

An Account of the Dissection of a Porpels, promised Numb. 74; made, and communicated in a Letter of Sept. 12. 1671, by the Learned Mr. John Ray, having therein observ'd some things omitted by Rondeletius.

S I R,

ABout the later end of *April* 1669, being at Westchester with my Lord Bishop of that Diocess, in the company of *Fr. Willughby Esq;* I had the good fortune to meet with a young *Porpels* of a convenient size for Dissection, brought thither by some Fishermen who caught him upon the Sands, where the Tide had left him; in the Anatomy whereof I observed some things omitted by *Rondeletius* in his Description of the *Dolphin*.

The length of this was by measure 3 feet and 7 inches. A string of 2 feet and 2 inches girded him in the thickest place. The shape of his body was not much unlike that of a *Tunny fish*; only his snout longer and sharper. His skin was thin, smooth, and without scales. In an old and well grown fish its like the skin may be thick and tough, as *Rondeletius* represents it.

His Fins are cartilagineous, and flexible, not sharp or prickly, as the Ancients report them. On his back he hath only one, which was distant from the tip of his snout 1 foot and 9 inches; and the basis of it in length $5\frac{1}{2}$ inches; so that measuring from the tip of his snout to the end of the tayl, it was situate somewhat below the middle of the fishes length. On the Belly it had only one pair of fins, 9 inches distant from the tip of the lower mandible, much about the place, where the foremost pair of fins in other fishes usually grow. The Tayl is forked, of the figure of a Crescent; the breadth thereof from angle to angle 11 inches. The *situs* or position of it contrary to that of all other fishes, except those of this kind. For, whereas the plain of the tayl of other fishes, when they swim, stands erected perpendicularly to the plain of the Horizon, in this fish (and I suppose in all others of the *Cetaceous* kind) it lyes parallel thereto. The reason whereof I conceive to be partly to supply the use of the hindmost pair of

of fins in other fishes, which serve to ballance the body, and keep it up in the water, answering in proportion to the hinder legs of a Quadruped; hence we see, that those fishes, which have long bodies and but one pair of fins, as Eeles and the like, cannot keep themselves up in the water, but lye always grovelling on the bottom: *partly*, to facilitate the fishes ascent to the top of the water (to which he can immediately raise himself by a light jerk of his tayl thus placed) for the use of respiration, which is necessary for him, as for Quadrupeds. For, doubtless if violently detained under water, he would in a short time be suffocated or drowned.

Immediately under the skin lay the fat, which, as I remember, our Seamen call the *Blubber*: It was firm, full of fibres, and in this small fish, of an inch thickness, encompassing and enclosing the whole body, back, belly and sides. The use whereof I conceive to be, 1. to keep the cold water at a distance from the blood, which is, I believe, actually and to the touch hot, in a degree not much inferiour to that of Quadrupeds, and therefore by immediate contact of the water would be apt to be chilled. 2. To keep in the hot steams of the blood from evaporating; by that means also preserving and maintaining its natural heat: as we see water, and any other liquour in a close vessel will retain its heat much longer than in an open; and nothing is more proper to detain the finest and subtillest evaporations and spirits, than oyl or fat. 3. Perhaps also, to lighten or counterpoise the body of the fish, which would otherwise be too heavy to move and swim in the water. Under the Blubber lay the Musculous flesh like to that of Quadrupeds, but of a darker colour.

The Body was divided into three Regions or *Ventres* like a Quadruped, *viz.* Head, Breast, and Belly; the vessels and *viscera* in each *venter*, for the main, the same as in Quadrupeds: 1. The Abdomen was compassed about with a strong *Peritonæum*. The Guts joyned to the Mesentery, and of a very great length, by measure 48 foot, without any difference or distinction of great and small; neither was there any Blind-gut, or Appendix, that I could find. The Stomach was of a strange make, being divided into two large bags, beside other

other smaller ones. I found nothing in it, but a good number of those little long fishes, which our Fisher-men dig out of the Sands at low water, and therefore call in some places Sand-Eeles; by some they are called *Launces*, and by Gesner, *Ammodyta*.

The Liver was of a moderate size, scituate in the right side, and divided into two lobes, having no *cystis fellea* or receptacle of Gall annexed. The *Pancreas* large, sticking close to the third bag of the Stomach; into which also its *ductus* enters, and emptys it self. The Spleen small and roundish. The Kidneys larg, sticking close to the back, and lying contiguous one to the other, made up of many little kernels, like to, but much lesser than, those of an Ox; of a flat figure, having no *pelvis* in the middle, but the Ureters going out at the lower end.

The Urin bladder oblong, and little for the bulk of the Animal, having on each side a round ligament, made of the umbilical arteries degenerating. The *Penis* long, slender, having a small sharp *Glans*; it appears not outwardly, but lies hid in its sheath within the body, doubled up or rather reflected in the form of the letter S, as is that of a Bull. The Testicles lye within the cavity of the *Abdomen* on each side, as they do in an Hedge-hog, and some other Quadrupeds, of an oblong figure; for their internal substance, Seminal vessels both *præparantia* & *deferentia*, *Epididymides*, *Ves pyramidale*, *Corpus varicosum*, & *glanula prostata*, exactly like to those of Quadrupeds. The Seminal vessels perforate the *Urethra* with many little holes, whereof four are most conspicuous somewhat above the neck of the bladder.

The Diaphragm was musculous, as in Quadrup. The Heart large, included in a *Pericardium*, had its two Ventracles; its *valvula Sigmoides semilunares*, *tricuspides* & *mitrales*; its coronary arteries and veins: in a word, the whole structure and substance of the heart and lungs agreed exactly with that of Quadrupeds. The Windpipe was very short, as it must needs be, the fish having no neck; the *Larynx* at top was of a singular figure, running out with a long neck, and a nob at the end like an old fashioned Ewer.

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The pipe in the Head, through which this kind of fish draw their breath, and spout out water, lies before the brain, and ends outwardly in one common hole, but inwardly its divided by a bony *septum*, as it were into two nostrils; but below again it opens into the mouth in one hole. This lower orifice is furnished with a strong *sphincter*, whereby it may be shut and opened at pleasure, and above this *sphincter*, the sides of the pipe are lined with a glandulous flesh, which if you press, you shall see start, out of many little holes or *papillæ* into the cavity of the pipe, a certain glutinous liquor. Above the nostrils is a strong valve or membrane like an *Epiglottis*, which serves to stop the pipe, that no water get in there against the fishes will. Within the *fistula* are six blind holes having no out-let; four tending toward the snout; two above the valve that stops the nostrils; and two beneath it; two tending towards the brain, having a long but narrow cavity for the use of smelling, as I conjecture, though opening the brain I could find neither olfactory nerves nor *processus mammillares*. The Eyes are small considering the bigness of the fish, and situate at a good distance from the basis of the brain. The Snout is long, and furnished with very large muscles, to root or turn up the sand at the bottom of the Sea for to find fishes, as appears in that we found nothing in his stomach but Sand-Eeles, which, as was intimated before, lye buried in the Sand. The Brain and *Cerebellum* are, for the substance and *anfractus* of them, the same with those of Quadrupeds, only differing in the figure, as being shorter: But what they want in length, they make up in breadth. They have also the like teguments called *dura* and *pia-mater*. Six or seven pair of nerves, besides the Optick: the same ventricles; only in the *modulla oblongata* we observed not these protuberances called *nates* and *testes*. The Skull (*Cranium*) is not so strong and thick, as in Quadrupeds, but articulated after the same manner to the first *Vertebra* of the back-bone. This largeness of the brain, and correspondence of it to that of man, argue this Creature to be of more than ordinary wit, and capacity, and make to seem less fabulous and improbable those Ancient stories, related by * I. 9. hist. nat. *Ezerodotus* concerning *Arion*: By *Pliny* the Elder * c. 8.

concerning

concerning a Dolphin enamoured of a Boy, whom he was wont to carry crofs a bay of the Sea, from *Baia* to *Puteoli*, to School, &c. By *Pliny* the Younger, of another enamoured of a boy at *Hippo* in *Africa*, whom he was wont to carry upon his back in like manner. The story is worth the noting: *Epist.* 33. 1. 9.

But to proceed; this fish had in each Jaw 48 teeth, standing in a row like to little blunt pegs. The Tongue was flat above, of an equal breadth to the very tip, which was toothed or peccinated about the edges, tyed firmly down to the bottom of the mouth all along the middle, as *Aristotle* truly saith: whence I cannot but wonder, that *Rondeletius* should herein contradict *Aristotle*, and affirm (contrary to truth, as I believe) *quod Dolphinis lingua est mobilis, quæ modo exeri modo condi potest*: Unless perchance in this particular the Dolphin differs from the Porpess. For the Porpess is, as I take it, the *Phocæna* of the Ancient, which is a lesser sort of Dolphin, and not the *Dolphinus*; at least if the fish, we are describing, were a Porpess; for the teeth of this fish were lesser than, and of a different figure from, those in the jaw of the Dolphin we got beyond Seas: yet is the difference not great between the *Dolphin* and *Phocæna*. As for that fish, which our Sea-men now adays call the Dolphin, and which, as it is described by *Mr. Terry* and *Ligon*, hath teeth on its tongue, small scales, is firm'd like a rock, of a pleasant smell and taste; what it is I know not, but I am sure it is *toto genere* different from the *Dolphin* of the Ancients.

We observed not in this fish any Nostrils besides those in the *fistula*, nor any ear-holes or *meatus auditorii* at all; wherein also *Aristotle* agreeth with us; which yet *Rondeletius* found out near the eyes: it being manifest, saith he, that a Dolphin doth hear, and seeing no creature can hear without a passage for that purpose to convey sounds to the brain: *Hac ratione impulsus, cum Delphini cranium diligentissime contemplatus essem, manifestissimum audiendi meatum, qui ad cerebrum usque patet, inveni statim post oculum tam exiguum, ut ferè oculorum aciem fugiat*. And we observed in the Skull a bone answering to the *Os petri sum*, which most certainly was for the use of hearing. It had 6 short Ribs that had no Cartilages, and seven that had Cartilages (on each side I mean.) The Breast-bone was very small, As for the name

name *Porpefs*, I agree with *Gefner*, that it was fo called, *quafi Porcus Piscis*, moft nations calling this fifh *Porcus Marinus*, or the Sea-Swine. Indeed it refembles a Swine in many particulars, as the fat, the ftrength of the fnout, &c.

A Letter of Francis Willoughby Efquire, of Auguft 24. 1671. Containing fome confiderable Obfervations about that kind of Wasps, call'd Vefpæ Ichneumones; especially their feveral ways of Breeding, and among them, that odd way of laying their Eggs in the Bodies of Caterpillars, &c.

AS I remember, *M. Lifter's* opinion is, that the *Mufca Ichneumones* lay their Eggs in the bodies of Caterpillars; which I look upon as very ingenious and true, and muft fubfcribe to it, though I cannot yet abfolutely demonftrate it, as I hoped I fhould have done before this. Thefe *Ichneumones* have all four wings, *Antennæ* like Bees; their body hanging to their breaft by a flender ligament, as in Wasps; moft, if not all, have ftings, and are made of a maggot, that fpins herfelf a *Theca* before ſhe turns into a *Nympha*. There is great variety of them; *Some* breed, as Bees do, laying an Egg, which produceth a maggot, which they feed till it comes to its full growth: *Others*, as we guefs, thruft in their Eggs into plants, the bodies of living caterpillars, maggots, &c. For, it is very furprizing to obferve, that a great Caterpillar, inftead of being changed into a Butterfly (according to the uſual courſe of nature;) ſhould produce ſometimes one, ſometimes two or three, and ſometimes a whole ſwarm of *Ichneumones*. I have obſerved this Anomalous production in a great many ſorts of Caterpillars, both hairy, and ſmooth; in ſeveral ſorts of maggots, and, which is moſt ſtrange, in one Water-inſect. When there come many of theſe *Ichneumon* maggots out of the body of the ſame Caterpillar, they weave all their *Theca's* together into one bunch, which is ſometimes round with web about it juſt like a bag of ſpiders Eggs; but I dare venture to answer *M. Lifter's* 10th *Quære* pag. 2172. of the *Phil. Tranſ.* negatively, that none of them feed upon ſpiders Eggs, but it is the ſimilitude of thoſe *Theca's*, conglobated together, to