

ther Flask, so as to be born with the mouth downwards, as were the other, but which was not stop'd; and these I caus'd to be taken up when they had been but 10 Fathom under water; and found them both entire, but the open Flask almost full of water; the which being emptied, were both let down again, and taken up at 20 Fathom, when the open Flask was entire, tho full of water, but the other broken to pieces.

Lumbricus Hydropicus;

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An Essay to prove that Hydatides often met with in morbid Animal Bodies, are a Species of Worms, or Imperfect Animals. By that Learned and curious Anatomist EDWARD TYSON, M. D. and R. Soc. S.

THE Title of this Essay, I doubt not will be some surprize to the Reader, and may prejudice his Judgment in what I am to offer; which indeed doth give me caution in it. But that I might not impose upon his Belief, or what I shall mention might not hinder his farther inquiry, 'tis only as an Essay. If truth, others Observations will confirm it; if otherwise, 'twill be a great satisfaction to be better inform'd.

By the opportunity given me of dissecting a *Gazella*, or Antelope brought from *Aleppo*, I observed several *Hydatides* or *Films* filled with limpid Water, about the bigness of a Pigeons Egg and oval, which were fastened to the *Omentum*, and some in the *Pelvis* between the Bladder of Urine and the *Rectum*. Upon this occasion I was very desirous of satisfying my self as much as I could of
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Some suspicions I had of the like watery Bags, or *Hydatides* I had met with in other Animals, for from what I could then observe, I was apt to believe them to be a particular sort of Insect bred in animal Bodies, but so different from any observed out of them, that unless upon fuller and farther considerations, I durst not trust my own thoughts about them.

My present Reasons of suspecting them to be Insects or at least the Embrios or Eggs of them, are these.

First, Because I observed them included in an outward Membrane like a *Matrix*, so loosely, that by opening it with my finger or a Knife, the inward Bladder containing the *Lympha* or *Serum*, seemed no where to have any connexion or hold to it, but would very readily drop out, still holding its Liquor without spilling any of it. Upon repeated Experiments of it in this, and other Animals, it gave me opportunity to think how it was possible this Humour could come into the inward Bladder without any cohesion to the outward which involved it.

Secondly, Observing them farther by my naked Eye, I perceived that to this inward Bladder there was a Neck or white Body, more opaque than the rest of the Bladder, and protuberant from it: but so as I could observe an Orifice at the extrem of it, which then to me seemed to be occasioned by the retraction of some part of it inwards. By this I fancied it might as by a Mouth, suck the *Serum* from the outward Membrane, and so supply its Bladder or Stomach.

Thirdly, But in this Thought I was farther encouraged by the assistance of my very good friend Mr. *Richard Waller*, whose presence I desired at the Dissection, and by imparting to him my Thoughts, that these *Hydatides* might be a peculiar sort of Insects bred in Animal Bodies; we were resolved to satisfy our selves of the Notion, and having observed what I have before mentioned, we found that this Neck (upon approaching it to the Candle) did

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really move, and that it did protrude and then shorten it self. But for a better satisfaction, I shall give the Figures made by his ingenious Hand; both natural as they appeared to the naked Eye, and what they were discover'd to be by the Microscope.

Fig. 1. Represents one of these watery Bladders in its natural bigness inclosed in its outward Membrane or *Clo-*
rrion, its shape was almost round, only flatt'd as a drop of Quicksilver will be by lying upon a solid. (*a*) shews the Neck, seen through the Membrane, which in

Fig. 2. is more plainly represented, (the outward Membrane being taken off) but as appearing to the naked Eye; where we may observe an open orifice at the Extream of it, and that it is made up of circular Rings or Incifures; which in

Fig. 3. being viewed by a Microscope, do more evidently discover themselves: This part is granulated with an abundance of fine Eminences all over. The Orifice at the end seems here to be occasioned by drawing itself inwards, and upon trial we found it so, for in

Fig. 4. Is represented the neck of this Worm drawn out its whole length and magnified: Where may be observed the lessening of the Rings, and its tending to a point at the end. And having opened it; within we found two small strings (*aa*) proceeding from the Neck and floating in the Liquor.

What these two Strings may be, is hard positively to assert: Leaving others to their own conjectures, I shall deliver mine; That this Worm by protruding its Neck, sucks from the outward Membrane (which involves it, and is furnished with Blood-Vessels,) the moisture or nourishment which is conveyed by these two Strings or Pipes into the Stomach or Bladder, and from whence, as there is occasion, it may be supplied for the nourishing the whole Body of the Worm again; for I am apt to believe this Bladder is but a Stomach of the Worm, which will appear

pear less unreasonable if we consider in some Insects how prodigiouſly large the Stomach is in proportion to the other parts of the Body; in a Leech you may obſerve not a ſingle but above Twenty Stomachs, emptying out of one into another, and running the whole length of the Body. And what *Malpighius* obſerves of the *De Bombyce* *Silk Worm*, that it would devour in one day
 P. 40. as much as was the weight of its whole Body; a Leech will do far more at a Meal.

Some it may be will be more inclin'd to think that the whole is but an Egg or Embrio of another Inſect a forming, and that this Bladder is as it were the *Amnion*, and the outward Coat that includes it the *Chorion*. But could they perfect any ſuch diſcovery, I ſhould think ſo too. But formerly in Diſſecting a Rotten Sheep, wherein I found many of theſe *Hydatides*, and opening ſeveral of them, I could not but obſerve the ſame Structure exactly in all; and doubtleſs had it been otherwiſe, in ſo many, I could not but have met with ſome nearer to Perfection.

Theſe *Hydatides* therefore I cannot but think are a ſort of Worms or Inſects *ſui generis*, and becauſe they contain ſo much water in them, and are uſually to be met with in rotten Sheep which are *Hydropical*: I call them *Lumbrici Hydropici*; not that I think all thoſe *Ciſts* to be met with in morbid Bodies are ſuch; for in ſome I have not obſerved this Neck and Structure of Paths, but only a transparent Bladder filled with a *Lympha*, and thoſe I take to be of another kind.

Thus in a Patient ſtill Living and enjoying her Health better than all her life time before; about Ten Years ago I cauſed her Right Side to be opened a little below her ſhort Ribs, whence iſſued out abundance of limpid Water, but what was moſt ſurpriſing, together with it, a great many *Hydatides*; that firſt and laſt, as we gueſſed, there might come out about 500 of theſe Bladders: moſt were entire and fill'd with limpid Water; of others that

were too large for the Orifice, the *Films* were broke, but in none of them could I observe the Neck, tho I was inquisitive to find it, which makes me think them to be different from our present subject.

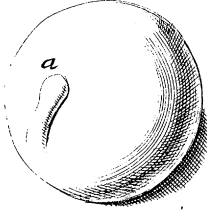
As are likewise those I have frequently met with in the *Ovaria* or Testicles of Women who have died *Hydropical*, which I take to be only the Eggs contain'd there, which by an extravagant flux of Humours into them are often swell'd to that prodigious bigness, that I have taken sometimes several Gallons of Liquor out of them.

And what is mentioned *Philos. Transact.* N^o. 188. of those Bladders of Water found in the Urine-Bladder, will come into the same number, having observed no Neck in any of them.

I shall only add, that these *Lumbrici Hydropici* I have always found hanging to the Membranous Parts, rather than included in the Body of any of the *Viscera*, as to the *Omentum*, *Peritonæum*, or the outward Membranes that cover the Diaphragm, Stomach, Liver, Colon, or other Intestines.

And we may be less surpris'd at the odd Structure in this Worm; since what I have observed of the *Lumbricus Latus* (*Philosoph. Transact.* N^o. 146. p. 113.) and of the *Teres* (*Philos. Transact.* N^o. 147. p. 153.) is as wonderful, tho in a different manner. And whoever has the curiosity of observing the Inwards of the vast Kingdom of Insects, cannot want Subjects enough for exciting his admiration.

Fig: i.



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Fig: 4.

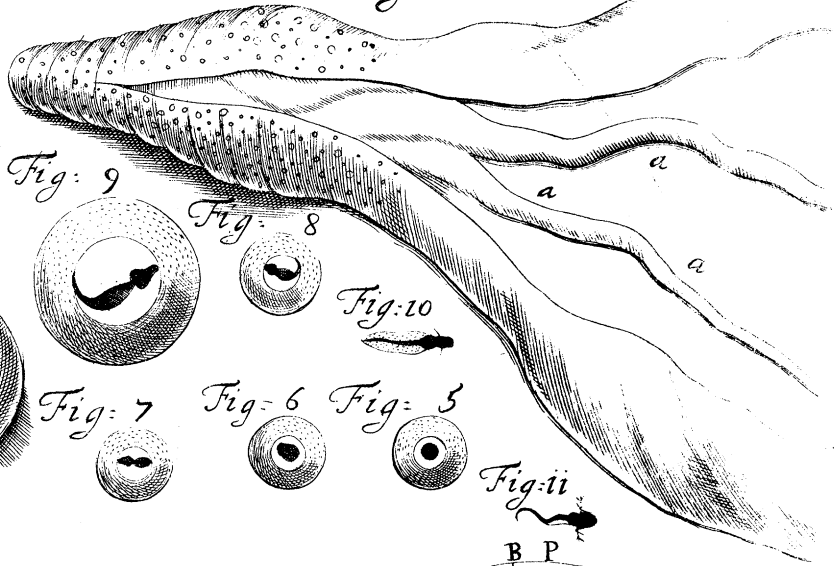


Fig: 2.

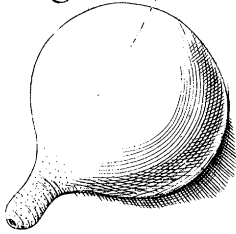


Fig: 9

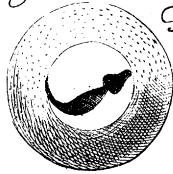


Fig: 8



Fig: 10



Fig: 7



Fig: 6



Fig: 5



Fig: ii

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Fig: 3.

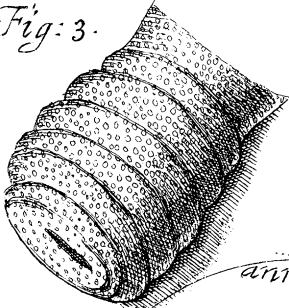


Fig: 12



Fig: 13

