

Comments in 1981 on claims by B. J. Ford on the subject of Leeuwenhoek's histology specimens

New Scientist 3 September 1981, Vol. 91, p.619

Letters

Leeuwenhoek's specimens

No doubt it is pleasing that Brian Ford has been able to examine in a scanning electron microscope the original specimens of Antony van Leeuwenhoek preserved among the manuscript letters at the Royal Society. But he has no good reason to claim ("Found — van Leeuwenhoek's original specimens", 30 July, p 301) that the specimens have remained "for more than three centuries, undiscovered until I (Ford) was fortunate enough to find them".

As can be seen on p 333 of Clifford Dobell's fine standard work on *Antony van Leeuwenhoek and his "Little Animals"* published in 1932 (and made widely available in a paperback reprint by Dover Books in 1960), Dobell clearly states "Leeuwenhoek was one of the first — if not the very first — to study the structure of solid opaque bodies by means of sections. Some which he cut with his own hand by means of a sharp shaving razor are still in existence. They were enclosed in a little packet affixed to an early letter (Letter 4, 1 June, 1674. To Oldenburg. MS. Roy. Soc...), and have remained intact to the present day".

R. D. Wood *Bromley*

Brian J. Ford replies

It was Leeuwenhoek who first published the fact that there were specimens attached to his letters, of course, and since his time we have found four such references which help document their history. All of them (like Dobell's note, to which I refer in my paper for the Royal Society, *Notes and Records*, vol 36, p 37) confirm that - until I discovered them earlier this year - they have indeed remained intact for the intervening three centuries, apparently a unique phenomenon.

[Here are some extracts from Ford's article ('Found — van Leeuwenhoek's original specimens') in *New Scientist* of 30 July 1981:

"It now transpires that he also left behind a unique series of microscope preparations, which were stored in little paper packets fixed to three of his letters to London. They have remained in perfect condition for more than three centuries, undiscovered until I was fortunate to find them... In many ways it is surprising that the material was not uncovered before ... In this way the specimens were repeatedly ignored until now"]

CORRESPONDENCE

Discovery unmasked

SIR - Examination with modern microscopes of van Leeuwenhoek's original late-seventeenth century specimens and sections preserved amongst the manuscripts at the Royal Society is a most exciting project. However, Brian Ford (*Nature* 30 July, p.407) is mistaken in claiming that they have only just been discovered by himself. Clifford Dobell (1886-1949), who carried out his pioneering study of the Leeuwenhoek collection at the Royal Society throughout the 1920s, clearly states in his scholarly and indispensable *Antony van Leeuwenhoek and his "Little Animals"* (p.333) published in 1932 (and reprinted in paperback by Dover Books in 1960) that "Leeuwenhoek was one of the first - if not the very first - to study the structure of solid opaque bodies by means of sections. Some which he cut with his own hand by means of a sharp shaving razor are still in existence. They were enclosed in a little packet affixed to an early letter (Letter 4, 1 June 1674. To Oldenburg. MS. Roy. Soc ...), and have remained intact to the present day".

Professor F. J. Cole, who justly stated "No student of Leeuwenhoek can fail to be deeply impressed by Dobell's classic monograph", also refers briefly to the existence of the specimens at the Royal Society in a publication in 1937 on "Leeuwenhoek's Zoological Researches". No doubt because it was published after Dobell's book, Cole's study, which appeared in two parts (*Ann. Sci.* **2**, 1-46. 185-235; 1937), seems to have been generally neglected. It can be recommended as a most useful guide to Leeuwenhoek's letters, as a thorough study of Leeuwenhoek's histology, and particularly valuable because Cole has compiled a 37-page analytical index of tissues and specimens studied by Leeuwenhoek. The way in which Leeuwenhoek prepared his razor is described by him in two letters of September and November 1709 (*Phil. Trans.* **26**, 493-502; 1709). Cole sums up Leeuwenhoek's histology thus: "He studied rough hand sections ... never evolved a technique which would have enabled him to prepare sections of soft tissues without previously drying the material. Only near the end, in 1714 does he mention any method of staining ... He first mentions section technique in 1674 and some of the sections he then cut with a 'sharp shaving razor' still survive attached to Letter 4 (1 June 1674)".

R. DEREK WOOD

Bromley, Kent, UK

but

SIR - My contribution to your columns did not make the claim to which R. D. Wood objects. It actually began with the words: "The original specimens sent by the 'father of microscopy', Antony van Leeuwenhoek, are still in existence". The words "After not being seen since 1674 ..." were added by *Nature* staff in processing the article.

Even so, this exciting discovery of Leeuwenhoek's fine specimens in pristine condition after three centuries or more is not dignified by citing occasional individuals half a century ago who noted the existence of the packets, but did not investigate what they contained. Contrary to what your correspondent implies, for the majority of the specimens there are no known historical records since Leeuwenhoek's time.

The value of these specimens as a source of information on Leeuwenhoek and his work lies in the remarkable fact that they have remained apparently undisturbed until I discovered them earlier this year¹. The historical record substantiates my belief: in particular, Dobell's remarks about the packet of 1 June 1674 are a helpful corroboration that the specimens remained (in his words) "intact to the present day".

BRIAN J. FORD

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1. Ford, B. J., *Not. Rec. R. Soc.* 36 (1), 37-59 (1981).

Nature, 1 October 1981, Vol. 293, p. 332

CORRESPONDENCE

Those specimens

SIR - For readers of *Nature* of 3 September (p.6) Brian Ford has readily blamed staff of this journal for a particular sentence (and the title?) of his article (*Nature* 30 July, p.407) reporting on "Leeuwenhoek's specimens discovered after 307 years". But his tightly literal answer is hardly impressive when it is compared with his concurrent article, and allied response regarding earlier knowledge of Leeuwenhoek's specimens, in *New Scientist* (30 July, p.301; 3 September, p.619).

I am particularly surprised when he dismisses Clifford Dobell's fine standard book on Leeuwenhoek (1932 and 1960) and Professor Cole's work of the 1930s as merely that of "occasional individuals half a century ago". Oddly, he now says the statement about the existence of Leeuwenhoek's specimens made on p.333 of Dobell's book is referred to in his own main article in *Notes and Records of the Royal Society*. This will be a welcome variation on the available accounts in *Nature* and *New Scientist*, but it is difficult to adjust existing criticism at the time of writing this letter because

publication of the *Notes and Records* cited by him has been delayed until at least the end of September.

Mr Ford is right to be enthusiastic over his examination of Leeuwenhoek's original specimens with a scanning electron microscope (ideally suitable for unfixed dried biological material), but he only has himself to blame in turning attention away from this main theme.

R. DEREK WOOD

Bromley, Kent, UK

Note by RDW 2003: More than twenty years later I am compiling these 'letters to the editor' of 1981 into a file immediately after listening to a BBC4 radio broadcast in June 2003 when Brian Ford talked about his unique discovery of Leeuwenhoek's specimens at the Royal Society. Indeed he has been continually repeating the same unmodified claim throughout the last 22 years — it might be considered somewhat obsessively in view of the bibliography of his writings on Leeuwenhoek (presented on his website www.sciences.demon.co.uk/~bjford.htm) which amounts to 300 items during those years. Obviously my published letters pointing out that Dobell and Cole had referred to the packets of specimens in the 1930s had no effect, but perhaps it does show that it was necessary to draw attention to such previous publications!

Especially with the passage of time my letters to the editor do need to be put into context by sampling Ford's writings on the subject, but for this I have to simply leave the reader themselves to follow up this by looking at the very extensive lists of Ford's publications available on his website. There, by the way, he describes himself as "scientist, broadcaster and lecturer... studied biology at Cardiff University, but became dissatisfied with the direction science was taking (the subject of his books *Nonscience* (1971) and *Cult of the Expert* (1982)" — "a prolific commentator on science in newspapers and broadcasts, and a successful lecturer ... a world authority on the microscope (and author of many books on the subject)... but he is best known as a gifted expositor of science to the public."

But to return to what was published in 1981. The month after the above items appeared in *Nature* and *New Scientist*, Brian Ford also published an article in the science and technology 'Futures' section of the *Guardian* newspaper: 22 October 1981, p. 22 'A clear case of second sight'. In the last part of the article Ford's enthusiasm was given free rein:

"At present I hope to reconstitute the algae specimens using sterile river water as a culture medium. The first attempt to do this gave a clear view of some of the aquatic organisms Leeuwenhoek studied... I remain haunted by two visions. One of them was of a small clony of cyanophytes ... and I have been left speculating whether it is even possible that, after three centuries they might still be capable of restoration to life. The second vision is that of the bacteria that appeared on the second day of the experiment. Turning and twisting, they appeared in increasing numbers. There had been no bacterial contamination of the specimens since they were unpacked, and the forms visible were typical of those found in pond-water..."

A letter to the *Guardian* commenting on his "visions" seemed appropriate — in satirical style:

[Satirical letter on Leeuwenhoek's specimens, spontaneous generation, Pasteur's writings, and Voltaire's *Micromegas*]

Guardian (London), Thursday November 12, 1981, p. 21,

Double action

['Double action' (?) was the title provided by the editor — the writer's original title was 'Spirit of Pasteur' a title which was chosen for this satirical piece as it applied not only to Brian Ford's use of words such as "I remain haunted by two visions" his "speculating whether it is even possible that, after three centuries, they might still be capable of restoration to life" and a way of pointing to the contrast of Pasteur's fight against ideas of "Spontaneous generation" and the difference between Ford's careless writing and that of Pasteur's exact and careful research and writing)]

MODERN micrographs of Leeuwenhoek's late-seventeenth century dry microscope specimens must be of great interest to historians of biology, but Brian Ford's sightings (*Futures*, October 22 [1981]) of live bacteria after regenerating with river water are reminiscent of an experience with a microscope reported in 1752 by an old friend, Voltaire (*Micromegas* (1752), last part of chapter 4 to chapter 6), when a [an enthusiastic] dwarf from Saturn believed he had "caught nature in the act."

There will be a severe limit to the number of Leeuwenhoek's specimens available for Mr Ford to treat with his river water but writing from Lake Lemane I should perhaps be recommending the use of the fine waters of Evian or Thonon-les-Bains. However, I was recently at the house in Dole, Jura, where Louis Pasteur was born almost 160 years ago, and on an early October morning the water in the canal at the rear of the Pasteur home was a little stagnant and a mist was rising evocatively from the surface.

No doubt that canal water is free from tartaric acid and other vinous ingredients studied by Pasteur, but the spirit of the great man — precise in both investigation and writing — can surely not be gone for ever. So, if Mr Ford is interested in soaking Leeuwenhoek's specimens in water from Pasteur's birthplace any consequent "vision" of bacteria regenerating will be most impressive.

R. D. Wood.

[the satirical signature sent, but not used by *The Guardian*, was "'Micromegas" aux bon soins de R. D. Wood', dated 23 October 1981]

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