

III. *A Letter from Mr Anthony van Leeuwenhoek, F. R. S. containing some Microscopical Observations upon the Chrystalized Particles of Silver dissolved in Aqua fortis.*

After having examined the Coagulation of those Particles that I found in *Aqua fortis* impregnated with Silver, and shewn, that these Particles had assum'd the Figure of so many rough Diamonds ; I separated the Silver and melted it, and then poured fresh *Aqua fortis* upon it, to the end that I might once again discover the Chrystalline or Adamantine Figures thereof ; but in vain, for I could only now and then meet with one single Chrystalline Figure of the Shape and Fashion of a Diamond.

This caused in me a great discontent, and the more, because if any Body should imitate me, and not meet with the same Success, as I have described in my foregoing Observations, they might blame me, for not having faithfully related what I had discovered.

For my further Satisfaction therefore, I took a piece of Silver, being part of a *Piece of Eight*, which was stamp'd with the Arms of *Portugal*, and had been coined many Years ago, and threw it into *Aqua fortis*, where it had not lain long till the Water was tinged with a Green Colour, from whence I inferr'd there was a great deal of Copper in it.

After this Silver had lain Eleven Days in the *Aqua fortis*, I saw a great many long Particles Coagulated in it, which I judged to be Sexangular, and as clear as Chrystal.

I poured off this Water as gently as I could, to the end that the long Particles which I had discovered by my Microscope, might remain in the Glass; and then I poured upon them four times as much Rain Water as there had been *Aqua fortis* before in the same place, to the end that the Salt Particles, which were still in the Glass, might go over to the Water: Then I drew this Water off again, and pour'd on fresh, and then view'd the afore-mentioned Particles thro' my Microscope, and observ'd 'em in great Numbers sticking to the sides of the Glass; but found, that those which had been as clear as Chrystal before, had lost a great deal of their Transparency, and assumed a pale red Colour, which from time to time grew redder; and after some Hours the Colour was so deep that it appeared blackish, at least it appeared so to me, having no manner of Transparency, and where the Particles lay thick together, they appeared to the naked Eye like a whitish Matter.

I likewise pour'd off very gently the *Aqua fortis* from another Glass, in which were a great Number of these long Chrystalline Particles, and then turn'd the Glass upside down, to the end, that that little Water which remain'd in it might be drain'd out; by which means a great Number of the said Particles remained sticking to the sides of the Glass; and forasmuch as I had pour'd no Rain Water upon them, they preserv'd their Transparency: And you must observe, that the afore-mention'd Coagulated Particles are but a very small part of the Silver which was thrown into the *Aqua fortis*.

As often as I dissolved the Silver in *Aqua fortis*, I could not discover any Diamond-like Figures worth speaking of, but only several very long Particles, such as I have described by Figure 1, 2, 3, 4, 5. Upon which I considered whether my *Aqua fortis* was good; but was informed, that it was the same that was sold not only

to the Gold and Silver-Smiths, but also to the Silk Dyers. However, having suffer'd prejudice formerly, in endeavouring to separate Gold from Silver by using *Aqua fortis*, that had been drawn off of foul Copperas and Salt, (that it might be sold the cheaper,) I apply'd my self to a Goldsmith, and got some of his *Aqua fortis*, in which I dissolved not only my own Silver, but also some that had been coined in *England*, and that prov'd to my Satisfaction; for I discover'd therein as many Particles of the Form of Bright Diamonds, as in any of my foregoing Observations; only with this difference, that the Chrystalline Particles of the *Englisch* Silver were not so Transparent as the other, and that that Silver which is suppos'd to be allay'd with one twelveth part of Copper, tinges the Water with a very green Colour, and leaves a great deal of Dross at the bottom of it. I likewise observ'd in the same Water some few long Chrystalline Particles, such as I have mentioned heretofore, which had six Sides, and ended in two points of the same Figure, like your Particles of Rock Chrystal, only with this difference, that most of them have but one Sexangular Point; the reason of which I suppose to be, that the other end is fastned to the Rock. And forasmuch as this appear'd strange to me, I examin'd again some of those Diamond Chrystalline Particles which were lying by me; and discovered among them, but in a very small Number, some of the last mentioned Figures, which you will here find described, *Fig. 6. A. B.* And I imagine, that all the Mountain Chrystal wou'd be of the same Form, if the Rocks and Stones, among which it is found, did not hinder it while it was yet soft.

I also observ'd one six-sided Figure, which only differed from the preceding, that one side of it was at least twice as broad as its opposite; by which means the Sexangular Point was askew, as it stands in *Figure 7. D. E. F.*

I saw also another little Chrystalline Particle represented by *Fig. 8.* G. H. I. K. which was of the same Figure with the former in its Sides, and at one end described by I. but the other end G. was not Sexangular, but of the Shape of a Hatchet. In the middle of the same Figure, there appeared a Break, or Rent, which to me seem'd as if it had been two distinct Particles, which were joined as they grew, till they became one Body ; yet there remain'd the Marks of their joyning, as you may see between H. and K.

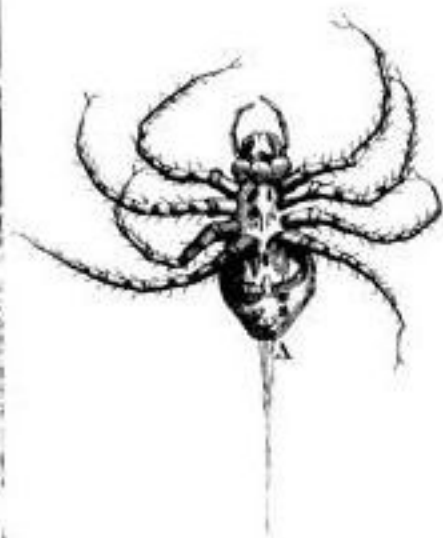
I remain with great Respect,

Your Honours

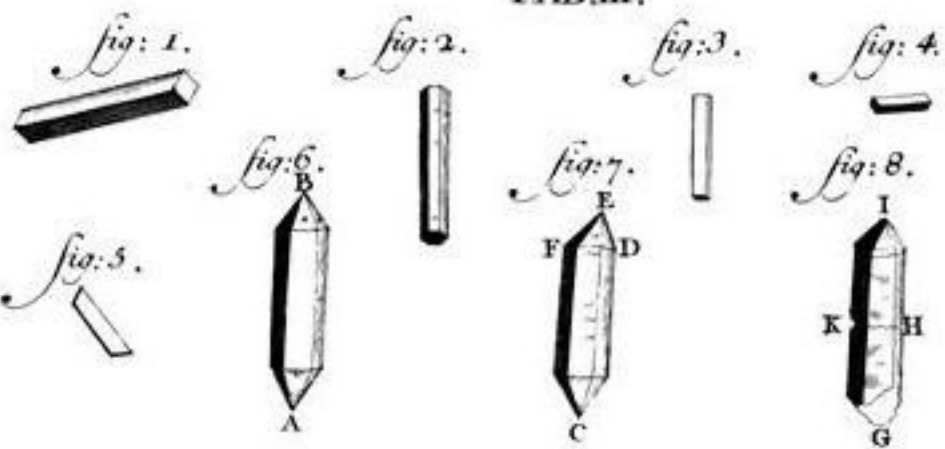
Most Humble Servant,

Anthony van Leeuwenhoek.

TAB. I.^A *Philos. Transact. N. 325.*



TAB. III.^A



TAB. II.^A

