

# ENCYCLOPÉDIE, OU DICTIONNAIRE RAISONNÉ DES SCIENCES, DES ARTS ET DES MÉTIERS

## TRANSFUSION: BY MÉNURET DE CHAMBAUD

### A TRANSLATION BY PHIL LEAROYD

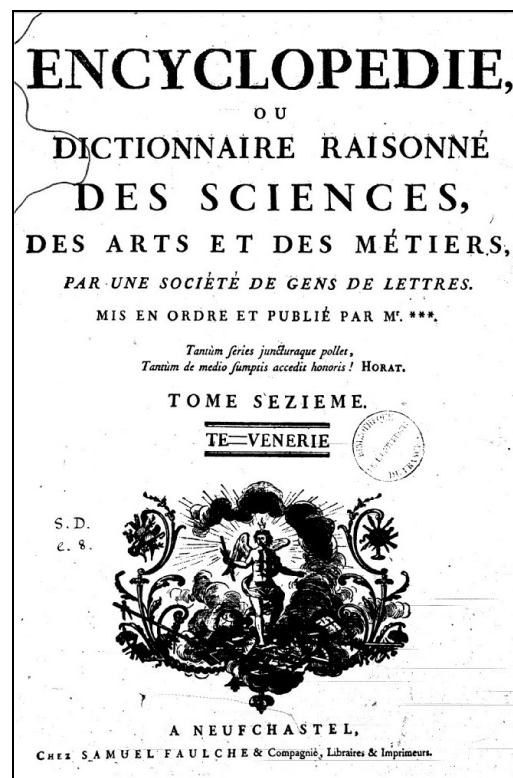
The 'Encyclopédie, ou dictionnaire raisonné des sciences, des arts et des métiers' [Encyclopaedia, or a systematic dictionary of the sciences, arts, and crafts] was a general encyclopaedia published in France between 1751 and 1772 that comprised 17 volumes (with later supplements and revisions). It was edited by Denis Diderot and co-edited (until 1759) by Jean le Rond d'Alembert. It had many contributors / writers who were known as the Encyclopédistes, who were identified at the end of each entry by a letter.

The sixteenth volume includes the entry for Transfusion, on pages 547-553 inclusive, which was written by Ménuret de Chambaud (or Jean-Joseph Ménuret) in (what is believed to have been) 1751. A copy of this volume can be viewed or downloaded from:

<https://gallica.bnf.fr/ark:/12148/bpt6k50548c/f450.item.textelImage>

The 'Transfusion' entry written by Ménuret can also be read or downloaded from the following site:

[https://fr.wikisource.org/wiki/L%E2%80%99Encyclop%C3%A9die/1re\\_%C3%A9dition/TRANSFUSION](https://fr.wikisource.org/wiki/L%E2%80%99Encyclop%C3%A9die/1re_%C3%A9dition/TRANSFUSION)



Title page: Sixteenth volume of Encyclopédie  
(Image credit: Gallica.bnf)

This entry, as much as any other of its day, highlights the unsupported arguments and entrenched attitudes of the opposing groups that formed regarding those who supported blood transfusion use in France in 1667-1668 and those who did not. People on both sides ignored actual medical and scientific outcomes and appear to have largely ignored verifiable information. Whether these attitudes were driven by self interest and/or professional standing, career advancement or simple personal dislike is not known and the actual reasons behind why these arguments became so important remains largely obscure. The educated and professional people on both sides can be shown by some of the content of this article to have even descended occasionally into the use of personal insults. These points are highlighted by Raphaële Andrault\* who comments extensively on the transfusion entry by Ménuret in the opening section of his 2014 paper as follows:

*“All controversial writings cease to be read and researched as soon as the argument is over”. In any case, this is what Ménuret de Chambaud writes, in Diderot's Encyclopédie, in the article “Transfusion”, less than a century after this dispute took place. In fact, the several-page account that Ménuret gives of this episode which occupied France between 1667 and 1668 highlights all the controversial aspects that make the study of this dispute difficult, uncertain and scientifically useless. It would therefore only be of historical interest - to hear: the picturesque interest of a factual history. The “transfusers” and “anti-transfusers”, as he calls them, would oppose “frivolous” reasoning, “weak and double-edged weapons that could turn equally against both parties”, whether it is in the interest of transfusion in general, which leads “sour spirits” to “insult each other”, or whether it was the success or failure of the transfusion experiments, which partisan accounts cannot rule on. Also, in light of “the principles of animal anatomy and economics most universally accepted today” [at the time Ménuret writes], the reasons given in the 1660s by those involved in the transfusion dispute should be regarded as “half good, half bad and all very specious.”*

\* Andrault, R. (2014) Guérir de la folie. La dispute sur la transfusion sanguine, 1667-1668. *Dix-Septième Siècle*, 3, 264, 509-532.  
[https://www.cairn.info/article.php?ID\\_ARTICLE=DSS\\_143\\_0509](https://www.cairn.info/article.php?ID_ARTICLE=DSS_143_0509)

Ménuret examines the information surrounding the death of the madman (Antoine Mauroy) that was proposed by Denis and his opponents, principally Martiniere and Lami, the author proposing that Denis had more to loose, indicates that it was he that was at fault and manipulated the truth.

The text also occasionally illustrates the changes in medial knowledge that have occurred in the approximate ninety years since the arguments for and against transfusion were first made in 1667, for example on stating (as fact) that the nourishment of the fetus in the womb as being the same as a ‘maternal transfusion’, whilst Ménuret provides a more reasoned argument to some of the evidence rather than the fallacious arguments used by people at that time, though there is still an obvious lack of understanding of the actual role of blood / red cells.

I have translated this text from the original French into English in the hope that the content may be appreciated by a wider audience. Although I have taken great care not to misrepresent the author’s original wording I cannot guarantee that this work does not contain ‘translational errors’, especially as some letters and words in the original scanned text are not easily readable. The reader is therefore recommended to check specific details against the original French. I have added a small number of comments in square brackets, mainly relating to the names of people mentioned; all words in italics are as published in the original text. Ménuret uses five references within his entry; I have numbered these and placed additional information at the end of the translation.

## MÉNURET DE CHAMBAUD

Jean-Joseph Ménuret, known as Ménuret de Chambaud, was an 'Encyclopédiste' in that he contributed to the Encyclopédie, edited by Diderot and d'Alembert [his contributions being identified by the letter 'm']. Ménuret was born on the 23<sup>rd</sup> January 1739 in Montélimar (Drôme) and studied medicine at the University of Montpellier where he obtained his doctorate in 1758, after which he returned to Montélimar, where he opened his medical practice and published a number of medical treatises. His early published works were fairly successful, but he obtained prominence mainly through his contributions to Diderot's Encyclopédie, which although somewhat contradictory were well researched and honestly written. He became one of the main collaborators of this work, providing nearly eighty articles on a variety of medical topics. During this time he moved to Paris and made successful connections that resulted in him being made the first doctor of the king's stables (1785) and then doctor to the Countess of Artois. However, the Revolution forced him to emigrate and he settled in Hamburg, though he returned to Paris after the coup d'état in around 1802. He is said to have treated both the rich and poor equally and enjoyed good health into his early seventies. He died in Paris on 15 December 1815.

**TRANSFUSION, s. f. (Med: Therapeut. Chirurg.)** famous operation which consists in passing blood from the vessels of one animal, immediately into those of another. This operation made a lot of noise in the medical world, towards the middle of the last century, around the years 1664 and the following ones until 1668; its celebrity began in England, and was, according to the most received opinion, the work of Dr. Wren, the famous English doctor; it spread beyond Germany through the writings of Major, professor of medicine at Kiel; transfusion was not known and tried in France until 1666; Messrs. Denys and Emmerets were the first to practice it in Paris; it initially aroused considerable rumours in this city, became a subject of discord among doctors, and the main subject of their interviews and their writings; two opposing parties were instantly formed, one of which was contrary and the other favourable to this operation; these even before it had been tried, proved by arguments of the school that it was a universal remedy; they celebrate its successes in advance, and praise its effectiveness; those opposed the same weapons, found passages in the various authors, which demonstrate that one could not cure by this method, and they concluded that the transfusion was always or at least must be useless, sometimes dangerous, and even fatal; we fought for a while with reasons as frivolous on both sides; and if we had stopped there, this dispute would not have left the obscure enclosure of the schools; but soon the scene was bloodied; the blood flowed, not that of the combatants, but that of the animals and the men who were subjected to this operation; experiments naturally reveal this question, which had become important, but no further progress was made after having made them; each one disguised, according to his opinion, the success of the experiments; at the same time as some say that a patient who had undergone the operation was cured of his madness, and appeared in different places; the others asserted that this same patient had died in the hands of the operators, and had been buried secretly. Finally, the spirits embittered by the dispute, they ended up insulting each other; the verbose Martiniere, the athlete of anti-transfusers, wrote to ministers, magistrates, priests, ladies, doctors, to the whole universe, that transfusion was a barbaric operation *coming out of Satan's shop*, that those who exercised it were executioners, who deserved to be sent back among the Barbarians, the Cannibals, the Jerusalem artichokes, the Parabones, etc. that Denis among others surpassed in extravagance all those he had known, and reproached him for having made play the puppets at the fair; on the other hand Denis, at the head of the transfusers, called *jealous, envious*,

*faquins*, those who thought otherwise than him, and called Martiniere a miserable tooth puller, and operator of the Pontneuf.

The court and the city soon took sides in this quarrel, and this question which became the news of the day was agitated in circles with as much enthusiasm, as little common sense, and less knowledge than in art schools and cabinets of savants; the dispute began to fall towards the end of the year 1668 by the better known bad effects of the transfusion, and following a sentence handed down at the Châtelet, April 17, 1668, which forbids, under penalty of imprisonment, to do the transfusion on any human body that the proposal has not been received and approved by the doctors of the faculty of Paris; and this illustrious company that we have often seen so zealously opposed to sometimes useful innovations, having remained silent on this question, it fell, for lack of being agitated, into oblivion where it is still today; we would hardly know that it occupied the doctors, if a few curious people had not taken care to preserve us the works which it excited in the time when it was in vogue, and which, like all the polemical writings cease to be read and researched as soon as the dispute is over. Mr. Falconet, owner of an immense library which he opens with pleasure to all those whom the desire to learn brings there, communicated to me a collection of sixteen or seventeen pieces on transfusion, where you can find all the remarkable things that happened on this subject; I have drawn some clarifications from it on the origin and discovery of this operation, the reasons which serve to establish or destroy it, the cases where it is believed to be mainly useful, and the way in which it is practiced.

There is little agreement on the origin of this operation; several authors fix the period in the past century, others trace it back to the most remote times, and claim to find descriptions of it in very old works; Martiniere also jealous to prove the seniority that inhumanity cites to support his feeling, 1°: *the history of the ancient Egyptians*, where we see that these peoples practiced it for the healing of their princes; and that one of them having conceived the horror of seeing a human creature die in his arms, and judging that the blood of a dying man is corrupted, put an end to this operation, and wanted us to replace it with the human bloodbath, as the most analogous to the nature of man and the most suitable to dispel his illnesses. 2°: *The book of wisdom* of Tanaquila, wife of Tarquin the elder, by which it appears that she used the transfusion. 3°: *The treatise on anatomy* by Herophilus, where it is mentioned quite clearly. 4 °. A *collection* of an ancient Jewish writer, which was shown to him by Ben Israël Manasseh, rabbi of the Jews of Amsterdam where the following words were written: "Naam prince of the army of Ber-Adad king of Syria, suffering from leprosy, resorted to medicines, which to fetch him drained blood from his veins, and remitting other, etc." 5°: The *sacred book* of the priests of Apollo where mention is made of this operation. 6°: The *researches of Eubages*. 7°: The *works* of Pliny, Celsus and several others, which condemn it. 8°: Ovid's *metamorphoses*; where it is found described among the means which Medea used to rejuvenate Aeson, and which she promised to use for Pelias; she began by removing all the old blood from them then she filled Aeson's vessels with the juices she had prepared, see Rejuvenation, and told the daughters of Pelias to encourage them to shed their father's blood which she would replace it with that of a lamb. 9°: The *principles of physics* of Maximus, where this author teaches it. 10°: The *treatise on the sacrifices of Emperor Julian*, by Libanius, where the author speaks of the transfusion as having been an eye witness. 11°: finally he assures us that Marcil Ficino, abbe Tritheme, Aquapendente, Harvée & Frapaolo have experienced it. (*La Martiniere, pamphlets, letter to M. de Colbert*). He could have added to deprive his contemporaries and his colleagues of the supposed glory of this discovery, which Libavius before Harvée [Harvey] had already proposed and described very exactly, that Handshan [Henshaw?] had practiced it in 1658, and that it had been perfected in 1665 by Lover [Lower], etc.

The question as to the antiquity of this operation seems sufficiently decided by this large number of testimonies, the authenticity of which cannot be contested, at

least as regards the greater part; the lack of some works that La Martiniere cites prevented me from verifying several of his citations, he must be the guarantor of their accuracy. However, I will notice that Marsil Ficin [Marsilius Ficinus], whom he gives as a transfusionist, only speaks of baths or the sucking of human blood, and not of transfusion; that in the *book of the sibyl Amalthea on the sufferings of gladiators*, that he also cites, nothing else is said there, except that their blood could serve as a remedy, which certainly could not apply to transfusion, because the blood of a dead man is not suitable for this operation.

This discovery being with reason removed from the doctors of the past century, it remains to know to whom we owe the renewal, several people attribute it to themselves; the English and the French fight over what they call *honour*; and each on his side brings proofs on which it is difficult and very superfluous to decide. It is generally agreed that the first experiments were made in England, and the first proven transfusion was attempted there by Handsham [Henshaw?] in 1658. Some Germans, Sturmius, famous mathematician of Altorf, Vehrius professor at Frankfurt, claimed that Maurice Hoffman was the first author, that is to say the renovator; but their claim is not adopted: it is also the feeling of Mr. Manfredi, that the transfusion was imagined in Germany, published in England and perfected in France. Although the French admit that the English and the Germans have the advantage over them of having been the first to try transfusion, for that they do not cede the rights they believe they have to the discovery or renewal of this operation; they claim to be the first to propose it, and they base their claims on a speech which was delivered in Paris in the month of July 1658, in an assembly of scholars which was held with Mr. de Montmor, by Dom Robert de Galats, religious Benedictine: the subject of the speech is blood transfusion, and the author's aim is to prove the possibility, the safety and the advantages of this operation. As these assemblies were frequented by foreign scholars, and there were among others a few English gentlemen who were very assiduous there, it is not very difficult to conceive, say the French, how the idea of transfusion will have passed by their means in the most distant countries. Tardy, doctor of Paris, claims to have had the first idea of it, and others assure us that Mr. l'Abbé Bourdelot, doctor, had spoken about it a long time before in conferences which were held at his home. It is moreover certain, by the unanimous testimony of authors from different nations, that the French were the first to dare to experiment with it on men; but in this do they deserve more praise than blame? Successes do not deposit in their favour; but it must be assumed that the public interest and the hope of curing stubborn diseases more promptly were the motives which led them to these attempts; and in this case, they would certainly be excusable: on the contrary, we should have only horror for them, if they had no other goal than to distinguish themselves, and if they cruelly made men serve victims to their ambition. Be that as it may, the example of Denis, the first French transfusionist, was soon after followed by Lower and King. The Italians were no less reckless; in 1668, they repeated the transfusion on several men. Messrs. Riva & Manfredi did this operation. A physician named *Sinibald* was willing to submit to it himself; the same experiments were made in Flanders, and had, if we are to believe Denis, a happy success.

The authors who practiced transfusion on animals in the beginning, sought by this operation only to confirm the famous discovery for, at the time, of the circulation of the blood, but the proofs which resulted from it were rather useless, and moreover inconclusive, whatever Boerhaave may say. If they had been opposed to the ancients, they would not have failed to answer them if the blood was received in the veins without circulating, or that it was agitated there by the movement of ebb and flow that they admit, that the modern have denied, and which nevertheless appears to be confirmed by some experiments; but, as the immortal author of the *Treatise on the Heart* judiciously remarks, "when one knows the course of the blood, one finds in the transfusion a continuation, rather than an obvious proof of the circulation", *vol. II. liv. III. chap. iij.* We were not long in persuading ourselves that we could derive much

greater advantages from transfusion, if we dared to apply it to men, Mr. Denis assures us that he gave all the more willingly to this idea, than of all the animals he had subjected to transfusion, none were dead, and on the contrary he had always noticed something surprising in those who had received new blood; but as he had never performed such an operation except on subjects of the same species, he wanted, before attempting it on men, to try if the phenomena would be the same, and the consequences as little disastrous, by making pass the blood of an animal into another of a different species: he chose for this purpose the dog and the calf, whose blood he believed less analogous; but this experience, repeated several times, having constantly had the same success, the dogs receiving foreign blood without any indisposition, it was confirmed more and more in the hope of seeing it succeed in man. However, not wishing to rush anything in such an interesting matter, where the faults are so serious and irreparable, this prudent doctor published his experiments, announced those he wanted to do on men, glad to know the opinion of the learned in this subject, and to examine the objections that could be made to him to dissuade him from pushing his experiments so far, but there was no need to be held back by the reasons that were opposed to him. Based only on the rather unsatisfactory doctrine of the school, they could not have much force: the main ones were: 1°: that the diversity of complexions based on blood, supposes that there is so much diversity in the bloods of different animals, that it is impossible for one not to be a poison to the other; 2°: that the extravasated blood, or which leaves its natural place, must necessarily be corrupted, according to the feeling of Hippocrates; 3°: that it must coagulate by passing through inanimate vessels, and then cause, by passing through the heart, fatal palpitations. Denis was not ill at ease with destroying these frivolous objections; he opposed them with bad arguments which then passed for good; he replied even less firmly and more verbally to those who objected to him that the pure blood transmitted in the veins of an animal which contained some impure, must mingle with it and contract its bad qualities; and that, moreover, even if it happened that the bad blood changed by the mixture of the good, the cause which had altered it still remaining, it would not be long in degenerating again and corrupting the pure blood. This argument is one of the strongest against transfusion, and to which its supporters could never give a satisfactory answer.

Denis believing he had rejected the features of his adversaries, in his turn borrowed the reasoning to support the thesis he had advanced. In the first place, he supported his opinion by the example of nature, which, being unable to nourish the fetus in the womb through the mouth, makes, according to him, a continual transfusion of the mother's blood into the umbilical vein of the child. 2°: He claimed that transfusion was only a more abbreviated way to bring the matter of nutrition into the blood, and that by this means we avoid the machine all the work of digestion, chyle formation and blood formation, and that they very well compensated for the vices which could be found in any of the parts intended for these functions. 3°: He put forward the idea of the majority of the doctors of his time, who deduced almost all the diseases of the bad weather and the corruption of the blood, and who provided no other remedy than bloodletting or the refreshing drinks; he proposed the transfusion as fulfilling the indications which presented themselves, besides this help, and as a means of accommodation between the doctors who favoured bloodletting and those who were its enemies, telling the former that transfusion required that the old and corrupted blood be evacuated beforehand before replacing it with a new one; and reassuring the others that the weakness and the other accidents which follow bloodletting removed this help, by showing them that the transfusion remedies these inconveniences, because the new blood repairs well beyond the forces destroyed by the evacuation of the bad. 4°: Finally he observed that several people die of haemorrhage that cannot be stopped, that there are many who are exhausted, and whose old age is advancing rather than due to a dearth of blood and vital heat; he

does not hesitate to decide that the transfusion of a gentle and laudable blood could not prevent the death of some and prolong the days of others.

All these arguments, which are well appreciated, are only more or less wrapped up sophisms, were refuted with great care, and even quite solidly for that time, in a particular dissertation by Mr. Pierre Petit, under the name of *Eutyphron*; we pass over in silence the arguments he uses, most of which are far removed from the healthier ideas that we have formed of man, appear absurd. Starting from the principles of anatomy and animal economics most universally accepted today or the best observed, we would respond to Denis, 1°: that his comparison of the child nourished by a kind of transfusion of maternal blood into his vessels, with what would happen to a man in whom we inject foreign blood, is false and inapplicable; it is shown that the blood does not pass from the mother to the fetus, and that the vessels of the womb, which terminate with the nipples of the placenta, only filter a whitish liquor strongly analogous to milk, that the blood formation takes place in the blood vessels of the fetus. 2°: That the work of digestion is no less advantageous to the machine than the juices which result from it; that the passage of food and its weight even in the stomach will lift it up in the instant; and that claiming to shorten this path is as Mr. Petit has already observed, just as if we were to throw someone out the window to make him arrive in the street instead; it is useless to recall all the reasons drawn from the action of the different chyle forming organs, from the chemical nature of food and blood, etc. 3°: That it is wrong that most diseases come from the blood; they almost all have their source in the disturbance of the solid parts, in the increase or decrease of the game, and in the activity of the different viscera; and when the moods are sinful, vice is rarely in the blood properly so called, it consists rather in the alteration of the humors which must provide the material of secretions; the blood of a mangy man, of a smallpox, etc., are just as pure as that of a healthy man; moreover, when the red part of the blood is flawed, does it not frequently happen that it is in excess, that the blood is too abundant, that there is plethora? now the transfusion would be manifestly harmful in this case. 4°: That in haemorrhages, which appear at the first glance to indicate transfusion, this operation is either useless or dangerous; useless, if there is some considerable vessel cut-off, because to put blood back into the vessels is to draw water from the bucket of the Danaïdes; danger, if the haemorrhage is due to weakness of some part, to a disturbance in the action of some viscera, etc., because then the vessels, extremely weakened by the evacuation of the blood which has taken place, would be incapable of containing new blood, and of acting effectively on it. Rather, it seems to be feared that this blood might increase or renew the haemorrhage by the irritation it would cause, by the kind of embarrassment it would cause throughout the machine, and especially in the blood system. Transfusion, for the same reasons, appears to be more useless, and more inappropriate in exhausted people, in old people, etc., for the vice is then more evident in the solid parts; and to flatter oneself in deriving benefits from this operation in pleurisy, pox, lepers, cancers, erysipelas, rabies, madness, etc., is to confuse absolutely different diseases, and to display a gross ignorance of their nature, their progress, their causes and their cure.

Soon there was no longer any question of reasoning, the preliminary shocks made with these weak and double-edged weapons which could be turned equally against the two parties, had only served to warm and prepare the spirits without clearing up the question; Denis finally dared to use in order to fight, weapons of a stronger, more deadly temper, and whose blows reveal to be more certain and more decisive; he came to those famous experiences, the happy or unfortunate success of which seemed bound to irrevocably end the dispute, confirm or destroy its claims; prudence would have, it seems, demanded that he made the first attempts at such a dubious operation on a criminal condemned to death; whatever had been the consequences, no one would have had occasion to complain; the criminal seeing a hope of escaping death, would have willingly submitted; it is thus that one should

often take advantage of these men whom justice sacrificed to public safety, one could subject them to tests of unknown remedies, to new operations, or to try on them different ways of operating, two advantages would be obtained, the punishment of the crime, and the perfection of medicine; Denis did not want to take such a cautious side, fearing that a criminal already corrupted by the apprehension of death, and who might be more intimidated by the apparatus of the operation, considering it only as a new kind of death, did not fall into weaknesses or other accidents that one would not fail to attribute to transfusion; he preferred to wait until a favourable opportunity provided him with a patient who wanted this operation, and who tested it with confidence, because a subject thus disposed would help himself to the good effects of the transfusion: but to practice the transfusion on men, he had to choose, either the blood of another man or the blood of animals; deeply struck by the barbarism that there would be to risk inconveniencing a man, to shorten his days in order to be cured, or to make another live longer, a barbarism however too common on many other occasions; he determined for the blood of animals, and he believed moreover to find in this choice other advantages. 1°: He imagined that brutes, devoid of reason, guided only by natural appetites or instinct, and consequently exempt from all debauchery and excesses to which men indulge, no doubt by an effect of reason, reveal to have blood much purer than them. 2°: He thought that the same subjects whose flesh were used daily as food for man, should reveal to provide blood more analogous and more suitable to be converted into its own substance. 3°: He also counted on the usefulness of the preparations which he would make to the animals before using their blood, convinced that it would be sweeter and more balsamic when care had been taken to feed the animals more delicately for a few days; he should have added, that one would have been able by suitable remedies, to give to their blood qualities more appropriate to the diseases of those who disclose receiving it. He could have relied on the true or false story of Melampus, with regard to the daughters of King Prétus, and on a fairly followed practice of feeding the goats, whose milk is made to the sick, with beneficial plants. 4°: He felt that the extraction of the blood would be done more boldly and with more freedom on animals; that one could cut, prune with less management, and take, if it was necessary, arterial blood and draw a large amount of it, and finally inconvenience or even kill them without worrying much about it; all these reasons, half good, half bad, and all very specious, urged him to use the blood of animals for transfusion into the veins of patients who would like to submit to it.

The first experiment took place on the 15th of June 1667 on a young man, aged fifteen or sixteen, who had recently suffered an ardent fever in the course of which the doctors, little averse to his blood, had caused him to flow abundantly on twenty different occasions, which had doubtless helped to make it more obstinate; this fever dissipated, the patient remained for a long time valetudinary and languid, his mind seemed dull, his memory previously happy, was almost entirely lost, and his body was heavy, numb, and in an almost continual slumber; Denis imagined that these symptoms must be attributed to thickened blood and the amount was too small; he believed his conjecture verified, because the blood which was drawn from him before giving him the transfusion, was so black and so thick, that it could not form a net when falling into the dish; about five ounces were taken out, and introduced through the same opening made in the arm, three times as much arterial blood from a lamb for which the carotid artery had been prepared; after this operation, the patient goes to bed and gets up, according to Denis' report, perfectly cured, having a cheerful spirit, a light body and a good memory, and feeling moreover very relieved of a pain which he had to the kidneys after a fall done the previous day; the next day he gave three or four drops of blood through his nose, and then recovered from day to day, he said that during the operation he felt nothing more than a very considerable heat along the arm.



This success, says Mr. Denis, urged him to attempt this operation a second time; one chooses a robust and healthy man, who submits to it for money; ten ounces of blood were taken from him, and he was given twice as much, taken from the crural artery of a lamb, the patient, like the other, only experienced a very strong heat up to the armpit, kept his peace and good humour during the operation, and after it was finished, he himself skinned the lamb that had been used there, went the rest of the day to use the money that had been given to him at the cabaret, and felt no discomfort. *Lettr. de Denis à M. de Montmor, &c. Paris, 25 Juin 1667.* <sup>(1)</sup>

Soon there was another opportunity to perform this operation, but where its effectiveness was not as demonstrated, by the consent of the transfusers, as in the preceding cases; Baron Bond, son of the prime minister of the king of Sweden, being in Paris, was attacked by a hepatic, diuretic and bilious flow, accompanied by fever; the doctors after having unnecessarily employed all kinds of remedies that prudence suggested to them, that is to say, *a number of bloodlettings in the foot and in the arm, purgations and enemas*, the patient was, as one can easily imagine, so weakened that he could no longer move, lost speech and knowledge, and a continual vomiting joined these symptoms: the doctors despaired of this, they resorted to transfusion, as to a last resource. Messrs. Denis & Emmerets, having been summoned, after some slight refusals, transfused him with about two pallets of calf's blood; the success of this operation was not, according to them, equivocal. The patient returned at the instant of his drowsiness, the convulsions with which he was tormented ceased, and his sunken and swarming pulse seemed to revive; vomiting and diarrhoea were stopped, etc., but after remaining about 24 hours in this state, all these accidents reappeared with more violence. The weakness was more considerable, the pulse became stronger, and the return of the deviation threw the patient into frequent syncope. It was believed that it was then advisable to repeat the transfusion; after it had been done, the patient seemed to regain a little vigour, but the diarrhoea still persisted, and in the evening death ended all these accidents; the transfusers had the corpse opened, and rejected the incomplete success of their operation on the gangrenous of the intestines, and on some other disturbances found in the different viscera. *Lettr. de Gadrogs (ou Denis) à M. l'abbé Bourdelot, médecin, &c. Paris, 8 Août 1667.* <sup>(2)</sup>

The most remarkable observation, which made the most noise, either in Paris or in foreign countries, which has been so variously recounted by the interested parties, and which was finally the cause that the magistrates have defended transfusion, is that of a madman who has been subjected several times to this operation, who has been perfectly cured of it, according to some, and that others claim to be dead: here is the abridged detail that Denis gives of his illness and successes of the transfusion.

The insanity of this patient was periodic, returning especially towards the full moon: different remedies which he had tried for eight years, and among others eighteen bleeds at forty baths, had had no success; it was even noticed that the attacks dissipate more quickly when nothing is done to him than when tormented by remedies; it was proposed to give him the transfusion; Messrs. Denis & Emmerets, consulted on this subject, judged the operation to be very useful and very practicable. They answered for the patient's life, but did not ensure his recovery; however, they gave hope for some relief from the intromission of the blood of a calf whose freshness, they said, and gentleness could temper the ardour and the broths of the blood with which it would be mixed; this operation was carried out on Monday, 19 December, in the presence of a large number of people of art and distinction; ten ounces of blood was drawn from the patient's arm, and the embarrassed operator could only bring in about five or six of that from the calf; they were obliged to suspend the operation, because the patient warned that he was ready to fall into weakness; the following days were seen without almost any change; the cause was attributed to the small quantity transfused blood; however, the patient was found to be a little less carried away in his words and actions, and it was concluded that the transfusion had

to be repeated once or twice. The second test was made the following Wednesday, 21 December; only two or three ounces of blood were drawn from the patient, and he was passed close to a pound of that of the calf. The dose of the remedy having been this time more considerable, the effects were quicker and more noticeable; as soon as the blood began to enter his veins, he felt the ordinary heat along the arm and under the armpit; his pulse rose, and a short time later a great sweat ran down his face; his pulse varied greatly at that moment: he cried out that he was tired of his kidneys, that his stomach hurt, and that he was ready to suffocate; the cannula, which carried the blood in his veins, was immediately removed, and while the wound was being closed, he vomited a quantity of food which he had taken half an hour before, and spent part of the night in the efforts of vomiting, and then fell asleep: after a sleep of about ten hours, he showed much tranquillity and presence of mind; he complained of pain and weariness in all these limbs; he made a great glass of blackish urine, and remained in a continual drowsiness all day, and slept very well the next night; on Friday he again made a glass of urine as black as the day before; he bled profusely from his nose, from which an indication was drawn to give him a copious bleeding.

However, the patient gave no proof of madness, confessed and took communion to win the jubilee, received with great joy and demonstrations of friendship his wife against whom he was particularly unleashed in these fits of madness; such a considerable a change made everyone believe that the cure was complete. Denis was not as happy as the others; from time to time he sees still some lightness which made him think that in order to perfect what he had begun so well, a third dose of transfusion was still needed; he postponed the execution of this design, however, because he saw this patient recover from day to day, and continue to do actions which prove the good condition of his head. *Lettre de Denis à M. \*\*\*\* Paris, 12 Janvier 1668.* <sup>(3)</sup>

A short time later (10 February 1668), Mr. Denis gave a transfusion to a paralytic woman on whom a doctor had uselessly exhausted all his knowledge; he had made her bleed five times from the legs and arms, and had made her take the emetic and an infinite number of medicines and enemas. The transfusion being decided and the patient prepared, a blood was chosen which had sufficient heat and subtlety, it was the arterial blood of a lamb; twelve ounces were passed in two times through the veins of the paralytic; the operation was followed by the most complete success; the feeling and the movement returned to all the parts which were deprived of it. *Denis, lettre à M. Sorbier médecine, 2 Mars 1668.* <sup>(4)</sup>

Towards the end of the month of January the madman who had given such great hopes, and who had prodigiously swelled the courage of the transfusers, fell ill (Mr. Denis does not mark the character of the disease); his wife having made him take some remedies which had no effect, turned to Mr. Denis, according to what he writes. (*lettre a M. Oldenburgh, secretaire de l'acad, royale d'Angl. Paris 15 Mai 1668*), <sup>(5)</sup> and begged him to repeat the transfusion on him. It was only by strength of prayers that this doctor, so impatient a few days before to perform this operation on the same patient, then resolved to do so; the vein of the foot had hardly been opened to draw blood from it, while a cannula placed between the artery of the calf and a vein in the arm brought new blood to him, when the patient was seized with a trembling of all the limbs; the other accidents redoubled; they were obliged to cease the operation as soon as it had begun; and the patient died during the night. Denis, suspecting that this death was the effect of the poison that the woman had given to this madman to get rid of him, and alleging some powders which she had made him take, asked for the opening of the corpse, and said that he could not get it; he adds that the woman told him that she was offered money to maintain that her husband had died from the transfusion, and that she offered to give him some to assure the contrary; at his refusal, the woman complained, cried out for murder; Denis had recourse to the magistrates to justify himself; and from these disputes resulted a sentence from

Châtelet which, as we have already noticed, “prohibits all people from making the transfusion any human body, that the proposal has not been received and approved by the doctors of the faculty of Paris, under penalty of prison”.

Such was the end of the experiments with transfusion on men, which were carried out in Paris, which, although presented by the transfusers, and consequently in the most advantageous light and with the most favourable circumstances, do not appear to be very decisive for this operation. We see that, according to them, of five people who experienced it, two patients were cured, a healthy man was not inconvenienced, and two others could not avoid death, and of these two the madman has subsequently had various accidents, such as weakness, fainting, vomiting, excretion of black urine, drowsiness, nosebleeds, etc., and there can be no doubt that the advantages of this operation have surely been exaggerated by those who practice it and claim to be the inventors; their honour and their very fortune were interested in the success of the transfusion; and it is a fairly certain rule in practice, that one must be all the more reserved in believing facts which one has not witnessed, that they are more marvellous, and that those who tell them have more interest in supporting them. The good effects of the transfusion will appear even more doubtful, if one consults the reports which the anti-transfusers, especially Martiniere and Lami, give of the cures operated by its means; and if we examine certain circumstances on which are generally agreed, but which the transfusers deleted as unnecessary or unfavourable to them.

We notice in the first place, that the young man who was the subject of the first experiment, was servant of Denis, and that no witnesses of this operation are cited; la Martiniere adds that the testimony of a servant is so inconclusive that he undertakes “to make his servant say that his cat, has her leg broken, he healed it perfectly in two hours; who will believe it”. 2°: It is said that the paralytic woman living in the suburb S. Germain died some time after the operation. 3°: It is claimed that the observation of this porter, who is doing well, was not inconvenienced with the transfusion, would prove nothing in his favour, when it would be true, because the quantity of blood that was transfused to him was very small, and that it may have happened that this blood was sufficiently altered by the continual action of his robust vessels and by the violent exercises. 4°: The story of the Swedish lord at least proves that the transfusion was unnecessary; the kind of momentary relief which followed may be the effect of the general excited revolution in the machine and the irritation made throughout the blood system by the foreign blood; as soon as this disturbance was appeased, the accidents returned with more force, and the patient died in spite of a transfusion given the same day. 5°: It is the article on the madman that the sentiments are even more different; Martiniere notices seven to eight contradictions in the relation that Denis gave to the public, and the one he gave in particular conferences on the disease and the treatment of this man, he claims to know exactly what happened, and says even keep it from the widow of this patient; the detail which he gives, fairly consistent with that of Lamy, differs mainly from that of Denis on the subject of the last transfusion; according to the letters of these two doctors, this madman, after having twice undergone the transfusion with which he was considerably inconvenienced, remained for fifteen days out of the fit of madness, and after that time precisely at the height of the January moon, the disease began again, having changed in nature; the delirium previously light and buffoon had become violent and furious, in a word, maniacal; his wife made him take the powders of a Mr. Claquenelle at the time, which were considered excellent in such cases; it is these powders that Denis wanted to make look like a poison. These remedies having produced no effect, and the fever having occurred, Messrs. Denis and Emmerets resolved to carry out the transfusion again; they overcame by their importunity the refusals of the patient and his wife; but hardly had they begun to bring blood from a calf into his veins, when the patient cried out: *stop, I'm dying, I'm suffocating*; the transfusers did not discontinue their operation for this; they

disorientate him: you don't have enough yet, sir; and yet he expired in their hands. Surprised and angry at this death, they forgot nothing to dispel it; they uselessly employed the strongest smells, the frictions, and after being convinced that she was irrevocably decided, they offered the woman, according to what she declared, money to put herself into a convent, on condition that she concealed the death of her husband, and that she published that he had gone to the countryside; she did not want to accept their proposition, by her cries and her complaints, gave rise to the sentence of the Châtelet.

It is impossible to decide today which of the two so different relationships, that of Denis or that of Martiniere and Lamy, conforms to the true. There is reason to think that in one and the other the spirit of party will have introduced falsehoods into it, because in all disputes there is wrong on both sides; but it seems natural to me to believe that Mr. Denis has altered the truth the most, 1<sup>o</sup>: because he was most interested in supporting his opinion; 2<sup>o</sup>: because transfusion has ceased to be practiced not only in France, but in foreign countries, clear proof that the bad effects have been recognized. Antimony, although proposed by a request from the doctors of the faculty of Paris, was nonetheless used by the doctors of Montpellier, and then its use became universal, and its usefulness was finally generally recognized, because it is indeed a very advantageous remedy. Aspirations, clamours, novelty, party spirit may well lend credence for a time to a bad remedy and debase good ones, but sooner or later these foreign advantages are diffused; we appraise these remedies at their fair value, we revive the use of some, and we absolutely reject the other; oblivion or general discredit where transfusion has been for nearly a century, clearly demonstrates that this operation is dangerous, harmful, or at least useless. There is no shortage of examples of animals that died after transfusion; they cite, among others, a horse that they wanted to rejuvenate, a parrot into which the blood of two starlings was transfused; Mr. Gurge de Montpellier, an impartial author on this subject, relates that Mr. Gayen having carried out the transfusion on a dog with great accuracy, he died in the space of five days, although he was well groomed and well fed; the dog that had provided the blood, lived long after. (*Lettre a M. Bourdelot, médecin, Paris, 16 Septembre 1667*).<sup>(6)</sup> The experiments of Lower, of Mr. King, and of Mr. Coke [Cooke?] in England did not have any unfortunate consequences on these animals, if one believes their authors. Those which were done there on a man produced no accident, it is not said if it resulted in good effects; in Italy a pulmonary fills in vain the lung with foreign blood, he died; a few other patients were cured of fever there, but these slight successes did not appear decisive or well established to enlightened physicians.

We can conclude from all these facts that transfusion is an operation indifferent to healthy animals, when it is done with circumspection, and that a very small quantity of foreign blood is introduced into their veins; it becomes bad, pernicious when done in large doses; and it is always accompanied by a more or less pressing danger when patients are subjected to it, especially those who are weakened by the effect of their disease, or by some other preceding cause, or who have some ill-disposed viscera: if it sometimes produces relief, it is usually only temporary, and rather the effect of the general revolution in the machine, of the particular irritation in the blood system, of the increase in the intestinal movement of the blood that the new blood causes, as any other foreign body would do; it would always be very imprudent to practice this operation in the hope of this uncertain and slight advantage; and moreover it can happen that this excited disorder turns disadvantageously, and tends to sag the springs of the machine instead of reassembling them: we could add many reasons drawn from the better known principles of animal economics, and recent analyzes of blood, which combine to inspire remoteness for this operation; but besides that the reported facts are sufficient, fortunately, there is no need to be diverted from them. I must not, however, forget to point out that this operation is very painful. Although we seemed to neglect this article, it is quite important, and

deserves attention. We first have to make a considerable opening in the vein in order to be able to insert a cannula; the introduction of this tube cannot be done without a new pain, which must still increase with the slightest movement made by the animal, and which is finally renewed by withdrawing the cannula. See below how to do this operation. I am not speaking of the excessive heat in the arm, of the general uneasiness of suffocation, of the urinating of blood, which makes it ordinary.

We can judge by all that we have said, how well founded the claims of those who, before the transfusion was practiced, had imagined in their study what should be an assured remedy against all the diseases, however different that they were the nature, and the causes that it had the virtue of *rekindling the languid flames which are ready to be extinguished in decaying old age*, and who saw in this operation an infallible assurance of immortality. Some physicians who were supporters of transfusion, but more circumspect, had restricted its use in particular diseases, as in cold weather, in rheumatism, gout, cancer, exhaustion following haemorrhages, melancholy, and in all the cases in which one of the organs which serve for digestion was disturbed; they also want the blood to be transfused to be changed, depending on the nature of the disease that is to be cured; and thus when the disease depends on coarse, thick blood, they advise the blood of a calf, or of a lamb which is fluid and subtle; they believe that the cold & numb blood of apoplectic must be warmed up and set in motion by the boiling and active blood of a vigorous young man, etc. All these dogmas, produced from theories formed from the debris of Galenism and from the fables of Cartesianism which then infested schools, are today so generally proscribed from medicine, that it is useless to stop to review them; all the more so since it would not be possible for us to do so without falling into superfluous repetitions.

The way to give a transfusion has varied in different times and countries: in the beginning, the surgeons unfit for this operation, did it with less care and skill, and consequently with more pain and danger than in the following, where the habit of practicing it made imagine successively new means to facilitate it and make it less painful. Foreigners give the French the unequivocal testimony that it was through them that it was perfected. The method used by Italians was extremely cruel. Mr. Manfredi reports that in order to make the transfusion on the men, the surgeons of Rome mark on the skin with ink the path of the vein by which they want to make the blood enter; then they remove this skin, and make an incision with the razor following the mark, about two inches long, in order to discover the vein and separate it from the surrounding flesh; after they pass a threaded needle under the vein to bind it by means of a waxed thread with the cannula, which is introduced in order to communicate the blood. By following this method, in addition to the long and sharp pains which one causes to the patient, one is sure to excite an inflammation which can be fatal, and one risks offending the artery, one tendon, or of exciting some another accident.

The method followed in Paris by Mr. Emmerets is much simpler, and is safe from all these inconveniences. The necessary instruments are two small pipes of silver, ivory, or anything else, curved by the end which must be in the veins or arteries of the animals which are used for the transfusion, and on whom it is made; by the other end these pipes are made in such a way as to be able to adapt with accuracy and ease; little difficulty in making animals suffer which must supply the blood which one wishes to transfuse to men, the surgeon conveniently prepares their artery, he discovers it by a longitudinal incision of two or three inches, separates it from the integument, and binds it in two places one inch apart, taking care that the ligature which is on the side of the heart can easily be undone; then he opens the artery between the two ligatures, introduces one of the pipes and keeps it firmly attached: the animal thus prepared, the surgeon opens the vein of the patient (he usually chooses one of those of the arm), lets his blood flow as much as the doctor judges it advisable, then removes the ligature which one usually puts to bleed above the opening, and puts it below; he introduces his second tube into this vein, then adapts

it to that which is placed in the artery of the animal, and takes away the ligature which stops the movement of the blood; so soon it sinks, finding in the artery an obstacle by the second ligature, he threads the tube, and thus penetrates into the veins of the patient. We judge by its condition, by that of the animal that supplied the blood, and by the quantity that we thought had been transfused from the time when the operation had to be stopped: the patient's wound is closed with the compress and the bandage, as in the bleeding of the arm. We can know approximately what is the quantity of blood that has been communicated to him; 1°: by weighing the animal whose blood was used before and after the operation; 2°: by drawing the rest of its blood from it, because we know the total quantity contained in an animal of such a species and of such size; 3°: by knowing how much the pipes which one uses can deliver blood in a determined time, and counting the minutes and the seconds which pass during the operation. Mr. Tardy proposed a reciprocal transfusion in men, which was done in such a way that the same man gave blood to another man, and received it from his at the same time; but this very cruel and very complicated operation never took place except in his imagination; and it is to be hoped that the physicians who are more stingy with human blood, the loss of which is often irreparable, carefully abstain from all these kinds of operations, often dangerous, and never useful.

(m)

#### **Additional details of the references used within the text:**

1. *Lettr. de Denis à M. de Montmor, &c. Paris, 25 Juin 1667.\**

The full title of this reference is believed to be:

*Lettre de M. Denis Professeur de Philosophie et de Mathematique, à M. de Montmor premier Maistre des Requestes touchant deux Experiences de la Transfusion faites sur des homes. In 4. A Paris. Chez J. Cusson.*

[Letter from M. Denis, Professor of Philosophy and Mathematics, to M. de Montmor first Master of Requests concerning two experiences of transfusion made on men.]  
*Journal des sçavans*, Vol. XI, pp 134-136

<https://gallica.bnf.fr/ark:/12148/bpt6k58122h/f136.item>

\* Note: This letter was published in the 28<sup>th</sup> June 1667 edition and not the 25<sup>th</sup> as stated in the reference – PL.

2. *Lettr. de Gadrogs (ou Denis) à M. l'abbé Bourdelot, médecin, &c. Paris, 8 Août 1667.*

The full title of this reference is believed to be:

*Lettre écrite à Monsieur l'abbé Bourdelot, Dr en medicine de la Faculté de Paris, & Premier Medecin de la Reine de Suede, par C. G. [Gadroys] pour servir de réponse au Sr Lamy, et confirmer en mesme temps la Transfusion du sang par de nouvelles experiences. [8 aoust 1667]*

[Letter written to Monsieur l'Abbé Bourdelot, Doctor of Medicine of the Faculty of Paris, and First Doctor of the Queen of Sweden, by C.G. [Gadroys] to serve as a response to Sr Lamy, and at the same time to confirm the transfusion of blood by new experiences. [8 August 1667]

<https://gallica.bnf.fr/ark:/12148/bpt6k1268937x/f1.item>

3. *Lettre de Denis à M. \*\*\*\* Paris, 12 Janvier 1668.*

The full title of this reference is believed to be:

*Lettre écrite a M\*\*\*, par J. Denis, touchant une folie inveterée qui a este curée depuis peu par la transfusion du sang [12 janvier 1668]*

[Letter written to M\*\*\*, by J. Denis, touching on an inveterate madness that has recently been cured by the transfusion of blood [12 January 1668]

<https://catalogue.bnf.fr/ark:/12148/cb30324107z>

4. *Denis, letter à M. Sorbier medicine, 2 Mars 1668.*

The full title of this reference is believed to be:

*Lettre écrite a Monsieur Sorbier Docteur en Medicine, par Jean Denis ausi Docteur en Medicine, touchant l'origine de la transfusion du sang et la maniere de la pratiquer sur les homes. [2 Mars 1668]*

[Letter written to Mr. Sorbier Doctor of Medicine, by Jean Denis also Doctor of Medicine, concerning the origin of blood transfusion and the way to practice it in men.]

<https://gallica.bnf.fr/ark:/12148/bpt6k58280889/f4.item>

5. *lettre a M. Oldenburgh, secretaire de l'acad, royale d'Angl. Paris 15 Mai 1668*

The full title of this reference is:

*Lettre écrite a Monsieur Oldenburg Gentilhomme Anglois, & Secrétaire de l'Académie Royale d'Angleterre, par Jean Denis, Docteur en Medecine, & Professeur ez Mathematiques. Touchant les differents qui sont arrivez à l'occasion de la transfusion du sang.*

[Letter written to Mr. Oldenburg, English Gentleman, & Secretary of the Royal Academy of England, by Jean Denis, Doctor of Medicine, & Professor of Mathematics. Touching on the differences that arrived on the occasion of the transfusion of blood.]

<https://gallica.bnf.fr/ark:/12148/bpt6k5788995z/f3.item>

6. *Lettre a M. Bourdelot, médecin, Paris, 16 Septembre 1667*

Could possibly be the same references as:

*Martiniere de la, Lettre a M. Bourdelot, medicin. Paris, 16 septembre 1667*

No additional details available – PL