

Some *Experiments* about *Freezing*, and the difference betwixt common *fresh Water Ice*, and that of *Sea Water* : also a probable *Conjecture* about the *Original* of the *Nitre* of *Ægypt* : by *Dr. Lister*, *Fellow of the Royal Society*.

December 3d 1684 at Night I expos'd 4 Glasse bottles in the open aire upon the ground to *freeze*; viz, of the *Red-Natron Water* from *Ægypt*; of a strong *Solution* of *Nitrum Murarium* in fair *Water*, of *Sea Water* taken up at *Scarborough* and more then halfe *Evaporated*; of the *Sulphur* well at *Knasborough*, that is, of natural brine *evaporated* to the same height with the *Sea Water*.

Note, that the 4th in the morning, the *Solution* of *Nitrum Murarium* was halfe of it *Ice*, but not any of the rest.

The 6th in the morning, the bottle of *Nitrum Murarium* was most *Ice*; the *Sulphur Water* had no *Ice* that I could perceive at all in it: the *Natron* had much *Ice* at the bottom of the bottle; and the *Scarborough* sea *Water* was not without flakes of *Ice*.

The *Icicles* of the *Natron* were prettily figured, as is represented in *Fig. 1.* the *Icicles* of the *Sea Water* were also figured in oblong squares, as in *Fig. 2.* and were brittle and transparent. I set the drained *Icicles* of *Natron* before the fire, which did readily enough melt & dissolve into water again; this *Ice* was both alike salt in *Ice* and in *Water*, much like its *Water* to the taste, out of which it was frozen.

In like manner having drained the *Sea Water Ice*, and expos'd it before the fire; these *Icicles* became soft and moist by degrees, but at length rather *Evaporated*, than quite melted away; and having taken up a good thick lump

lump of *common Ice*, at least a 100 times their thicknesse & bulk, this in a few moments at the same distance before the fire, grew wetter and wetter and dissolved into water, whereas the *Salt Icicles* after 3 quarters of an hour, lying before the fire did at length dry into a white powder perfect Salt, the moisture totally Evaporating.

Also the *Sea Water Icicles* tasted very Salt, when first taken out of the Water.

I repeated the same experiment of exposing to freeze the bottles of *Natural Brine* of *Knasborough Sulphur* well halfe Evaporated, and *Scarborough Sea Water*, the same as formerly, the 7 and 8 th instant at Night, & with the like successe; viz, no Icicles in the natural brine, but the same large ones as above described I had in the *Sea Water*, but not till after the 2d Nights keen freezing.

These *Salt Icicles* continued unthawed in the bottles, though they were brought into the House and kept in a warm room long after all other Ice within doors was gone, viz, till the 12th instant at Night, when the Icicles also were dissolved and vanished.

From which Experiments we note, 1. that there may be *Salt Ice* from *Sea Water* frozen, which the Experiments of this S. of the last year did not seem to favour.

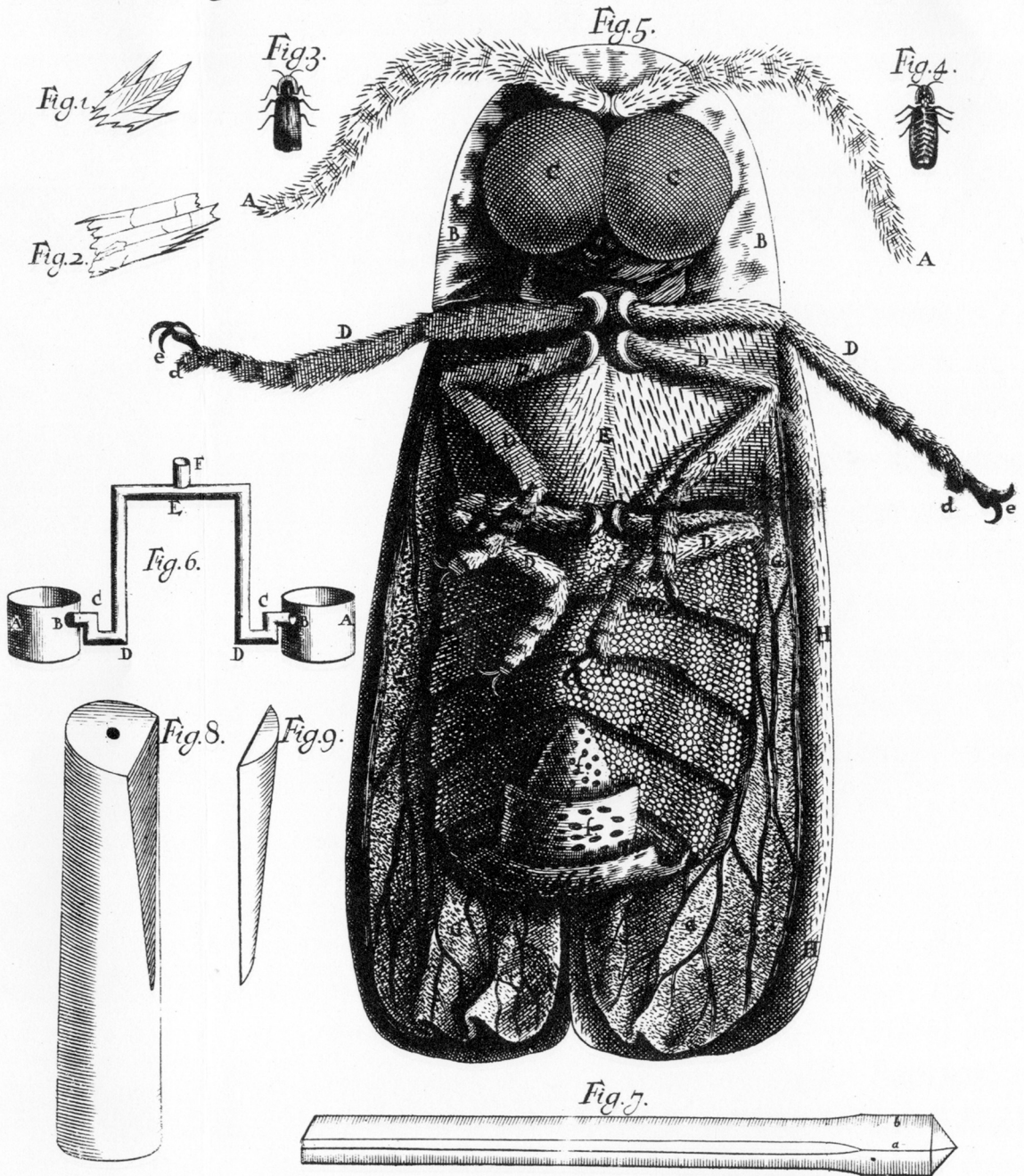
2. that there is a real difference betwixt *natural Brine*, and *Sea Water*; as there is betwixt the Salts themselves, which they yield.

3. That the great floating Mountains of Ice in the Northern Seas (if upon strict Tryal they shall be found to be salt, which should be further enquired into,) are not only the effects of many yeares freezing, but also much of their magnitude may be owing to the natural duration of that sort of Ice.

Before I end, give me leave to guesse at the original of the *Nitre* of *Ægypt*, which the Experiments made about it at *Oxford* plainly shew to be little different from *Sal Armoniac*.

That confidering that it rains little or nothing comparatively to the great heats, in *Ægypt*; and that the Lakes there are only once a year furnisht with fresh Water from the overflowings of *Nile*; also that vast tracts of Land there and all over *Asia* are naturally covered with fossil Salt; again those Lakes are furnisht with vast Animals as *Crocodiles*, *Hippopotami*, and without doubt great variety of other lesser Vermin; these things I say, well considered, it is easy to think, that in a years time, most the Salt Water of those Lakes has past through the Bodies of those Animals, and consequently is become Urinous or Salin-Urinous, as is the nature and composition of factitious *Sal Armoniac*.

Philosoph. Transact. Number, 167.



MBurghers sculp.