

VIII. *Some Observations on the Hardness of Shells, and on the Food of the Soal-Fish ; by Mr. Peter Collinson, F. R. S.*

Read March 15.
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I HAVE observed some Circumstances in the Structure of Shells, which I know not whether they have been sufficiently attended to; I mean their durable Hardness and Polish; which, in the slenderest of these Bodies, is very remarkable; and it is unknown how long they will resist the Injuries of Time and Weather.

I saw an Instance of these permanent Qualities at *St. Edmond's-bury*, in the Ruins of that Abbey, which is built of a kind of Stone composed of Grit or Sand, interspersed with an infinite Number of very minute Shells, which appeared to be a Species of smooth shining Cockle. In several Parts of the Building, much exposed to the Air, the Sand was mouldered away; but these exceeding small Shells remained intire, and their Polish not in the least decayed.

It may be alledged, that a petrifying Juice, the same that had united the Particles of the Sand together, had likewise hardened these, and rendered them more durable than Nature had formed them.

But, as we have many Instances of Shells retaining their natural Politure and Firmness, where no such Allegation can justly be made (for Instance, the Shells found in Chalk-pits, in Loams, and several other Places, where no such Juices are hitherto proved

to

to exist); yet of so tender Shells, long exposed to the Weather, and still remaining uncorrupted, the Instance mentioned above is the most singular I know, be the Cause of their Duration what it may.

The other Observation, which I would offer to your Consideration, relates, in part, to the same Subject, but of a different Nature. I was led into it by the following Circumstance:

In *September* last, having bought some Soal-fish, before they were skinn'd, I observed their Bellies were prominent and hard, as if they were full of large Rows; but, instead of that, their Guts were filled with Shell-fish, a Species of *Pectuncula*.

Before these Shells were taken out of the transparent Guts of the Fish, the Whole had very much the Appearance of Strings of Beads, or Necklaces; the Interstices betwixt the Shells occasioning this Resemblance. Upon taking the Shells out, I observed, that some of them were almost intirely dissolved, others partly so, but many were whole and intire.

It is well known in Natural History, that Shell-fish are the Food of several Species of Fish. The Sea-Porcupine, and a kind of Ray, are known to subsist chiefly upon them; but then they are wonderfully provided with a suitable *Apparatus* for reducing them into a State more fit for Digestion: Their upper and under Jaws are hard enough to break or grind almost the strongest Shells to the Condition of Pulp.

But the Soal-fish has nothing of this kind: She feeds, we see, on Shell-fish, but digests them not by Attrition; for neither her Mouth, nor any of her

Viscera, are framed for this Purpose ; but, as it would appear from the preceding Account, by a proper *Menstruum*, which is prepared in the Body of this Animal.

Thus we see, *Shells*, which can resist the Teeth of Time, the Inclemency of Seasons, and lie, without apparent Decay, for unknown Ages, in the Bowels of the Earth, reduced, in all Probability, in a little while, almost into a State of Fluidity, by the Juices of a small tender Animal.

Is it the Juices of the whole Animal, or is it the Consequence of such a kind of Nourishment, that renders this Fish so delicious?

It would seem no unnecessary Disquisition of those who are properly qualified, to search, with some Care, into the Nature of this Solvent. It is probable, that either the Juice itself, or the Fish under proper Management, may be rendered more beneficial than has hitherto been expected.