acetic acid dissolves any perceptible portion of this resin after a week's digestion in it, when in the state of a fine powder. I even triturated them together for a considerable time in a mortar, and then boiled them in a glass tube, but no solution was effected. Here, again, another character which Mr. Hatchett has assigned to the resinous bodies fails when applied to the Highgate resin.

VIII. I have not tried the action of oils upon Highgate resin; but from the properties above described I conceive there is reason to presume that, like copal, it will not dissolve in any of them.

IX. It burns all away before the blow-pipe upon a piece of metal without leaving any perceptible ash behind it, when we make choice of pieces quite free from any earthy matter attached to them.

Such are the properties of this substance, as far as I have examined them. They are sufficient, I think, to distinguish it from all the vegetable substances hitherto observed. It approaches nearest to copal and amber; but is distinguished from the first by its solution in alcohol, and its non-solution in potash ley; from the second, by its readily melting when heated, and by its melting without any perceptible change of its properties. Thus the chemical properties of this singular substance throw no light upon the source from which it was derived; and cannot, therefore, facilitate our inquiries into the revolutions which the southern part of this kingdom has undergone, and the various animal and vegetable remains so thickly scattered in its bowels.