Antony van Leeuwenhoek

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Antony van Leeuwenhoek was born at Delft in Holland on 24 October 1632. He died in his native town on 26 August 1723. Historians also remember it as the year of the Siege of Maestricht, which marks approximately the middle of the Thirty Years' War (Grainger, 1958). Verily a strange hour for the birth of one who, while leading in the midst of wars the peaceful life of a provincial tradesman, was to win immortal fame by his amateur activities as a man of science. Of Leeuwenhoek's parents not much is certainly known. His father was named Philips Antonysz. van Leeuwenhoek and was a basket maker living in the East-End (Oosteinde) of Delft - near the now long-vanished Leeuwenpoort . He appears to have been a craftsman of good Dutch stock, but of no personal or social distinction. His own father (Antony Philipszn.) was likewise a basket maker. Leeuwenhoek's mother was Margaretha, daughter of Jacob Sebastiaanszoon Bel van den Berch , a Delft brewer. She belonged to a good family, and was related to other Dutch families of equally good standing. The brewers then, as now, were no inconsiderable folk in Holland; and it thus seems clear that any claims, which our Antony may have to gentle birth, must rest upon his mother. Philips van Leeuwenhoek and Margaretha Bel van den Berch were married in 1622. Their betrothal was formally announced on January 15, and the marriage took place on the 30th of the same month - as Bouricius has now both married subsequently. Neeltge [Nellie] apparently died young (Grainger, 1958).

Leeuwenhoek was not the first microscopist, but he was the first to *measure* microscopic objects. He had to select objects, which could serve as standards of comparison, one of the first of which was an inch. He has given a good figure of a five-inch measuring rod, which shows that he was very accurate, as this works out at an average value of 2·61 cm. to the inch. Leeuwenhoek put a hair from his wig on one of the thirtieth

subdivisions of an inch on his brass rule, and he thought that twenty hairs would go into 1/30th of an inch, which works out at 600 hairsbreadths being equivalent to an inch and therefore, in modern notation, one hair would have a diameter of about 439. This suggests that his wig was made of the hair of the Angora goat, the hairs of which have a length of up to 35 cm., and a diameter of 40-43¼; it is known that the hair of this animal was used throughout the Netherlands in Leeuwenhoek's time for wig-making (Schierbeek, 1959).

Leeuwenhoek undoubtedly deserves the name of 'the father of microbiology'; he acquired great merit as a histologist, and he did extremely valuable work as a botanist. He also advanced the study of both pure and applied entomology, and discovered not only spermatozoa, but also parthenogenesis, and the asexual propagation by means of budding; in addition to all this, he also set up a new theory of generation, and discovered numerous organisms (Dobell, 1922). All these discoveries are scattered throughout his writings and are nowhere systematically displayed. We might blame him for not doing this, unless we remember that he knew Hooke Micrographia only from its figures, and the “Philosophical Transactions” naturally contain the most heterogeneous collection of subjects. With Hooke, as well as with Leeuwenhoek, the microscope formed the connecting link; everything, which he could investigate with his own glasses, and methods he examined, just as today with the first publications describing research with the electron microscope. From this it is evident that he had certain general theories, such as his idea that all animals were built in more or less the same way. This theory (still held by many famous biologists a century after Leeuwenhoek's death) often put him on the wrong track, but it was, nevertheless, an incentive to his researches. At the beginning of his work he thought that all organic matter (and also much of the inorganic) was formed of globules, but he did not adhere tenaciously

to this opinion. When a closer investigation taught him that dentine and muscles, for example, were built up from other elements, he frankly admitted his error (Dobell, 1922).

In later life he was struck with the common occurrence of a spiral structure, and he then thought that he had found a very general structural principle; in several of his writings he puts forward an opinion which is very similar to Goethe's ' Spiraltendenz.' Leeuwenhoek did not confine himself to the vegetable kingdom: Spirogyra, the stalk of Vorticella, tracheids in plants, tracheae of insects, muscle fibers and tendons of various animals all presented, according to him, the same structure. Moreover, we should not forget that in one of his first letters, Leeuwenhoek complained that at Delft there was no one with whom he could discuss his work, which is why he asked the Royal Society not only to suggest subjects for his research, but also to criticize it (Grainger, 1958).

Works Cited

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