Short Articles

THE FIRST BLOOD TRANSFUSION: FRENCH OR ENGLISH?

by

MICHAEL T. WALTON*

THE NUMEROUS priority disputes among seventeenth-century scientific figures amply demonstrate that Bacon's dream of a harmonious community of dignified scholars was far from realized by those who most admired him. Newton, Hooke, Leibniz and Huygens all possessed to a greater or lesser degree the secretiveness, personal pride in discovery and desire for recognition which typified the alchemists whom the Lord Chancellor had indicted as defective natural philosophers for those very traits. As regards the first blood transfusions, however, an element other than individual pride entered the seventeenth-century disputes over priority. This additional element was nationalism. More than seeking to establish who first transfused, the correspondents, Henry Oldenburg and Jean Denis, attempted to prove which nation, England or France, had produced the ingenious first. The controversy had an outcome which neither virtuoso could have foreseen.

Before turning to the actual dispute, it may be helpful to outline the chronology of the blood transfusions which were discussed.[1] The first printed reference to an actual transfusion appeared in the 19 November 1666 issue of the *Philosophical Transactions of the Royal Society*.[2] The note mentioned that Dr. Richard Lower had demonstrated the technique of transfusion first at Oxford and then before the Royal Society at Gresham College. These transfusions, using dogs, were thought to be the first direct blood transfusions ever performed. The continuing experiments of Dr. Lower, as well as the parallel work of Dr. Edmund King and Thomas Coxe, were reported in the *Transactions* from 1666 to 1667.[3]

In France, mention of a transfusion was first reported in the eighth issue of the *Journal des Scavans*, April 1667. The *Transactions* reprinted this short note, which described how Jean Denis and a surgeon named Emmerey had transfused blood between calves and dogs.[4] This report, while praising the potential of transfusion, failed to mention the previous English efforts. A second and more detailed account of Denis' work was published in the *Transactions*, number 27. The report was in the form of a letter to Habert de Montmor, master of requests to Louis XIV, and described Denis' success at transfusing two human beings with sheep's blood. The letter also claimed the priority in transfusion for the French.[5] It is against this background of dates of publication that Oldenburg and Denis carried on their correspondence.

With Denis' report on the first human transfusions the priority controversy with

*952 Hudson Avenue, Salt Lake City, Utah 84106, U.S.A. (Doctoral Student in History of Science, University of Chicago.)

Oldenberg commenced.[6] According to Denis, transfusion was the product of French thinking, having been first discussed in a meeting at de Montmor's home ten years earlier. "The project of causing Blood of a healthy animal to pass into one diseased, having been conceived *about ten years agoe*, in the illustrous Society of *Virtuosi* which assembles at your house . . .".[7] The only reference to the English efforts was to the transfusion of a mangey dog by Thomas Coxe.[8] Why Denis did not refer to English experiments may be explained by his inability to read English. In one letter to Oldenburg in particular, he described both his dependence on the translations of others and stated his earnest desire to be able to read English.[9] Denis might genuinely have been unaware of any English transfusion other than that of Coxe at this point in time.

If lack of information lay behind Denis' letter, it did not hinder Oldenburg, Secretary of the Royal Society, from rising to the defence of his English friends. Noting that Denis had apparently been apprised of Lower's work in 1665–66, Oldenburg wrote: "he [Denis] should have taken notice as he doth now, of what is affirmed . . . about the *time* and *place* of the *conception* of that transfusing design . . . that how long so ever that that Experiment may have been conceived in other parts (which is needless to contest) it is notorius, that it had its *birth* first of all in *England;* some Ingenious persons of the *Royal Society* having first started it."[10] The fact that England and the Royal Society were mentioned before the "ingenious" men may indicate that more than just the honour of Oldenburg's colleagues was being defended.

In the next issue of the *Transactions* the Secretary published a general critique of human blood transfusion in an apparent attempt to belittle Denis' genuine first. A portion of the criticism was taken from a letter of Gasper de Gurye de Montpoly.[11] The critique emphasized the potential danger of transfusion by relating that a Swedish nobleman's son had died after receiving his second transfusion from a sheep.[12] Though Oldenburg concluded that transfusion had not caused the death, he warned that, before men are transfused: "frequent Experiments should be made, . . . both upon sound and sickly Beasts, carefully observing . . . what are the Effects following there on."[13]

Oldenburg then turned once again to the priority question. "And the *Journal des Scavans* glorieth, that the French have advanced this Invention so far, as to trie it upon *Men,* before any English did . . .".[14] The English might well have been first, he exclaimed, "if they had not been so tender in hazarding the Life of Man."[15] He went on to explain that preparations had actually been made in England months before to transfuse a man; indeed, he claimed that Dr. King had written a note explaining the tentative method to Denis, implying that this relevation may have been the impetus which moved the Frenchman to human transfusion.

Leaving the question of priority in human transfusion, which he so reluctantly conceded to the French, Oldenburg again took up the problem of the general priority of the procedure. It was a matter of public record that Dr. Lower had been given an order to demonstrate transfusion in May of 1665.[16] Did the French have an earlier published claim? Oldenburg further cast doubt on Denis' statement, which he seemed to accept in his initial letter against Denis, that Dom Robert de Gabet had suggested transfusion ten years earlier. "It seems strange, that so surprising an Invention should have been conceived in France . . . ten years ago, and lain there so long in the womb,

till the way of Midwiving it into the world was sent thither from London."[17] Oldenburg turned quickly from criticism to conciliation, saying that the two groups should join in developing the discovery. He attempted to soothe the waters he had troubled by pointing out that his critical discourse was written not to injure but to give each his due. Needless to say, he felt that he had successfully established the English position with regard to the first performance of transfusion and had at least shown that the French claim to the idea of transfusion was questionable.

The English claim to priority in actual transfusion was not challenged in any of Denis' subsequent correspondence with Oldenburg, most of which dealt with a lawsuit over the death of a transfusion patient.[18] The deceased was shown to have been poisoned by his wife, and Denis was exonerated. A stipulation was made in the court, however, that only with the consent of the Parisian medical faculty could future transfusions be performed.[19] It seemed that the day had been won for Oldenburg's defence of the English and plea for caution in human transfusion.

Both the tenuous hold of the French on the conception of the idea of transfusion and Oldenburg's criticism of that claim in favour of Lower's published work were to prove transient, however. In 1668 the *Transactions* published a revealing excerpt from a tract by Pauli Manfredi entitled *Relatione delle'esperience falte in Ighilterra, Francia ed Italia intorno la transfusione del sangue* (Rome, 1667).[20] Manfredi wrote that transfusion was conceived neither in England nor in France, for Andreas Libavius, a German, knew of transfusion as a means to restore health and mentioned it in his *Appendix Necessaria Syntagmatis Arcanorum Chymicorum* (Frankfurt, 1614), actione 2, p. 8.[21] There Libavius described a method for exchanging blood by inserting tubes into arteries. The editor of the *Transactions* drew attention to the fact that Libavius did not practise transfusion himself and mocked the procedure but conceded that he did know of it. The conception of transfusion, therefore, stemmed from an earlier period than had been supposed. With neither side able to claim the conception of transfusion, the English had to be content with having performed the first recorded procedure and the French with the pioneering of human transfusion.

With the recognition of the dangers of transfusion and the entry of Libavius upon the scene, the controversy between Denis and Oldenburg came to an end, though priority continued to be discussed, with Dr. Lower claiming credit for performing the first transfusion in his *Tractatus de corde* (London, 1669), and John Aubrey ascribing the idea to Francis Potter. The topic may be found on the French mind even as late as 1733.[22]

From the tenor of the arguments presented by both Denis and Oldenburg, it is clear that nationalism and pride in one's own scientific society as well as individual ambition motivated the transfusion debate. Each man sought to win as much credit for his side as possible. The controversy was resolved according to Oldenburg's rules, from published materials. That, in the end, neither the French nor the English could claim complete victory was an irony which no one expected.

REFERENCES

1. The reader is directed to the 'History of blood transfusion' by N. S. R. Maluf (*J. Hist. Med.*, 1954, **9**: 59–107), for a general discussion of the methods and order of events

in seventeenth-century blood transfusion. Maluf's study does not treat the priority debate which this paper seeks to arbitrate. Charles Webster in 'The origins of blood transfusion: a reassessment', (*Med. Hist.*, 1971, **15:** 387–392) adds to the knowledge of the first actual transfusion by examining evidence which points to Francis Potter as the first transfusionist. Potter's work, however, did not enter into the debate between Oldenburg and Denis, the topic of this study, though Timothy Clarke (Ref. 20) in a 1668 letter mentions John Aubrey's support of Potter's priority. Clarke himself linked transfusion to Wren's injection experiments of 1656, as he could not confidently speak of Potter's efforts, owing his knowledge of them only to Aubrey.

2. *Phil. Trans. R. Soc. Lond.*, 1666, **1:** 19, 352. Maluf (op. cit., p.61) wrote that Dr. Wilkins, Daniel Cox, Thomas Coxe amd Robert Hooke were the first Englishmen to transfuse. Theirs was an indirect transfusion. Dr. Richard Lower in chapter IV of his *Tractatus de corde* (London, 1669), after noting the work of others in injection, claims to be the first ever to perform a direct transfusion (this claim may need revision in view of C. Webster's discussion in op. cit.). The place was Oxford and the time February 1665. John Wallis and Thomas Millington were present. As further proof for his claim, a letter by Robert Boyle dated 26 June 1666 is reproduced. The 1665 work of Lower was not mentioned by Oldenburg, perhaps because he wished to avoid materials which had not appeared in print.
3. *Phil. Trans. R. Soc. Lond.*, 1667, **2:** 25, 451.
4. Ibid., p.453.
5. Ibid., 1667, **2:** 27, 489. There was confusion in Oldenburg's mind as to how this translation of a French letter got into the *Transactions*. He reported to Boyle on 24 September 1667 that he had not translated it from a French copy which he possessed. He even mentioned that he intended to censor the claims of Denis to the French invention of transfusion. (*The correspondence of Henry Oldenburg*, ed. by A. Rupert Hall and Marie Boas Hall, Madison, University of Wisconsin Press, 1966, vol. 3, p.480.) Denis' letter in the *Transactions* is different from his report on the same topic found in the *Journal des Scavans*, 1667, **11:** 167–174. The information presented, however, is approximately the same except in the *Journal des Scavans* Denis identified the virtuoso who conceived of transfusion as "Robertus des Gabetus monachus Benedictinus". The question of who first performed a transfusion in France seems to be answered by Hebbel E. Hoff and Roger Guillemin in 'The first experiments on transfusion in France', *J. Hist. Med.*, 1963, **18:** 103–124. They cite a 31 December 1666 manuscript record of the *Académie des Sciences* which describes the work of Perrault, Auzout and Gayen in transfusing dogs. Gayen as the leader of the group is given credit as the first French transfusionist. Henry Oldenburg mentioned that, though Denis claimed de Gabet was the first Frenchman to discuss transfusion, others supported the Abbot Bourdelot's right to the honour. Oldenburg used this confusion as to which Frenchman was first to discredit the French claim for priority in *Phil. Trans. R. Soc. Lond.*, 1667, **2:** 28, 524.
6. Ibid., 1667, **2:** 27, 489–504.
7. *J. Scavans*, 1667, **11:** 173. (Translation from op. cit., note 6, p. 489.)
8. *Oldenburg correspondence*, vol. 4, p.473.
9. *Phil. Trans. R. Soc. Lond.*, 1667, **2:** 27, 490.
10. Ibid., 1667, **2:** 28, 517–525.
11. It is not unreasonable to assume that the young man was sensitized by this first transfusion. A second transfusion might well have been the cause of death but the case gives insufficient evidence to make a determination. Denis in a note, (*Phil. Trans. R. Soc. Lond.*, 1667, **2:** 30, 621) describes a haemolytic reaction in a mad patient who received a second transfusion. The reaction, however, was not linked to the transfusion.
12. *Phil. Trans. R. Soc. Lond.*, 1667, **2:** 28, 521.
13. Ibid., p.522.

14. Ibid., p.522.
15. Ibid., p.524.
16. Ibid., p.524.
17. Ibid., 1668, **3**: 36, 713–714.
18. Ibid., p.714. The court order was changed in 1679 to a prohibition against transfusion. This point is brought by Albert B. Siewers in 'A case of madness cured by blood transfusion', *Bull. Inst. Hist. Med. Johns Hopk. Univ.*, 1938, **6**: 1010–1014. Siewers' article is based on an account of Denis' transfusion of a madman. Oddly Siewer does not go to Denis' own account for his knowledge but rather to a report in Theophilus Bonet's *Mercurius compitalitius sive index medicopractius* (Geneva, 1682), Book XI, pp.468–469, translated into English as *A guide to the practical physician*, London, 1684, Book XI, pp.373–374.
19. *Phil. Trans. R. Soc. Lond.*, 1668, **3**: 37, 731. A letter sent by Timothy Clarke to Oldenburg in April/May 1668[?], and published in number 35 of the *Transactions* reviewed the entire transfusion controversy. Though granting that the "first mention of this experiment . . . must be credited to France", Clarke supported the English claim for Lower's priority. The general tenor of the letter was to glorify the English scientific firsts of Harvey, Joyliffe and Lower. Apparently Clarke was aware of Manfredi's claims for Libavius but rejected them. "Moreover, I should like to know by what reasons . . . Manfred was let to judge that the discovery was first conceived in Germany. For we have until now come accross nothing that could give rise to the slightest suspicion of that kind" (*Oldenburg correspondence*, vol. 4, pp.365–366). Perhaps it was Clarke's doubts which prompted the publication of Manfredi's view in number 37 of the *Transactions*.
20. The passage from Libavius as cited in *Phil. Trans. R. Soc. Lond.*, 1668, **3**: 37, 732, reads: "Adsit Juvenis robustus, sanus, sanguine spirituoso plenus: Adstet exhaustus viribus, tenuis, macilentus, vix animam trahens. Magister artis habeat tubulos argenteos inter se congruentes, aperiat arteriam robusti, et tubulum inserat muniatque; mox et agroti arteriam findat, et tubulum foemineum insigat. Jam duos tubulos sibi mutuo applicet, et ex sano sanguis arterialis, calens et spirituosus saliet in aegrotum, unaque vitae fontem afferet omnemque languorem pellet." The present author is grateful to The Wellcome Institute for the History of Medicine for supplying a copy of the salient portion of Libavius' *Defensio Syntagmatis* (Frankfurt, 1615). With the exception of some minor spelling and punctuation the passage is correctly quoted in the *Transactions*. Maluf in op. cit., pp. 59–60, also cites Libavius as the first mention of transfusion. The passage does not constitute a claim for priority by Libavius as it is quoted from another work and he expressed doubts as to the safety of the procedure for the robust youth. Haller in his *Bibliotheca Anatomica* (1774), vol. 1, p. 346, notes that Giovanni Colle in his *Facili preaparatione alimentoriums* (Venice, 1628) also spoke of transfusion. The reference in Haller is not mentioned by Maluf.
21. See Refs. 1, 2 and 20.
22. Though the debate over priority seems to have abated in England except for Lower's and Aubrey's claims, French feelings did not die. The *Histoire de l'Académie Royal des Sciences* (Paris, 1733), pp. 37 and 38 (translated by Hoff and Guillemin in op. cit.) reads, "there was much noise concerning a new discovery for which the English had all the glory, but which the French perfected from day to day." The reference is to the French first of human transfusion as opposed to the English transfusion of dogs. The *Histoire* does prove that there was a grudging acceptance of English priority by the French. The 1733 work is a fitting footnote to the nationalistic rivalry of the mid-seventeenth century.