INTRODUCTORY NOTES

This is a transcript of a number of undated documents prepared by Mr Peter Howell and used for demonstration purposes at a British Blood Transfusion Society Annual Meeting and subsequently used for display at the Manchester Blood Centre. The information is reproduced here as written, the different sections below representing different original documents. It is however believed that these documents are incomplete as the original collection also included a number of legend titles that must have related to images that also appear to have also been used for demonstration purposes, but the images / text relating to these legends are missing.

ARCHIVE DOCUMENTS ON TRANSFUSION HISTORY

Mr Peter Howell

Blood transfusion, or the transference of blood from the circulation of one individual to that of another, for therapeutic purposes, is now a commonplace feature of medical practice, and yet it is little more than sixty years since it came to be recognised as a practicable procedure of wide application. It had, nevertheless, been in the minds of doctors and scientific men for three centuries, and many attempts were made to establish transfusion as a form of treatment.

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From the dawn of human history the blood has been regarded as the most vital ingredient of the animal economy, no doubt because it could not escape notice that loss of blood was followed by loss of life as inevitably as night followed day. The blood, therefore, came to be invested with many mysterious properties, and was supposed to carry with it the characters of its owners, both mental and physical. In classical times it was believed that the weak might remedy their weakness by bathing in, or drinking, the blood of the strong, so that the blood of bulls or of gladiators slain in the arena tended to become a popular beverage.

Even as late as near the end of the fifteenth century an attempt was made to rejuvenate an aged Pontiff (Innocent VIII) by giving him a draught prepared from the blood of three young boys, whose lives were thus sacrificed in vain.

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In the sixteenth century the possibility of transferring blood from the body of one individual to that of another, usually to remedy the infirmities of old age, was certainly in the mind of more than one writer.

All the classical and medieval references to the therapeutic value of blood are more closely related to superstition and to magic than to medicine, and this continued well into the seventeenth century. For this reason the true history of blood transfusion does not begin until a relatively late date – it could not, indeed, begin until the minds of the medical profession had seized the conception of the circulation of the blood, enunciated by William Harvey in 1616, and published to the world in 1628.

In 1668 a thin quarto of 80 pages dealing with experiences of blood transfusion was published in Bologna. This was really a compilation from tracts and journals published in Paris and London in the previous year, with some observations on experiments made by Magnani at Rome; but, as it forms a survey of the information available at that date, the book deserves to rank as the first textbook on the subject.

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The opening page of the translation in the Philosophical Transactions, July 22nd, 1667 is of a letter written to Monsieur de Montmor, Counsellor to the French King, by Jean Denys, Professor of Philosophy and Mathematics at Montpellier, and Physician to Louis XIV. It describes the transfusing of blood from one kind of animal into the veins of another. These practices had been instigated at least a decade earlier and had led to vitriolic debate among academics, in fact Denys and his assistant faced a political trial charged with causing the death of one of their patients.

It is claimed that Denys was the first person to transfuse lamb's blood to a human recipient, a strategy which was believed by Transfusionists to transfer placid qualities to the recipient, of particular benefit where there was marital strife. On occasions not inconsiderable effects were observed by Denys which possibly reflected the manifestations of a classic incompatible transfusion reaction. One such case involved a debauched person who was transfused to cure his philandering.

Jean Denis in Paris, argued at great length that it could be expedient to use the blood of an animal for treatment of disorders in man, and describes how on June 15, 1667, he happened on a youth of 15 who had for months been tormented with a fever, for which he had been bled by his physicians twenty times "to assauge the excessive heat". "Before this disease, he was not observed to be of a lumpish dull spirit, his memory was happy enough, and he seemed cheerful and nimble in body; but since the violence of his fever, his wit seem'd wholly sunk, his memory perfectly lost, and his body so heavy and drowsie that he was not fit for anything." Accordingly he was bled to the extent of about three ounces, and received in exchange about nine ounces of blood from the carotid artery of a lamb. The change that ensued was startling and presently the boy was showing "a clear and smiling countenance". He had felt "a very great heat along his arm", the usual sign of an incompatible blood transfusion, but there were no further ill effects.

In the next year, 1668, one of Denys' patients died after the third of a series of transfusions, and the widow instituted proceedings against him. The case aroused great feeling, and ultimately a verdict was given in Denys' favour. It was directed that in future no transfusion was to be performed without the permission of a member of the Faculty of Medicine of Paris. As the Faculty was bitterly opposed to the whole idea, this permission was never given, and so the practice of transfusion speedily fell into disuse.

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A Florentine physician, Francesco Folli, published in 1680 a book setting out his claim to be the originator of blood transfusion. He stated that he read William Harvey's treatise on the motion of the heart in 1652, and thereupon formed in his mind the idea that transfusion of blood should be possible to sure diseases and to rejuvenate the aged:

“This I pointed out in my pamphlet on life culture which was published for no other reason but to make known to all that blood transfusion had been invented by me at the end of 1664 and demonstrated to his Serene Highness Ferdinand II, Grand Duke of Tuscany, of undying memory. The novelty of it had pleased him, or the fascinating ingenuity or the considerable experimental elaboration. To no one else did I impart my idea, believing that if such an invention were successful, Monarchs alone were worthy of it.”

Later in the book Folli describes in some detail the apparatus required and the method of using it. He even postulates the presence of twenty young men as blood donors, so that the patient may receive every day the blood of a fresh donor over a considerable period. An illustration shows his apparatus consisting of a funnel connected by a tube formed from a goat’s artery with a gold or silver cannula to be inserted into the patient’s vein. It is all very ingenious, but, near the end of the book comes the confession that spoils it all. “Finally”, he says, “I know that I have said too much concerning the manner of carrying out the operation, not having made the experiment”.

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Richard Lower’s celebrated book on the heart, Tractatus de Corde, published in 1669, proves him to have been one of the great pioneers in anatomy and physiology, and here he stated that he proposed “to reveal the conduct of the whole affair [of blood transfusion] and at the same time to show that [he] first reasoned it out and undertook it, and finally, by what means and aids it was carried into effect”. He goes on to say:

“For many years at Oxford I saw others at work, and myself for the sake of experiment injected into the veins of living animals various opiate and emetic solutions, and many medicinal fluids of that sort … But when, in addition, I likewise injected many nutrient solutions, and had seen the blood of different animals mix quite well and harmoniously with various injections of wine and beer, it soon occurred to me to try if the blood of different animals would not be much more suitable and would mix without danger or conflict. And because in shed blood … the natural blending and texture of the parts must of necessity change, I thought it much more convenient to transfer the unimpaired blood of an animal which was still alive and breathing into another”.

Lower’s account is the first description of a successful direct transfusion from artery to vein.

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During the seventeenth century there had been much playing with the ideas, and, in the early stages, attempts had been made to use the blood of animals therapeutically, though usually, be it noted, to treat senility, insanity or chronic diseases, rather than to meet the emergency of severe blood-loss. Partly this may have been due to the difficulty of arranging an animal transfusion at short notice, but more perhaps, to the preoccupation of the medical profession with the supposed mental or semi-magical effects of transfused blood rather than with its value in replacing blood that had been lost. The hero of this critical period was James Blundell, a noted physician, physiologist and obstetrician, born in 1790. From 1814 to 1836 he was lecturer at Guy’s and St Thomas’s Hospitals and during this period he made notable contributions to abdominal surgery and to knowledge of blood transfusion.

He was a pioneer in this field, and he was stimulated to make his researches by realisation of his helplessness in face of the severe and often fatal haemorrhages which might follow childbirth.

The record of a successful transfusion by Blundell is printed in the Lancet in 1829. It was done for post-partum haemorrhage, the patient receiving 8 oz. of blood from the arm of an assistant during the course of three hours, and making a good recovery.

It is interesting to make some note of how Blundell carried out his transfusions. He invented an instrument, the “gravitator”, in which gravity provided the motive force for pushing the blood into the patient’s veins. This consisted of a funnel at the end of a long flexible bracket connected by a tube with a cannula which was buckled to the patient’s arm. The other end of the bracket was again fixed to a chair, but this time the blood donor had to stand, while he watched his blood gushing into the funnel.

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The notable experiment of transfusion in man had gained great notoriety, and some of the authors of text-books felt that they had to include an account of the procedure in their writing,

One illustration is taken from a standard text-book, the Armamentarium Chirurgicum of Scultetus, published in Leyden in 1693. It is evident that the picture is not taken from life, but was, rather, a fanciful representation, idealised by the writer and the artist. The donor animal, tied to a post, appears to be a dog, and the difficulties of the operation are not indicated. In reality there must have been a good deal of mess.

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