DISCUSSION POINT

The Origins of Vaccinia Virus—A Brief Rejoinder

By PETER RAZZELL*

Derrick Baxby's discussion of my article on the destruction of smallpox virus[1] raises one major issue that warrants further comment. He writes with the authority of a leading medical microbiologist familiar with the latest research on smallpox, cowpox and vaccinia, and his conclusion about the immunological and molecular relationship between the three viruses is not at issue. As Baxby writes, the three viruses are immunologically related but have stable differences in their DNA and other characteristics.

However, what is at issue is the historical origin of the vaccinia virus, and given the ambiguity of the microbiological evidence, it is a subject that must be largely settled by medical historical evidence. Fortunately there are certain points of agreement which should allow further clarification of the subject.

Discussing the nature of cowpox, Baxby writes: 'Despite its name cowpox virus does not circulate in cows—probably why nineteenth-century vaccinators had difficulty obtaining material.' The historical evidence more than bears out this conclusion: not only did Jenner find it almost impossible to inoculate what he believed to be cowpox (taken from the udders of cows), but so did his contemporaries. It was for this reason that he turned to Woodville for a supply of 'cowpox lymph'.

Woodville claimed to have discovered a source of cowpox in a dairy at Gray's Inn Lane, and it was this strain which reputedly formed the origin of the vaccine supplied to Jenner and other medical practitioners. Baxby argues that this was only one source of vaccine, but it became so important as to acquire the name of the 'world's lymph', used not only in England, but in France, Germany, America, and elsewhere.

But if cowpox is not to be found in cows, what was the source of the vaccine used by Woodville, Jenner, and the others? Baxby writes that cowpox 'is maintained in small wild rodents', but there is no evidence that Jenner or any of his contemporaries obtained cowpox virus from this source, and they unanimously believed that cowpox was a disease of cows. (Jenner experimented in trying to obtain the virus from the grease in horses' hooves, but with ambiguous results.)

If vaccinia was not derived from cowpox taken from cows, what was its origin and source? It is possible that the virus Jenner and Woodville found on cows had originated from milkmaids. Many of these milkmaids had been inoculated with smallpox and it is likely that some of them had scratched the itchy pustules on their

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[1] See Peter Razzell, 'Should Remaining Stocks of Smallpox Virus be Destroyed?', *Social History of Medicine*, 8 (1995), 305–7, and Derrick Baxby 'Should Smallpox Virus be Destroyed? The Relevance of the Origins of Vaccinia Virus', *Social History of Medicine*, 9 (1996), 117–19.

0951–631X *Social History of Medicine* Vol. 11 No. 1 pp. 107–108

arms and inadvertently transferred smallpox virus to the cows. Baxby has written that vaccinia is probably a hybrid originating from both cowpox and smallpox,[2] but to sustain this view, he must answer the question, from what source did Jenner, Woodville, and others obtain their cowpox virus?

I agree with Baxby that the chances of vaccinia or cowpox mutating into smallpox are likely to be very slight, but given what I believe to be the origin of vaccinia—that it was derived from smallpox—it is not beyond the bounds of historical possibility. Baxby's tone is one of reassurance, adopting the mantle of impartial scientific authority, but the truth is that no one knows for sure the origin and nature of the vaccines which were used on many millions of people. Perhaps the lesson to arise out of this particular episode in medical history is that scepticism of medical certainty is the true legacy of Jenner's discovery of vaccination.

[2] D. Baxby, *Jenner's Smallpox Vaccine; the Riddle of Vaccine Virus and its Origins* (London, 1981).