



Philosophical Transactions

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Whatsoever is melted in the melting Furnace, is let out through an hole at the bottom thereof into the pan, which is plac'd in the earth before it, and, thus expos'd, it immediately acquires an hard scum, dross, loaf or cake, which being often taken off from the top, the metal remaining in it becoms purer; to which is added Lead, and after some time the melted metal is taken out. Then being again melted in the Driving Furnace, the Lead, or what else remains mixt with the Silver is driven off by the blowing two great bellows, and runs over in the form of Litharge: that which first comes over is the *White*, and that which last, being longer in the fire, is the *Red*, not that it is Litharge of Gold, both being driven off from the same metal.

As *Chremnitz* Gold-ore hath Silver in it, so most of the *Schemnitz* Silver-ore holds some Gold; which they separate by melting the Silver, then granulating it, and afterwards by dissolving it in *Aqua fortis*, whereby the Gold is left at the bottom, and is afterwards melted; the *Aqua fortis* is distilled from the Silver, and serveth again for use.

The Silver then separated from all its former associats, is sent to *Chremnitz*, where they coyn it into pieces of a mixt metal (which is the common Money of the Country,) after this manner: They melt it with about the same quantity of Copper, and run it into Bars, which they beat out; then softning them in the fire, draw them out to an exact thinness between two Steel-Wheels; then they cut them out into round pieces with an Instrument like a Shoemakers Punk, and then boil them with Tartar and Salt, shake them in a Sack with Small-coal and Water, dry them in a Kettle perforated, and afterwards they are drawn between two Wheels, in which they receive their Stamp.

So far this generous Travailer of the Hungarian Gold-and Silver-mines: what he hath observed concerning the Copper-mines, and the Baths in those parts, we must refer to the next opportunity.

Some Inquiries relating particularly to the Bleeding of Walnuts; suggested by Dr. Ezerel Fonge in a Letter of his to the Publisher, of March 22. 1670.

AFTER I had been troubled a while at the Observation of Mr. *Willoughby*, concerning *Sycamores* staying in hot, and running in cold weather, and had re-commended an *Hypothesis* to salve the *Phænomena*, and to reconcile the seeming repugnancy's*, he hath rais'd two other difficulties for me, of *Sycamores* running in *November*, and *Walnuts* never running but in cold weather: The *former* of which Observations puts me out of conceit of a *Salvo*, I found, and offer'd, in my publick Papers, to *Birch* suppos'd to have run in *Autumne*, and found to have jelly'd the hole

* Of which in Namb. 57. p. 1165, 1166.

hole full at *Spring*, which was bored that time Twelve-Moneth before, and yielded not any sap at all that *Spring*, as far as could be observ'd, and was not come to its season of bleeding the second *Spring*, when the Jelly was observ'd in the bor'd hole *. The latter, of the *Walnut* not bleeding but in cold weather, being inconsistent with the Observations, often made by me of that Tree, not only bleeding and bleeding longer in warmer weather, but bleeding longer at the roots on the South-side in the Sun, than on the North-side in the Shade, and constantly governing the Course of its Sap in its beginning to rise and to stop daily at the rising and setting of the Sun; I shall betake myself, instead of opining, to make some naked *Queries* for the finding out the matter, *viz.*

* See Numb. 44.
p. 810.

1. Whether this Observation of Mr. *Willoughby's* concerning the *Walnut-Tree*, was in Roots, Body, Branches; all, or some, or one?

2. Whether the Sap of a Tree, as to its motion, be not influenced from the Full or Wane, or other Aspect of the Moon to the Sun, &c?

3. Whether the *Walnut*, being a more solid Wood, have not some alteration as to heat, ascent of Sap, &c. from thence different from *Birch*?

4. What the Age and Bulk of the Tree, consuming perhaps insensibly what rose insensibly in hot, not in cooler Weather?

5. What the time of the Year? The *Aspes* run only, as M. *Midford* relates, before *February*; the *Hopp* about Hopp-harvest. *Withies* in *April*, &c.

6. Whether the weight of the Atmo-sphere will put some check to Sap rising in that part of the Root, which is cut off from the Body? And whether the exclusion of that Impedment, by closing the cut Root in Glass, will cause any sensible alteration: to be tried in several Roots of the same Tree of like Diameter.

I want a good *Thermometer*, *Barometer*, and *Hygro-meter*, (or if you will have English Names for them, a Heat-Weight-and-Wet-Wiser) to make more accurate Observations, how far the ascending of Sap depends on the Air, and the several temperatures of the same.

An Extract of a Letter

Written by Francis Willoughby Esquire to the Publisher, containing some Observations of his made on some Sycamore-Trees, the Black-Poplar, and the Walnut: As also his thoughts about the Dwarf-Oaks, and the Stellar Fish described in Numb. 57.

I Am sorry, I cannot return you a better Answer to yours of *March* 19; the Experiments, which our leisure hath since permitted us to make, being not sufficient to found a new *Hypothesis* on, to