IX. *On the Sublimation of Silica.*

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SOME years ago, being in pursuit of another object, a mixture of the oxides of tin and lead was exposed to the heat of an air furnace in an English crucible, to the top of which was luted another of the same sort. This apparatus was allowed to remain in the fire for some hours. No account of the heat was taken, but I have on former occasions produced in the same furnace a heat sufficient to contract one of Mr. Wedgwood's original clay pieces to the 130th and 140th degree of his scale. On removing the crucibles, the insides of both from the bottom of the lowermost to within a third part of the top of the uppermost, were found covered with white brilliant filamentous crystals crossing each other in all directions. I concluded that they consisted of the oxide of tin, or perhaps that of lead, and subjected them to the obvious experiments necessary for ascertaining this circumstance. Failing to confirm this supposition, I then conjectured that they might consist of silex. The quantity I procured scarcely amounted to half a grain, and I therefore divided it into two parts, that I might have the satisfaction of confirming or refuting my own trials by comparison with those of some chemical friend. Mr. Aikin was so good as to undertake the examination of the reserved portion, and from his well known accuracy, the Society will naturally place confidence in our mutual results. On igniting

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them in successive portions of borax and of pure potash, they were dissolved. The solution was then neutralized, and a few light flakes fell down, which were redissolved in muriatic acid. This solution being evaporated to a transparent jelly, was ignited by the blowpipe, and became insoluble in acids. I was very desirous of obtaining a second specimen, and repeated the same process many times for that end, but in vain. I can not pretend to account for this accidental appearance, and only regret that I was unable to ensure it at will. There can be no doubt that they were crystals of silica, however difficult we may find it to form them at pleasure, and the rarity of the occurrence only serves to prove that there are properties and relations of this substance with which we are as yet unacquainted. An agreeable confirmation of this fact appeared some time after in an observation of Vauquelin, copied in Tilloch's journal for 1809, with which the members of this Society are doubtless well acquainted. In a geological view it may perhaps be worthy of record as not only establishing the volatility of silica, but serving to prove that this substance may be crystallized from the state of vapour, as sulphur, some neutral salts, and some metals are known to be. How far this property of vaporization and crystallization from that state may be possessed by the other earths, or by earthy compounds, as it undoubtedly is by all the metals, must be determined by future observations. Possibly we may thus gain a step on which to rest, in the investigation of the difficult subject of mineral veins, and the arrangement of the crystallized substances which occupy their cavities. The possibility also of explaining by this process the crystallization of the delicate filamentous zeolites which occupy the cavities of amygdaloids, will readily occur to every mineralogist.