

**RAGGUAGLIO DEGL'ESPERIMENTI FATTI SOTTO LA DIRETTIONE DI
PAOLO MANFREDI, CIRCA LA NUOVA OPERATIONE DELLA
TRASFUSIONE DEL SANGUE DA INDIVIDUO AD INDIVIDUO & IN BRUTI
& IN HUOMINI.**

BY: PAOLO MANFREDI (1668)

A TRANSLATION BY PHIL LEAROYD

The booklet 'Summary of experiments carried out under the direction of Paolo Manfredi, regarding the new operation of blood transfusion from individual to individual and in brutes and in men' by Paolo Manfredi was published in 1668 in Rome [by Ignatio de Lazari]. A copy of this 32 page booklet can be viewed at:

<https://books.google.co.uk/books?id=EHG8QjQE2PsC&pg=PA1&lpg=PA1&dq=Paolo+Manfredi+%2B+RAGGUAGLIO+DEGL%E2%80%99ESPERIMENTI+FATTI&source=bl&ots=FNTD38E8j7&sig=ACfU3U0RSm7hTvScGR-MDR482RTvCiPx8Q&hl=en&sa=X&ved=2ahUKewjcnrTRy7HrAhUvVRUIHWX3DvcQ6AEwBH0ECAkQAQ>

Note: The four pull-out 'tables' [illustrations] and their associated explanations that are located at the back of this booklet are not reproduced in this document, however three of them can be viewed in the Wellcome Collection site, at:

<https://wellcomecollection.org/images?query=bvf8h6ee>

The booklet is dedicated to 'The Illustrious and Excellent Sig. D. Maria Mancini Colonna, Roman Princess, Duchess of Tagliacozzo and Princess of Paliano, Etc., Grand Contessa of the Kingdom of Naples.' The Colonnas are an ancient and influential Roman family whose history dates from the 12th century; family members have included Popes, cardinals, senators and military leaders.

My introduction must start with an explanation of why producing an accurate translation of this booklet has proved extremely challenging. I originally believed that this was due to the language and spelling variations of 17th century compared with 21st century Italian, combined with the difficulties posed by the print type itself and the presentation of the text produced within the scanned document. Whilst these are contributory factors, the author also includes a message towards the end of the booklet which identifies that the printing of the booklet was 'rushed' and that he did not proof read the draft document or check the print version, which he states as a result contains a large number of errors. This may in part at least explain some of the difficulties in producing a meaningful translation. Whilst I believe it is important to translate what the author actually wrote rather than an interpretation of it, because of the reasons identified above, so as to make sense of what is written this has not always been possible. I have however attempted to keep these text variations to a minimum and only where it allows the document to be produced as readable English.

To compound the translation problems further, a number of words within the scanned document proved impossible to either read or translate. These unavoidable gaps of missing words are identified in the text of the translation by the terms '*one word*' or '*two words*' in brackets. Due to the print style and scanning limitations presented by the original document it is not possible to produce an automatic computer-generated translation of the original document. Given these factors, it is

however hoped that this translation will enable the content of this document relating to the history of blood transfusion, to be appreciated by a larger audience. I have kept the same sentence and paragraph structure of the original document.

The booklet describes the methodology of blood transfusion used by Paolo Manfredi and the surgeon Bartolomeo Simoncelli, who on the 5th January 1668 transfused a man with lamb's blood. Manfredi published two reports of this event, one in Latin titled *De nova et inaudita medico-chirurgica operatione sanguinem transfundente de individuo ad individuum* (which is referred to in this booklet) and this booklet in Italian titled *Ragguaglio degl'esperimenti fatti sotto la direzione di Paolo Manfredi, circa la nuova operatione della transfusione del sangue da Individo ad Individo et in bruti et in huomini*. The transfusion was reportedly performed on a labourer called Angelo da Udine in front of a large audience in Manfredi's home (though the recipient is not referred to by name in this booklet). Both publications were intended to counter the accusations, controversy and debate that blood transfusion experiments had instigated in Rome (as it had also done in other parts of Europe around the same time).

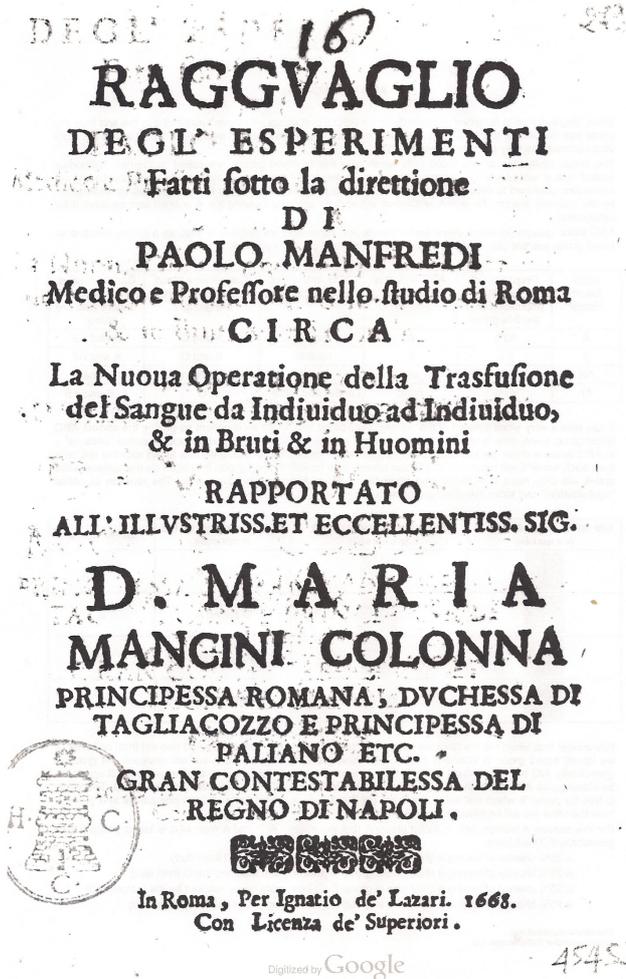
As such, this publication on the one hand appears to have been written to confirm the success of the operation of blood transfusion and to describe how it was done, whilst also attempting to answer the medical and philosophical objections that the introduction of animal blood into a man had raised. The transfused patient is identified by Manfredi in the text as being alive and well 'twenty days or more' after the operation and this statement is supported by testimonies from two physicians, Baldassare Colutii and Ottaviano Paulini, signed on the 15th February 1668, that are reproduced at the end of the booklet.

Manfredi begins with a somewhat lengthy eulogy to 'Madam', i.e. Sig. D. Maria Mancini Colonna, during which he identifies that he originally heard about human blood transfusion via letters from Paris, which by inference must relate to those performed by Jean Denis during the previous year. He also states that he is aware of infusions performed by [Johann Daniel] Major in Hamburg as well as the infusion experiments on animals previously performed in England. Manfredi identifies that these letters include details of the technique used by the French to perform a blood transfusion and that he has modified their method by instead of using two separate leg vein sites for the simultaneous infusion of animal blood into one and the bleeding of the patient from the other, he uses a single vein in the arm of the patient for both purposes. This he describes as being 'easier and more convenient for the work' and less painful for the patient.

Having placed two tourniquets on the patient's arm, one above and one below the elbow, he describes the method of cutting the skin to expose the arm vein and of passing a thread under and around it so as to secure the curved transfusion tube within it, so that it points towards the shoulder. This transfusion tube is connected to a tube placed into the carotid artery of a sheep. The cut arm vein, is left open behind this tube, i.e. towards the hand, and is used as the place where the patient is able to be bled from; the two tourniquets being used to regulate the flow of animal blood into the patient and the patient's own blood out of the same vein.

Manfredi also discusses the problem of understanding how repeated small volume transfusions of 'good blood' can have an effect over the much larger quantity of 'bad blood' already in the patient – an argument essentially against Galen's theories, which formed the cornerstone of medical practices for such a long time. He also rejects the idea that the introduction of animal blood into the human circulation could result in a 'changed spirit' or have any other detrimental effects on the health or personality of the recipient – a view widely held by many people at that time.

The content of this booklet graphically illustrates the difficulties posed by both the practical methodology of 17th century blood transfusion and the problems associated with the medical beliefs of that time.



Title page of Paolo Manfredi's book (1668)
(Image credit: books.google.co.uk)

PAOLO MANFREDI – BIOGRAPHICAL INFORMATION

Paolo Manfredi was born in Camaiore, in the Republic of Lucca, on 15th October 1640. Although it is not known how or when he arrived in Rome, it is known that together with his brother Antonio, he studied as a teenager in the Roman College of the Society of Jesus. However, he did not complete his studies there and moved after completing the lower-middle courses to devote himself to the study of medicine at Sapienza. One of his tutors there was Giovanni Trulli, a skilled anatomist and surgeon who supported the concept of the circulation of blood. Having acquired the doctorate in 1659, Manfredi entered the service of the Hospital of Consolation. At the time that the transfusion experiments were made Manfredi was an 'Ordinary Reader' of theoretical medicine, but by 1676 (when records are available) he had entered medical college and by 1682 (again, when records are available) he is identified as being the Dean of the College of Medicine in Rome. During this period he taught anatomy and surgery and published other works on the anatomy of the eye and ear. In 1704 he resigned from the College but is known to have held the office of Archivist (1709) and Chamberlain (1713). He died in Rome on 24th July 1716.

MADAM

Among the succession that a human seemed to conceive from his birth, crossing from the figure of the one who gave it birth, acquires the name of a monster; it boasts the poorest fortune to the vaguest children, occupying the curious eyes not only of the vulgar, but of the greatest. So, indeed, Most Excellent Lady, you are here today to my labours; since I have endeavoured to serve the public joy by investigating the truth of the blood transfusion by means of the happy experiments practiced several times on brutes in my house, and with Mr. Bartolomeo Simoncelli, excellent Surgeon and Anatomist, regulated by my orders, and particularly on the 5th January of the present year, in which in the presence of many principled and titled people, and with a large number of virtuosi, it was from the same with not a little applause of the disinterested, practiced with singular dexterity, and authorized by the reasons and motives, which I composed and dispensed in the booklet printed in this regard; I say, lucky these weaknesses of mine, although they are different parts, to draw to their admiration not only popular curiosity, but the eyes of the most concerned characters. Among these of singular esteem are the favours which I receive from Your Excellency, declaring yourself curious about it, and craving a distinct relationship, like Mr. Abbate Marcello Seueroli Auuocarò Concistoriale, he was pleased to report his desire to me, with my singular and glorious enjoyment; since they conspire to marvellously declare this desire of his, to be things and for my baseness, and for their condition, very unequal to his greatness, and to the fool, to whom, however, making himself superior with his talents, and clothing the soul with any virtuous erudition and doctrine, if nature gives the body a noble and singular vagueness, makes himself known to the world as a worthy germ of that sublime mud, which was worth to the most worthy part of the world, I say to France, to sprout the heroes. Such was Cardinal Mazzarino, the great, the political deity of that kingdom, who was no less serious in generosity than in prudence, and knew with true glory to reduce his fortune if contrary to him, and to moderate it if too friendly. If then with my poor talents, it will not make it easy to serve so great a Princess; the matter of which will make me blush, obliging me with the honour that I receive from Your Excellency, in order to wound it well, until the shedding of blood.

And in order not to give myself an advantage, I will not speak to Your Excellency of the great commotion, that brought this novelty into medicine, (*three words*), and still occupying the prime geniuses of our century, which have been equally applied to the intellect and the hand, with speculations and experiments, very virtuous subjects have tried to perfect it in Florence, Bologna, Pisa, and other noble cities; it is much less than how this invention came to light, and how (*one word*) Daniele Maier [Major] of Hamburg thought to heal human bodies more quickly and happily by infusing medicaments in the veins, and heard this from the English, who thought it easier to give better blood than intruding medicines, as they practiced it with good success in different animals; but it will suffice to say, that having passed this newness at a faster pace in Paris, from these sublime geniuses he receives for this the soul, since for the first time and with happy success as your Excellency knows much better than I the certainty that a similar operation was practiced in men, both healthy and badly affected, and were seen, so to speak, miraculous effects. Then, with the scholars who write from France, the knowledge of a curious work reaches the Court of Rome, the marvel of which by occupying the understanding at all, prevents them from adopting belief, even among the Professors of Medicine; I (*one word*) was not able to quickly adapt the coarseness of the intellect, appearing to me at first sight, as to everyone else, to be an impossible and monstrous operation; but then, as your virtuous friend, communicated to me the letters that were written from Paris in this regard, and which by describing the way of operating it is much easier to understand than that which could imagine, I resolved to satisfy myself with the experience which is practiced in this way in man.

The arm (in which we operate in Rome) is uncovered, as the part of the body that is easier and more convenient for the work, is firmly tied above the fold of it, so that the vein swells (conforming to the ordinary practice of bleeding) when in this way it is swollen, which can be clearly discerned under the treatment, it also binds with another band under the flexure towards the hand, so that when the vein is cut to introduce the tube, which is to infuse the foreign blood, it does not let the blood of man abound and prevent its operation.

In order to understand the necessity of these bindings, and after your Excellency supposes, that the blood for the veins does not run from the shoulder to the hand, as is commonly believed, but with a very contrary motion it runs from the hand to the shoulder and then, having taken the blood in the arteries from the heart, they bring it to all the extremities of the body, which flowed into the veins, these bring it back towards the heart, so for this purpose the binding is made first over the cleft of the arm, which by squeezing the vein tightly, and preventing the upward flow of blood, causes it to swell below, and then the second lower binding is made, so that the blood from the cut vein does not disperse. Having made this preparation and observed between the two ligatures where the greater and most conspicuous vein appears, it's site is marked with pen and ink, so as not to fail with the cut, and takes hold of the skin, sideways to the sign made here and then with two fingers, as shown in the third figure, he lifts the skin so that it can be cut with a razor without offending the vein.

It is not superfluous, as some believe, this diligence of cutting the skin without touching the vein, thus having to practice, and not open the skin and vein together, conforming to the sanguineous, if one wishes to do this work with perfection, and with neatness, this being the greatest mistake, into which those who practice it invariably fall, and the only reason why it has not been revived by some; or no less, then considering it necessary to pass a thread under the vein, in order to be able to tightly encircle the tube with the same vein, which is impossible to do without first cutting the skin away from the vein, so with these unfortunate effects he declares those who are not very careful or consider this very necessary diligence as superfluous and barbaric, in that not only is it not superfluous, without it attached, he will never do the operation perfectly, whoever he is, and very less barbarous, being so to speak insensitive, if done by a practical and diligent surgeon.

Therefore, to pass the said thread under the vein, which already appears uncovered due to the aforementioned cut, it is necessary to gently detach it from the adjacent fat, from which when it is made very free, take a twisted needle without point, or rather round at the tip, and place it under, it is known that it passes to the other side; but because the vein is strongly attached below with some very thin membranes, the tip can be seen on the other side, but covered by the same material, so it is necessary to give the tip of the needle a very simple stroke of the lancet to cut them, which being very strong, immediately detach themselves, giving rise to the needle and the thread passing freely, and is subsequently introduced. Here the pain ends, which is also little, if the surgeon takes it diligently. The introduced thread, very useful for the perfection of the work, since with it the vein can be lowered and lifted at the pleasure of the worker according to what the need requires, but with dexterity; raise it for so long, it is cut with the lancet from above along the length of the vein as if you wanted to make an ordinary bleed, and given the outcome to that blood, which closes between the two ligatures of the arm in the vein, and introduce into the already made (*one word*) the silver stylus, to keep the lips of the same vein dilated, the stem is gently introduced, which must introduce the blood, and he places its mouth twisted up towards the shoulder as it enters the vein, taking the two ends of the thread already passed underneath it, it binds with it flawlessly, leaving a little hole below so that the outcome is free to the blood, which from the extreme hand of man runs upwards, and must in due course throw itself out like bad.

Having secured the entrance to the blood in this way, it is no less easy to connect the outer part of the tube introduced into the man's vein with the tube first placed in the artery of the animal's throat (called the carotid by doctors), which must also be prepared as for the man's vein, with this difference however, that in man the vein below is not fleshed, as many have spread the word to make the operation horrible and painful to be learned, and to make it so hateful to the world; but only with singular dexterity is it passed through a thread led by the needle, which, being round at the end, does not give pain, as has been said above, and I, on the experiences made in my house by Mr. Simoncelli can testify to Your Excellency with truth; in the animal, however, the artery is thinner and completely separated all around, in order to be able to use it more freely and operate with greater ease. Joining the tubes in this way (with caution, that the tube of the animal enters that of the man, so that the blood coming from the animal finds the easiest passage) and the binding already made above the fold of the arm in the man is loosened, so that the entrance to the blood remains free, that when introduced, it must run upwards, and loosening the knot made in the artery of the animal under the tube, prevents the flow of blood, the tubes are filled, and the man feels the sensation of that entering the arm, and in order to be blood from a ferocious artery, because it is like a sweet flame that raises it, and homeless after entering the foreign blood, it is also necessary to loosen the band that is under the fold of the arm towards the hand, that prevents the blood of the man running upwards, so, as has been said, may result from the same hole where the introduced tube is, since running up the blood, and finding the result of that hole, it comes and throws itself out, being unable to pass further, to the vein tied with the tube in the upper part. It is necessary to be most alert, that we make sure not to untie the ligatures in the man's arm, but only loosen both the one above and the one below, so that if the blood enters with too much force, or little haste, the superior may shrink or relax according to need, and the inferior loosen to advantage if a little of the man's blood in proportion comes out, or true to squeeze more if it gushes too much; in summary, these bindings must be made the same, which the gardeners of the Chiani de Condotti use, with which they give more and less water according to what is needed or pleases them. It was this caution that I thought of after having seen the experiments in man for myself, and for this reason I did not feel comfortable placing it in my Latin booklet and in the figures that are connected to it; but as I had it practiced by the surgeon in the public demonstration on the evening of 5th January, so was the objection ill founded of those that having seen the upper binding only loosened, that they began to spread around the Court that no blood was introduced into it; convincing, beyond the patient's attestation that he sensitively felt the entrance with the blood of the man himself, which flows out so abundantly, although it was with similar lacing [fastening], but in the same relaxed way, in the lower tied part of the arm.

I do not want to waste time here responding to begged and slight oppositions, and I will only say to fully satisfy the curiosity of his commands, that once the quantity of blood he wants is introduced into the man, his arm or wound is not otherwise treated after removing the tube and the thread, other than with an ordinary bandage the barbers use, such as for a bleeding, not being one of them, the wound is greater; in the animal but it is necessary to fasten the artery from which it receives the blood with a firm binding towards the heart.

And this is the way, most Excellent Lady, of which we make use of here, in the operation you deign, esteeming it for the easiest and safest way, so indoctrinated by the many experiences with which we have examined all the others as well. There is no doubt that the way that it is practiced in Paris by French doctors (from the singular industry of which the blood transfusion recognizes its greatest glories, and we confess its knowledge and principles) satisfies the eye more, since taking the blood from the man from the foot, and introducing it on the other side, we can more clearly see the different course of these bloods, and the clarity of the work: but we do not

consider it so necessary for the perfection of the working of this operation to this evidence to the eye, that in order to fulfil only this, we have to leave out a better way, and much less painful, more gentle, and that we are certain that feeling from the same Frenchmen, it will not be from their most purged disapproved judgement; and as such, I am singularly sorry that it is so difficult to learn, even by the most sensible men, who not having found it in the course of this detail, the most common objection, even if it is the weakest, of the impossibility of the entry and of the outcome of the blood at the same time, since it is not possible to understand well from them, how from the same hole, the blood of man comes out and that of the brute is introduced; a difficulty, which as it is fomented by the false belief that the veins carry the blood down towards the hand; so easily comes from destroyed foundations, by admitting the circulation of the blood, a very true opinion and received today by all schools; with which, carrying the human blood from the veins upwards towards the shoulder, it comes out when it reaches where the tube is introduced, which carries the brutes' blood upwards, to be at that time superior, enters the curved tubule, and following the course that the human [blood] would have to take if the vein were not open, clearly demonstrates that the blood does not meet, removing any ambiguity, which is supposedly born far from the truth. Others of more resuscitated ingenuity, not arrested by such frivolous difficulties, are satisfied, and they understand very well how the operation happens, but deny, however, that it can bring about effects or benefit, and however capricious inventiveness may be, as to satisfy more the curiosity of restless spirits, and eager for novelty, than to the needs of evils, which contribute to the human body; I will not answer these with arguments, and reasons, seeming to me to have quite satisfied this part in my Latin booklet, but I will only put before their eyes, the many famous experiences, very happy effects and successes from this operation in the city of Paris, mother of virtues, from whence one feels, with this operation, that grave hells have been healed there, desperate by doctors, and dying, and lately a madman, as there are authentic ones, and faith of priests, and very grave characters; I am amazed by those who are not very supportive of this operation, these experiments are denied and mocked, who feel they are from a country so far away, if they were not boldly ashamed in the face of the truth, to say, that he was already dead, in which the public experience took place in my house after two days; it is also thanks to God today that twenty and more days have passed since the experience, he is well, and healthy, although when it was practiced, he was unhealthy, and convalescing, as by the authentic faith attached to this throne, it is faithfully seen. And yet this, Madam, is a great argument in favour of this new operation, since if some try to destroy it with lies, they make it known that they cannot destroy it with reasons, of which, if any one were, that with some ground could oppose him, it would be to my judgment that which most meaning fabricated bring up the antipathy of blood, the individual nature of which, not being known to us, we could introduce into a body, to which it was poison; danger, which would be much to be feared, if it were as easy as they suppose; I cannot imagine, not that I am led to believe it, that the blood of animals, whose meat is commonly used in daily food, can find any human individual, so different from himself, that not only does it not offer to be useful to him, but has to be poisonous so to speak, or harmful; we also see the blood of these brutes appearing on tables during the day, of which we propose to take care of ourselves in the transfusion, and not only does it not bring harm to any man, but transforms into excellent nourishment; it is a pleasure to answer, because the intrusion of the already cooked blood in the stomach is very different from the transfusion of raw blood in the veins, since this is very good for me, and as I have demonstrated elsewhere, all bloods carry such similar or competent heat, to that of every animal that lives; I will not deny already, that if we introduce a very warm blood, it increases the heat to man, and if another is relatively cold in temperature, we will diminish it; but granting it, I establish the (*one word*) dissimilar operation, thus having to practice it, so that it is done with method, and requiring no less regard for the

quality, than the quantity which is introduced, which if not moderate, and with prudence transmitted the blood, instead of following its useful effects, considerable accidents will follow, as Mr. Gio. Battista Pieri and Guglielmo Riva, surgeons in Rome, and of well-regarded merit and fame have observed with the most diligent experience; and in particular Mr. Hipolito Magnani, in the same very erudite profession, who with a continuous assembly of the most curious intellects of this city, he has seen the events, which from them will be soon promptly granted to the press; from this limited amount of blood, however, which is introduced in several times instead of changing it all without reason in a single one, if there is no objection, which is still proposed by all; how can it be (they say) that if a small quantity of foreign and good blood is introduced into a body, whose blood is vitreous and bad, the much and bad is corrected by that good which is so little, and no longer be this perfect little soon corrupted by the much larger quantity of bad condition, in conformity with the philosopher's saying that what is touched by the putrid also degenerates into putrefaction? To which argument I do not really read, he is satisfied with the example of the Alterants [sic], who in putrid fevers are given, as altered broths and the like, although they are in small quantities, they exceed nothing but by replicating, much greater putrefaction in the blood mass, which much better can be done by the blood of an animal that is dark and healthy, not only with the manifest quality; and against his blood to the contrary, with the aforesaid medicaments operate, moreover bringing with them the natural warmth, which was the main instrument of nature in overcoming evils, it is not only helped but stimulated, so to speak, to correct the bad blood.

You shouldn't have to bore V.E. any longer, but stay, if you are pleased, calm, to make sure that you satisfy a very considerable consideration given to me by some righteous, who oppose the operation as superfluous; because, if it is done to change the bad blood, and to introduce blood for several hours, we cannot thus obtain the intent, while the scrambling brute who must transmit the blood, with painful cuts and ties, the mass of blood shakes in such a way, that what we transfuse will be no less bad than what must change: this argument seems at first sight an Achilles, but well considered it does not draw attention to what it appears to be; firstly because they do not struggle so that they can suffer similar trauma, and especially the castrated and calves, who being peaceful and quiet animals, we have seen with experience, that they do not get much agitated, but go to the same death with peace; and then it is not so much, it is too much, nor the pain that that brute suffers that is sufficient to make him, I will not say worse, but not by far so bad, how much and what we want to change, not being able, neither the pain nor the fear, nor the too violent motion itself alters the mass of the blood, but only to induce some slight agitation in the spirits; while those causes mentioned above, in the opinion of all medical writers, are not worthy enough to produce any fever other than a simple one, which is light due to the movable matter in which it appears, the hardship lasting no longer than a day; so that, not communicating, not only the rottenness to the blood, which we want to introduce by removing the human blood, but soon its heat, which from the causes already mentioned is separated only to the spirits, it remains much more perfect than that of changing, and vigorous consequence, the benevolent effect of our operation; nor does it raise the doubt more than others, that from brutal blood, beastly customs can be introduced, for several reasons, first of all because it would be necessary for them to prove that customs are dependant upon the blood alone, which is quite false. And then (without many other answers, which could be given) meanwhile the blood is transfused from a brute into a man, to find first the perfection of the work, which when it is renounced, it is claimed that it can be practiced from man to man, and thus also escape those frivolous accusations of the too witty.

I leave out many other arguments, which as weak and vacillating, I hope that without the impetus of the answers they will fall by the way. And to diminish the tedium that perhaps by being too verbose I will have brought on, I will close this

briefing, deploring the blindness of those, who I do not know, from what ill genius they are brought to, they make fun of the new things, and of whom, I will not say defends them, but tries to investigate the truth; and without considering their motives, and reasons, scorning, and experiments, and authorities, it is enough with them to declare them of little esteem, that they are the daughters of our century; when at the meeting they should at least accept the desire of those who place their labours, expenditures and industry for the public service, to increase the glories of the Profession, and more and more they see them animated by the Medici Lords, who they assist with all prudence, and that the most concerned characters, by calling themselves curious, they declare themselves Tutelaries, as your E. wishes to do so, making new petitions of revered Cenni and Commands and his most esteemed Protector, I make humble and very profound reverence.

By: V. E.

Humble and Devoted Servant
Paolo Manfredi
TA

READER

The copious errors, duplicates of printing, and of the Corrector (of which, due to the haste, I was forced to trust for the editing) than in the Latin booklet, which days I gave birth to this very same material, they saw them as unavoidable in their imprinting, having been printed in sixteen hours, so in reading them I am insufferable, they bring me great displeasure; when it has pleased the Divine Goodness to offer me the opportunity, with which, appearing again in public, I can sincerely bring you my secrets; all I know is no less to your discreet superfluous goodness, that I am certain of the confidence of your pity, if in this brief report I am forced, not only for the necessity of the story often replicating the same words, but also to adapt myself to the common way of saying, frequently hurt me with voices not their own. I know that you are courteous, that that is enough to get my wish; but I want three things to help you; first, that in my Latin booklet of this subject in chapter 6, line 17, you must read like this *Indit vmbilicalis vena tender corpuscle sanguiné re, vocantq; arteriae, circulo incestant, (one word)* the one who copied the original neglected, for haste of writing, a reminder, or remittance that they have placed in the margin; secondly, that I was cautious in giving ear to the little (*one word*) of this operation, who spread the rumour that the one in whom I practiced in my house was dead, because this is false, compliant with the attached attestation, as you can see; and thirdly that having been my aim in these labours only to help you, if some gentler palate doesn't like it, I don't want to force myself to defend it. It is enough for me to have the operation proved feasible; which is then going to have a good effect, according to me, I take it for sure, so the experiments of France, of Rome, and of Bologna will prove it; in the rest, if some critics want to make fun of it, these cynics will bark at the moon for me, not pretending to sell my enemies at the price of sweat; and protesting me, not wanting to break my head with replies, and answers, to the (*one word*) reasons, of those who want to oppose me, just to show themselves to be a beautiful ingenuity and to keep me restless, will appeal to the experience. On the contrary, to show you that only the greater glory of God spurs me, and the public (*one word*), I beg you with the Lyric...
si quid nouisti (one word) iftis
Candidos imperti, si non, his vtere mecum

We (*two words*) Roman Physicians do full, and in undoubted faith; which Angelo da Udine in Friuli, to whom, by Mr. Bartolomeo Simoncelli, Surgeon, the blood transfusion was performed by introducing Castrato's blood in diluted veins, on the 5th January 1668, under the direction and in the house of Mr. Paolo Manfredi, the Physical Doctor, and (*one word*) in the study of Rome, he is at present well, and very healthy, and in faith this of 15th February 1668.

I Baldassare Colutii, Roman Physician, authenticate as above
I Ottaviano Paulini, Roman Physician, confirm as above.

TABLE ONE

Demonstrates two dogs, one of which sends blood from the artery, and the other receives it in the vein.

THIS ILLUSTRATION IS NOT AVAILABLE

- A. The dog, which sends blood from the carotid artery.
- B. The dog who receives the blood in the jugular vein.
- bbbb. The straps with which the dogs are bound.
- cc. Two wooden (*one word*) to which the dogs are bound so that they are forced to raise their heads, and expose their throats better.
- dddd. Ligatures with which the dogs are tied.
- ee. Wounds in the throat to take the vein and the artery.
- f.f. Artery in dog A, vein in dog B, discovered.
- g.g. Cuts, in the vessels, and the pipes introduced in those, which transfuse the blood.
- hh. Threads with which the pipes are tied within the vein and the artery.
- L. Blood coming out of the vein of dog B, to introduce new blood.
- K. Conjunction of the pipes.

TABLE TWO

The instruments necessary for the operation.

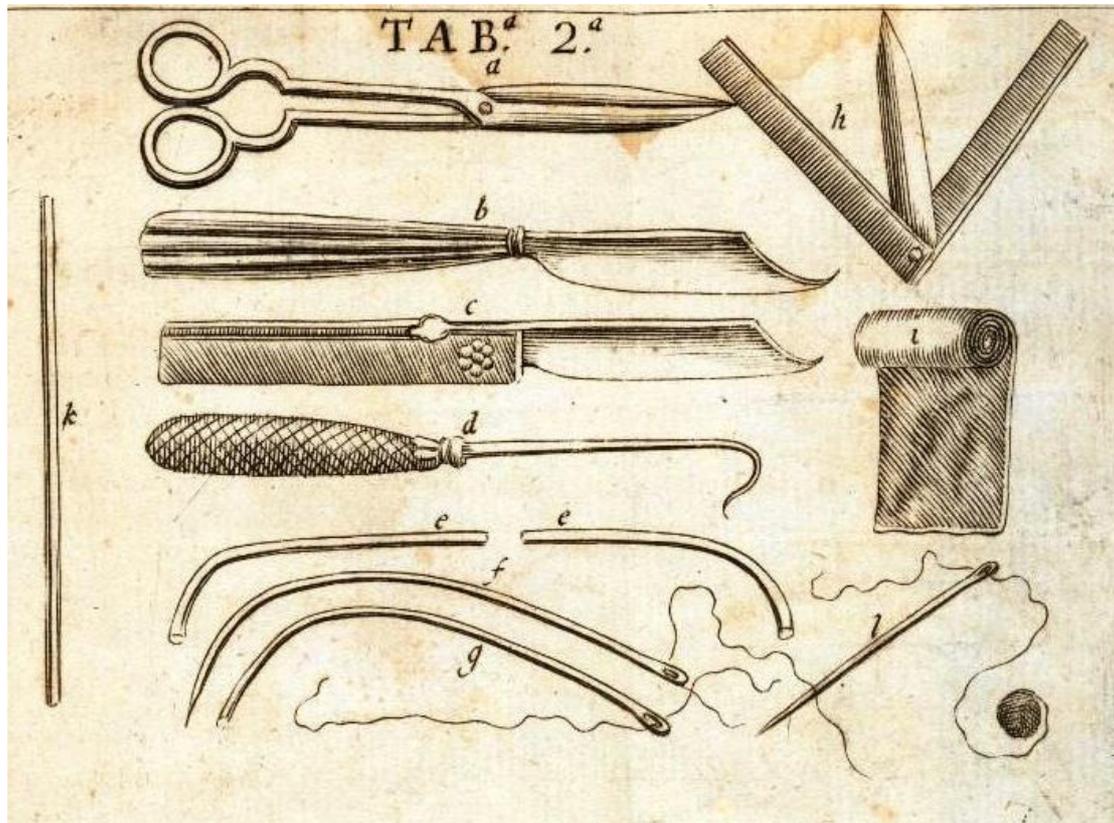


Image credit: Wellcome Collection

- a. Scissors
- b. Cutting knife
- c. Razor
- d. (*One word*) to raise the vessels and widen the skin
- e.e. Pipes for the transfusion
- f. Needle twisted
- g. Needle twisted, and blunt
- h. Lancet to cut the vein and the artery
- i. (*One word*)
- k. Stylus for exploring the sites and cavities
- l. Needle to sew with thread

TABLE THREE

The arm, which must be cut, so that its vein receives the foreign blood and sends out its own.

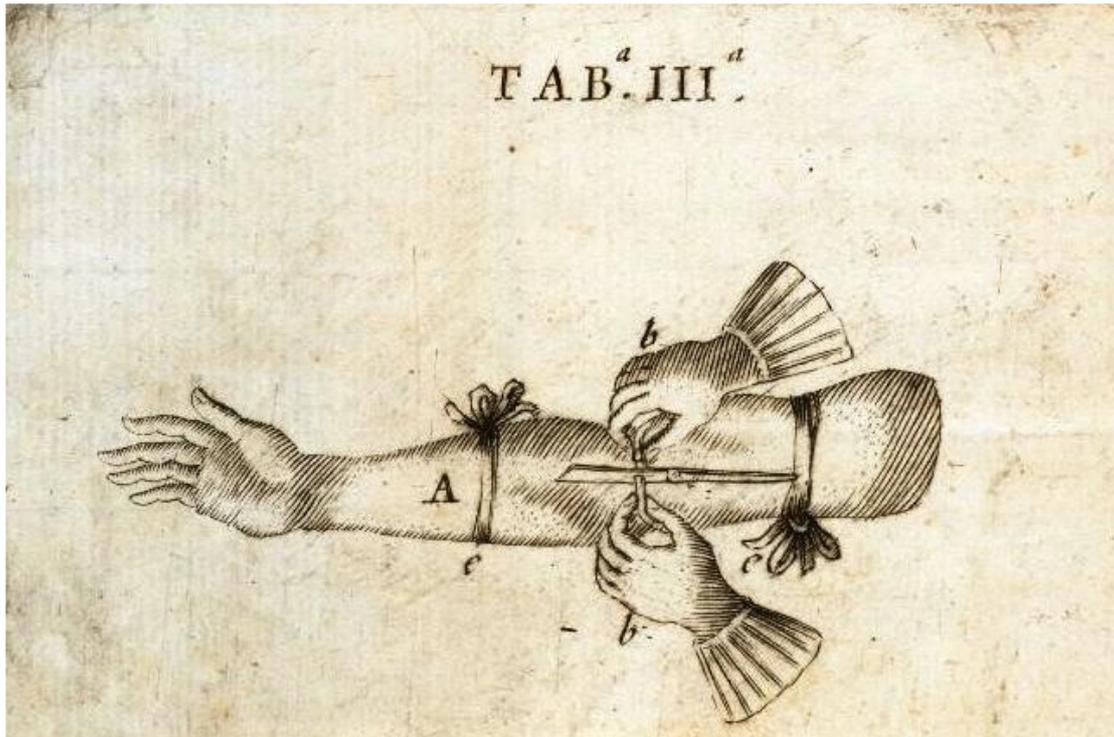


Image credit: Wellcome Collection

- A. Arm
- b.b. Two hands, of two ministers, which from here and there transversally grasp the skin and lift it, so that the cut can be made better, and without pain.
- c. Skin, or skin with the hands tightened, folded and raised, so that the incision is made according to the length of the vein
- d. Razor that cuts the skin
- e.e. Straps that loosen and / or tighten as needed.

TABLE FOUR

The entire operation is shown, and you see the animal that transmits and the human arm that receives the blood.

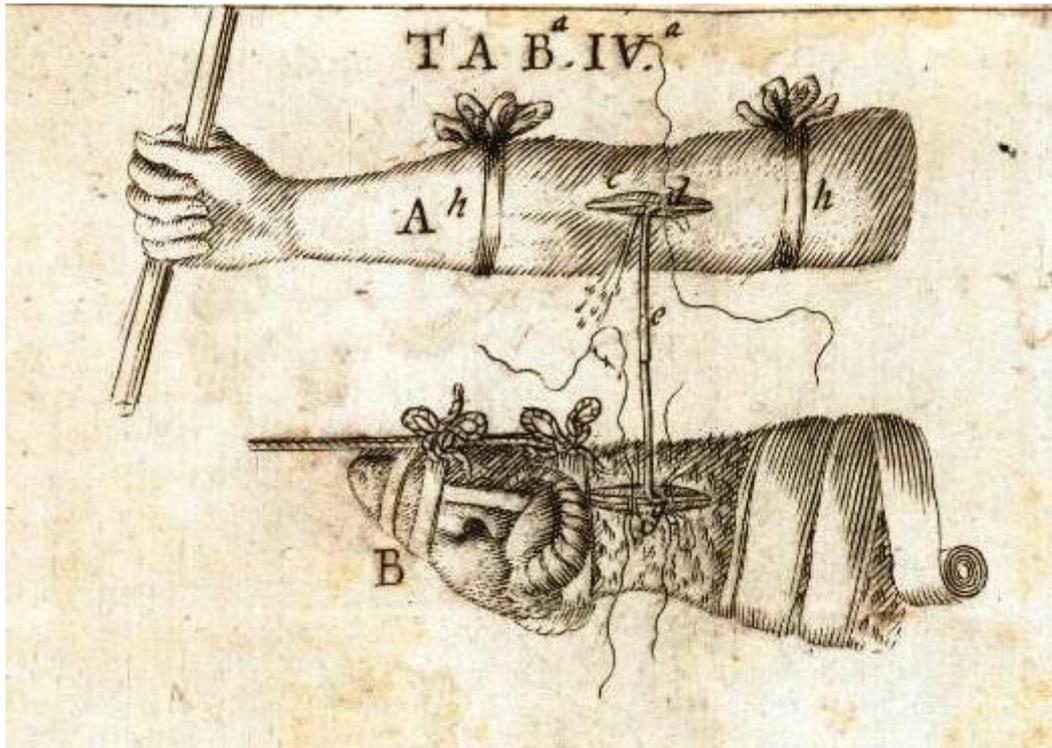


Image credit: Wellcome Collection

- A. Arm that receives blood.
- B. The animal that transmits blood.
- c. Opening of the arm showing the vein.
- d. The vein tied with the introduced tube.
- e. Tube introduced into the human vein and finished with the animal's tube.
- f. Needle, with which the thread is passed under the artery.
- g. Tube introduced into the animal's artery, and tied with it.
- h.h. Bands to repress or release the flow of blood that comes out and that enters.