

II. *Part of a Letter from Mr. Anthony van Leeuwenhoek, F.R.S. to Mr. James Petiver, F.R.S. Containing some Microscopical Observations upon the Animalcula in Semine of Young Rams.*

*Delft in Holland, August 18. 1711.*

S I R,

**H**AVING about the time that you call'd upon me, employed my self in Dissecting the Testicles of a young Ram, I take the Liberty to communicate to you my Observations thereupon. At the latter end of the Month of *June*, I procur'd two Testicles of a young Sheep, to which they still gave the name of a Lamb, and I made a small Incision in the lower part of each of them, where there was a Protuberant roundness, and from whence proceeded the *Vasa Semen deferentia*: Then I squeez'd a little whitish Matter out of them, which I immediately placed before a Microscope; and having very clearly observ'd a vast number of *Animalcula* living and moving, I was resolv'd not to ingross the Spectacle to my self alone, but I call'd four several Persons to be Eye-witnesse of the same; which I did the rather, because I have been charg'd by some Learned People, but not of our Town, that what I have affirm'd upon this matter was not true: And because the *Animalcula* could not be seen so distinctly, by reason of the vast number and the quick Motion of 'em in the little slimy Matter, in which they swam among one another, I took a little Rain Water, about the quantity

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of a great Pin's head, and mixed it with an equal quantity of the said Matter; whereby it being very much Diluted, I placed it again before the Microscope, and then we could see very clearly the dead Bodies of those *Animalcula* lying in the Liquor.

About 10 or 12 Days after, I got two other Testicles of a young Sheep, otherwise call'd a Ram, but they were something smaller than the former; and I proceeded with them as I had done with the rest, but found that the whitish Matter was much more fluid than the former; and that there was floating in it a vast number of very clear little Globular Bodies, of which I could not discover any of the least Particles to be like those living *Animalcula* above-mention'd. From which Observation I thought with my self, that as the unborn Creatures lie in their Mothers Womb, in such a Globular Figure, as is consistent with our Bodies; so in like manner, these round Bodies or Globules, which I saw, were *Animalcula* proceeding from the *Semen Masculinum*, that were not yet arrived to their compleat Figures.

Eight Days after, I got two more Testicles of a young Ram, which were smaller than the former; which having open'd in the like manner, as I did the other, I found not only no *Animalcula* that appeared to be living, but the transparent Globules were not the fourth part so big, according as I could guess with my Eye, as the above-mention'd.

Upon the 13th of *July*, I again caused two Testicles to be brought me of a sucking Ram; which, tho' it was a young Ram, they call it a sucking Lamb, because it had suck'd its Dam a little before it was killed. I was inform'd, that this Lamb was about 3 Months and a Fortnight old, and its Testicles were a little more than half as big as the first. Having opened these likewise, in that part where the *Vasa Semen deferentia* were  
thickest,

thickest, and having taken one of them out, and view'd it with the Microscope, I judg'd that those Globules which I observ'd therein were so small; that 25 of them were not equal to one of the great ones above mention'd.

Upon the 18th of *July*, I made an Experiment of the same nature with the former, the Lamb being almost as old as the preceding; but I could not discover any Globules bigger than the last mention'd. nor any thing that appeared to be living.

Upon the 20th of *July*, I repeated my Experiment upon the Testicles of a young Ram, which was very near as big as the first of all; which having open'd in the usual Place, I saw great Numbers of *Animalcula* living: I discover'd likewise in the fluid Matter, which I had taken out, several Globules floating, which I imagin'd likewise might be some of those imperfect *Animalcula* above-mention'd. All these young Rams were killed the Day before their Testicles were brought to me.

Upon the 25th of *July* at Nine a Clock, they brought me two Testicles of a young Ram, which they had killed the Day before at Eleven a Clock at Noon: These were bigger than any I had seen this Year.

I immediately examined one of them, opening the part before mention'd; and I discover'd the *Animalcula* in so great a number, and like Clouds moving amongst one another, that it was no small Pleasure to me to have so many Objects before my Eye: And this I continued to do till the Clock struck 12; and consequently till the Testicles had been 25 hours out of the Body of the Ram, and had lain wrapt up in a Paper upon an earthen Dish, and were expos'd to the Cold of the whole Night. Then I took a second Testicle, upon which I had as yet made no Remarks, and I bound it up in a Linnen Cloth, and kept it in a warm place, in order to view it the next Day; and I observ'd the first Testicle till

till 5 a Clock in the Afternoon, at which time I saw some *Animalcula* living; but at 12 a Clock before, I discover'd a hundred living *Animalcula* for one that I saw at 5 a Clock: for between 12 and 5 a Clock, I had made 25 several Observations, and those almost always by making new Incisions with a Knife into the Testicles, and by squeezing the Matter out of the Incision, tho' no bigger than a Pins head.

Now while these *Animalcula* were swimming in the aforesaid fluid Matter, I observ'd often thro' the Microscope, that the first part of their Bodies had a very bright glance with it; just as we see in small Fishes swimming in the Water, when they turn upon their Sides or Bellies, and cast a glittering brightness to the Eye: from which I imagin'd, that the upper part of the little Bodies of the *Animalcula* in *semine Masculino* of the Rams were flattish, and that that brightness proceeded from their exposing those flattish Sides to the light in swimming.

The next Morning at 7 a Clock, I viewed the Matter of the second Testicle, which I had bound up in a Cloth, with my Microscope; but I could not perceive any thing that had the least Life in it; and the Testicle had begun to be corrupted, for an ugly smell proceeded from it.

Now since we perceive that the *Animalcula* in the Testicles of a Ram, can live 32 hours after the Ram is dead, we may very well conclude, that the said *Animalcula* in *Semine Masculino* of a Ram, being admitted into that part of the Womb of the Ewe, which is call'd *Tuba Fallopiana*, will live much longer, that being the place which Nature has provided for them: From whence it may follow, that after the Copulation of the Male and Female, the *Animalcula* may be 2 or 3 Days in coming into that part of the Womb, where they receive their Nourishment, and consequently before the

Female

Female is Impregnated ; and the same may be applied to other Creatures. These are all the Observations I shall trouble you with at present, and remain,

Sir,

*Yours to serve you,*

Anthony van Leeuwenhock.

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III. *A Letter from Mr Ralph Thoresby, F. R. S. to Dr. Hans Sloane, R. S. Secr. Giving an Account of a Lunar Rain-Bow seen in Darbyshire, and of a Storm of Thunder and Lightning which happened near Leedes in Yorkshire.*

*Honoured Sir,*

THE *Iris Lunaris* being so rarely seen, that the Ingenious Dr *Plott* tells us (*Nat. Hist. of Oxf. cap. 1. §. 7.*) that several Learned and Observing Men never saw one in their Lives, and that even *Aristotle* himself observ'd but two in above 50 Years; the ensuing Account, which I had from a Gentleman of great Veracity and Ingenuity, will be the more acceptable. He is now in this Town, but was lately in *Darbyshire*, where, upon *Christmas* last, he was at *Glappwell Hall*; and walking towards *Patterton-Green*, about Eight in the Evening, he observ'd with great Satisfaction the Bow, which the Moon had fixed in the Clouds: She had then pass'd her Full about 24 Hours; the Evening had been