

## The discovery of the microworld by Antoni van Leeuwenhoek in the Berkelse Meer

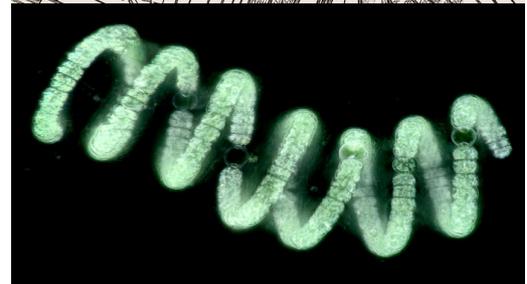
In a letter sent to the Royal Society in London, dated September 7<sup>th</sup> 1674, Antoni van Leeuwenhoek described micro organisms for the first time, it's the birth of microbiology.

as translated from the original Dutch, with comments below:

About two Leagues from this Town<sub>1</sub>, there lies an Inland-Sea, called Berckelse Sea<sub>2</sub> whose bottom in many places is very moorish. This water is in Winter very clear, but about beginning or in the midst of Summer it grows whitish, and there are then small green clouds permeating it, which the Country-men, dwelling near it, say is caused from the Dewes then falling, and call it Hony-dew. This water is abounding in Fish, which is very good and savoury.

Passing lately<sub>3</sub> over this Sea at a time, when it blew a fresh gale of wind, and observing the water as above-described, I took up some of it in a Glass-vessel which having view'd the next day, I found moving in it several Earthy particles, and some green streaks<sub>4</sub>, spirally ranged, after the manner of the Copper or Tin-worms, used by Distillers to cool their distilled waters; and the whole compass of each of these streaks was about the thickness of a man hair on his head: Other particles had but the beginning of the said streak; all consisting of small green globules interspersed;

among all which there crawled abundance of little animals, some of which were roundish; those that were somewhat bigger than others, were of an Oval figure: On these latter I saw two legs near the head, and two little fins on the other end of their body: Others were somewhat larger than an Oval, and these were very slow in their motion, and few in number. These animalculas<sub>5</sub> had divers colours, some being whitish, others pellucid; others had green and very shining little scales: others again were green in the middle, and before and behind white, others grayish. And the motion of most of them in the water was so swift, and so various, upwards, downwards, and round about, that I confess I could not but wonder at it. I judge, that some of these little creatures were above a thousand times<sub>6</sub> smaller than the smallest ones, which I have hitherto seen in cheese, wheaten flower, mould, and the like.



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| 1. Delft, the city where Antoni van Leeuwenhoek lived.   |
| 2. 'Sea' should be 'lake'; 'Meer' in Dutch. The Berkelse Meren (plural) consisted of 2 lakes, the Westmeer and Oostmeer. There is enough evidence to conclude it was the Oostmeer, shown here on the Krukius map from 1712, it was drained in 1777. Google Maps coordinates: <a 4°27'46.1\"e"="" href="https://www.google.com/maps/place/52°00'09.3\" n="">52°00'09.3\"N 4°27'46.1\"E</a> (center of the Oostmeer) |
| 3. The original Dutch says 'varende'; which means he was in a boat on the lake.  |
| 4. The word 'streak' is a mistranslation of the Dutch word 'Ranckje'. It should be 'tendrils'. The first microbe he describes is the cyanobacterium <i>Dolichospermum</i> . (Definitely not <i>Spirogyra</i> as some sources claim.) The whitish water is a cyanobacteria bloom.   |
| 5. Animalcula is a latinised translation of <i>kleijne diergens</i> : small animals. Not possible to identify from this description but likely contains rotifers, ciliates, Euglenas; Micro-animals and unicellular organisms.   |
| 6. 1/thousandth of what would probably be a cheese mite which are smaller than a millimeter. This would mean they are in the range of a micron. These could be bacteria or small flagellates.  |

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Complements the [article](#) suggesting that Sept. 7<sup>th</sup> should be celebrated as Van Leeuwenhoek Day.