Observations on the transfusion of blood : with an account of two cases of uterine hemorrhage, in which that operation has been recently performed with success / by Charles Waller.

OBSERVATIONS

ON THE

TRANSFUSION OF BLOOD;

WITH AN ACCOUNT OF TWO CASES OF

UTERINE HEMORRHAGE,

IN WHICH THAT OPERATION HAS BEEN RECENTLY PERFORMED WITH SUCCESS.

BY

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OBSERVATIONS,

&c.

AMIDST the various trying circumstances under which a medical man is placed, in the honourable discharge of his professional duties, there are none that more loudly demand coolness and self-possession, than cases where his patients are suffering under alarming hemorrhages, and perhaps there are none more terrific in their appearance than those bleedings, which procecd from the puerperal uterus. You have not, as in hemorrhage from the limbs, the power of immediately arresting it by the application of a tourniquet, and of preventing its recurrence by passing a ligature around the wounded artery; but you have blood pouring from a large number of vessels, the closure of which can only be effected by exciting the contraction of the womb; and it often happens that this desirable end cannot be accomplished till your patient has been brought into an alarming state. Nor is this all, for after you have succeeded in arresting this hemorrhage, your patient is by no means safe,

for she may have lost so large a quantity of blood that she will die in the course of a few hours from exhaustion. Or she may drag on a miserable existence for a few days, and then sink from that irritable state of the head or of the bowels, so common in cases of this kind. Or perhaps, by good luck, she may recover after remaining for weeks in a very distressing and alarming state of weakness; but then what is the consequence? not having sufficient blood to nourish herself, she has of course none to spare for the child, no milk is secreted, and the life of the infant is, to say the least, placed in the greatest jeopardy. Now a remedy has been found which promises in no mean degree to be of essential service in cases of this kind, and notwithstanding the opposition it has met with, will, I have little doubt, be *eventually* brought into general practice, or at any rate will not be discarded without a fair trial being afforded it. We need neither be surprised or daunted at its being so opposed; for if we consult the records of medicine, we shall find that the introduction of any new theory or remedy, *however just in principle,* has always met with the same fate. I need only mention the discoveries of Harvey and of John Hunter to bear me out in this assertion. The remedy which I allude to, is the much ridiculed and ancient operation of replenishing the empty state of the vascular system, by the introduction of blood into the veins, but with this modification,

that instead of using the blood of different animals, it should be taken from those of the same species, and thus in the cases which I have before mentioned, human blood should be employed. As considerable stress has been laid upon the trials which were formerly made, and especially those in France, I shall make no apology for entering a little into the history of the operation of the Transfusion of Blood, and relating the results of the French experiments. The practicability of the operation appears to have been known to many of the earliest writers on medicine, though from its not having been performed, it was taken but little notice of, and we find between the years 1660 and 1670, several persons claiming the merit of the discovery, some for the English and others for the French; but there is a description of it in a work, published by Libavius, in 1615, *his words are these, "adsit Juvenis robustus, sanus, sanguine spirituoso plenus: adstet exhaustus viribus, tenuis, macilentus, vix animam trahens. Magister artis habeat tubulos argenteos, inter se congruentes, aperiat arteriam robusti, et tubulum inserat, muniatque; mox et egroti arteriam findat et tubulum femineum insigat. Jam Duos tubulos sibi mutuo applicet, et ex sano sanguis arterialis, calens et spirituosus saliet in ægrotum, unaque vitæ fontem afferet omnemque languorem pellet." It is true this writer merely

* Appendic. Syntagmat. arcan. Chymic. Cap. 4.

mentions it to ridicule it, and he has made the operation one of great danger, by directing the *arteries* of both persons to be opened; Dr. Lower* has however gained the credit of being the first to propose the operation; his directions are these, "Take up the carotid artery of the dog or other animal, whose blood is to be transfused into another of the same, or of a different kind; separate it from the nerve of the eighth pair, and lay it bare for about an inch, make a strong ligature upon the upper part of the artery, and an inch nearer the heart another ligature with a running knot, to be loosened or fastened as occasion requires. Draw two threads between the two ligatures, open the artery, put in a quill and tye up the artery again upon the quill by the two threads, and stop the quill by a stick. Then make bare the jugular vein of the other animal for about one and a half inch in length, and at each end make a ligature with a running knot, and in the space between the two knots, draw under the vein two threads as in the other. Open the vein and put into it two quills, one into the descending part of the vein to receive the blood from the other dog, and carry it to the heart; the other quill put into the other part of the jugular vein towards the head, through which the second animal's own blood is to run into dishes. The quills thus tied fast, stop them up with sticks till there be occasion to open them. Things thus

* Richardi Lower Tractatus de Corde.

disposed, fasten the dogs on their sides towards one another, in such a manner that the quills may go into each other. Then unstop the quill that goes down into the second dog's jugular vein, as also that coming out of the other dog's artery, and by help of two or three other quills put into each other as there shall be occasion, insert them into one another. Then slip the running knots, and immediately the blood runs through the quills as through an artery, very impetuously. As the blood runs into the dog, unstop the quills at the upper part of his jugular, for his own blood to run out at, though not constantly, but as you perceive him able to bear it, till the other dog begins to cry and faint, and at last dye. Lastly, take both quills out of the jugulars, tie the running knot fast, and cut the vein asunder. Sew up the skin. The dog [thus dismissed, will run away as if nothing ailed him." This detail of the operation is contained in a letter to Robert Boyle, and is dated July 6th, 1666, but which was not published at the time, and he complains that Denys wishes to deprive him of the merit of the invention. However, I believe the actual performance of the operation on the *human subject* was first accomplished by Denys, and as far as I am enabled to find the record of the cases, they were limited to five, and this number corresponds exactly with the number mentioned in Chamber's Cyclopœdia, edited by Rees; he says that Denys had operated

five times on the human subject, and that he was then stopped by an Act of Parliament. The result of these five cases are there given, four of the individuals were diseased, of whom two recovered and two died; one was in perfect health, and no effect whatever was produced by the operation. This man had the blood of a lamb injected into his veins. Of the two successful cases, the one was that of a man who had been labouring for two years under a quartan ague, and who was considered to be in an incurable state; the blood of a calf was injected into his veins, and "Quasi Medeœ arte recoctus revivixit et melius habuit quamvis non plane in integrum restitutus."* The other cases are related at length in the first four vols. of the Philosophical Transactions. One was that of a man who had been labouring under fever, for which he had been bled twenty times, and was left in a perfect state of lethargy; this man was cured by having the blood of a lamb injected into his veins. The two cases which were unsuccessful were the following: the first was a person of some note, Baron Bond, who was the son of one of the ministers of the king of Sweden, who had been for "three weeks afflicted with the complicated distempers of an hepatic flux, a dysentery, and bilious diarrhæ, accompanied by a very violent fever; he had been attended by four physicians, who bled, purged and blistered him as much as

* Acta Thomæ Bartholini. vol. 3. p. 86.

they thought fit; he grew at last so weak, that he was unable to stir; lost his speech and senses, and vomited all he took; whereupon they all despairing of and leaving the patient, and declaring that they did so in the presence of divers persons of honor, consented to have the experiment of transfusion made upon the patient, which his relations proposed as the last refuge, very unwilling to omit any thing that might seem possible to rescue a dying man."

M. Denys and M. Emmerez were sent for, and upon seeing the state their patient was in, absolutely refused to perform it, but they were at length overcome by the solicitations of his friends, and consented to make the trial. A small quantity of the blood of a calf was injected in the morning, and although he was lying at the time in a languid state, and had a very low and creeping pulse, yet a sudden change was experienced, for he revived and spoke to those around him in "divers languages," and at length went to sleep for about three quarters of an hour: on wakening he took several broths, and did not vomit at all during the rest of the day, and had no stool, although previous to the operation his bowels were excessively relaxed. At the end of twenty-four hours he began to droop, his pulse declined, his disorder returned. His friends then proposed a second transfusion, which was performed next morning. The patient revived a

little, but soon sank again, though he took his broth again without vomiting. In the afternoon he died. On examining his body, his intestines were found in a state of gangrene.

The other case was that of Du Mauroy, a madman, which excited a great deal of commotion; and as it gave rise to that decree of the French Court of Justice, which has been attempted to be brought forward as an argument against the operation, for it has been said, "*surely if there had not been great danger, it would not have been interfered with.*" I shall give the case somewhat at length. The best account is that given by M. Denys himself, in his celebrated letter, dated Paris, May 15th, 1668; the following translation of which was published in the Philosophical Transactions of that period.

Paris, May 15th, 1668.

"You may also have heard how that this operation had effects quite contrary at the same time, and that for *one brain* cooled thereby, it fired *many*, for as much as by curing the madness of one poor wretch, it destroyed the wits of many such as aim at nothing but to signalize themselves *by opposing all new discoveries which themselves are not capable to make.** It was indeed but three or four days after that this man was recovered, that

* Query. How far is this observation applicable to some of the objectors of the present day?

some malicious spirits began to publish that he died under our hands, and that we had *put an end to his extravagances by putting an end to his life.* This first story having been convicted of falsity, they mended the tale, and were resolved to make people believe he was relapsed into his former madness, and even was grown worse than ever. This obliged the first president, and many other persons of quality, to send for him to their houses to examine the truth themselves; who after they had all entertained him awhile, were all satisfied of the good effects of the Transfusion, and that those wanted no malice who reported things so contrary to what they saw with their own eyes."

Upon this same man falling ill again, his wife was clamorous about having the operation performed a third time. Dr. Denys and M. Emmerez were consulted, and their opinion was most decidedly against it. The wife "then fell down, with tears in her eyes, and by unwearied clamour engaged us not to go away without giving her the satisfaction of having tried all possible means to recover her husband." Thus being prevailed upon, the pipe was passed into the patient's arm, and the vein in the foot opened "to draw away some of the old blood." "But at this time he was seized with a violent fit which obliged them to take the instrument out of the arm and to leave him *without the operation having been performed at all.*" The patient died in the night, and M.

Denys and Emmerez recollecting the complaints often made by the deceased of his wife having attempted to poison him, of course wished to examine his body "in the presence of six or seven witnesses;" but this proposal was so violently opposed by his wife, that they were unable to execute their design. "We were no sooner gone," adds M. Denys, "than she bestirred herself exceedingly, as we were informed, to bury her husband with all possible speed; but being in an indigent condition, she could not compass it that day. Mean time a famous physician of the faculty of Paris, happening to be that night at the house of a lady who was solicited for charity towards this burial, he was of the same mind with us, that his body should be opened, and therefore sent instantly for chirurgions to execute. But she being resolved against it, used lies and other arts to elude this design; and when we threatened her to return the next morning and do the thing by force, she caused her husband to be buried an hour before day, to prevent our opening him.

As soon as his death was bruited about, the enemies of the experiment began to triumph, and soon after published defaming books. I then resolved to be silent, but that silence made our adversaries the keener; and I was surprised when two months after I was ad-

vertised, that there were three physicians who did not budge from the widow, importuning her by promises of a great recompence, only to let them use her name to accuse us before a court of justice, for having contributed to the death of her husband by the Transfusion ; and that they even addressed themselves to the neighbours of the woman, to engage them to bear false witness against us. And some time after this woman, raised by the hopes given her by those men, came and told us that some physicians did extremely solicit her against us, and that she had always refused them, knowing her obligations to us for having relieved her husband freely. But she drawing from hence no profit, as she expected she should, she turned her advertisements into *menaces*, and sent us word, that in the present necessity to which she was reduced, she was obliged to accept the offer made her by certain physicians if we would not assist her. I sent her this answer, that those physicians and herself stood *more in need of the Transfusion than ever her husband had done*, and that for my part I cared not for her threats. But yet *I then* thought it time to break silence, not only my interest being concerned but the public, to discover to the world those persons that would be engaged in intrigues so unworthy of learned men. I complained of it to the lieutenant in criminal cases, who presently allowed me to inform against the widow and those who solicited

her. Some witnesses having been called before justice, they deposed against the three physicians and this woman, accusing them to have secretly given her husband certain powders, which might have contributed to his death. This information, brought in by five witnesses, having been presented in a full court to the said lieutenant, by Mr. Dormesson, the King's Advocate, he gave sentence, that the woman should have a day set her to appear in person to be examined upon my information, and that in the mean time new informations should be taken against her at the desire of His Majesty's attorney. And because he thought that there might be danger in permitting indiscriminately the practice of Transfusion to all sorts of persons, he ordered, that for the future it should be used *but by the prescript of physicians.*"

The following is an extract of the sentence given the Chastelet, by the Lieutenant in Criminal Cases at Paris, on April 17th, 1668.

"In this Case there are proofs and evidences of these particulars."

1st. "That the operation of Transfusion was twice performed upon Anthony Mauroy, a madman, and that it was *attempted* a third time; that it succeeded so well those two times, that the patient was seen for two months afterwards in *his good senses, and in his perfect health.*"

2nd. " That from the time of his two first operations, his wife gave him eggs and broth, and bedded with him four times, notwithstanding the prohibition of those who treated him, and that she carried him to her home without speaking to him of it, and with great reluctance of her husband."

3rd. " That since that time he went from one Cabaret to another, took tobacco, and falling ill again, his wife ordinarily gave him strong water to drink, and broths, wherein she mixed certain powders; and that Mauroy having complained that she would poison him, and gave him arsenic in his broths, she hindered the assistants to taste thereof, and making a shew of tasting it herself, cast it down upon the ground what she had in her spoon."

4th. " That Du Mauroy had frequent quarrels with his wife since, and that she gave him many strokes sick as he was; but having once received a box on the ear from him, she said he should repent it *though he should die of it.*"

5th. " That when Transfusion was attempted the third time, it was at the instant request of his wife; those who were to perform the operation, refused to do it without permission of the Solicitor General. That some days after that, the opera-

tion was begun, but almost no blood issued either out of the foot or the arm of the patient; a pipe was inserted which made him cry out, though it appeared not, that any blood of the calf had passed into his veins; that the operation was given over, and that the patient died next night."

6th. "That this woman would no ways suffer any one to open the body of her husband, saying for an excuse, he was already in the coffin *when he was not*."

7th. "That a good while after the decease of the said Du Mauroy, three physicians did solicit the said woman to take money, and to make complaints that the Transfusion had killed her husband; that she said, when those persons had gone away from her house, those persons had been with her on that account; and that unless those who had made the operation would give her wherewith to return into her country, she would do what those others pressed her to. That a witness deposeth, that she came to pray him that he would advertise those who had made the operation, that unless they would maintain her during her life, she would accept of the offer made her by the said physicians. That another witness deposeth, that one was sent to him from a physician, and had offered him twelve golden Louis' if he would depose that Du Mauroy died *in*

the very act of Transfusion. That the matter was important enough to enquire into the bottom of it. That there was cause enough to examine the woman where she had those powders? why she had given them to her husband? why she had hindered the opening of the body by a lie? That he required further information about it, and that in the mean time she be put into safe custody."

"That as to the three physicians who had solicited her with money to prosecute those who had made the operation, and who had been seen with her, be demanded that a day might be set them to appear in person."

Lastly. "That since the Transfusion had succeeded well the two first times, and had not been undertaken the third time but at the earnest request of the woman, who otherwise had so ill observed the orders of those who had made the operation, and who was suspected to have caused the death of her husband, be demanded that the execution of the decree of prefixing him a day for personal appearance might surcease. Whereupon it was decreed, that the widow of Du Mauroy should, on a set day, appear personally, and undergo the examination upon the alleged information, and that more ample information should be taken of the contents of the complaint of M.

Denys. And that for the future, no Transfusion should be made upon any human body, but *by the approbation of the physicians of the Parisian faculty.*"

"Since the above sentence, new informations have been given in considerably stronger than the former, and witnesses have been discovered to whom the woman committed it as a trust, that it was arsenic she mingled in her husband's broth; and even that the deceased having given a portion of it to the cat, that the animal died in a few days after."

I think it is pretty evident, that the first trial on the human subject, was made by M. Denys, for in the writers of that period we find among the rest, Thomas Clarck, in a letter, published in the Philosophical Transactions, gives him the credit of it, and in another paper the Editor observes, "before we dismiss the subject, something is to be said of the cause why the curious in England make a demur in practising this experiment upon man. The above ingenious M. Denys has acquainted the world how this degree was ventured upon at Paris, and with what good success it there met with; and the Journal Des Scavans glorieth that the French have advanced this invention so far as to try it upon man, and that with good success. We readily grant they were

the first we know of that actually improved the experiment, but then they must give us leave to inform them of this truth, that the philosophers of England had long ago practised it upon man if they had not been so tender in hazarding the life of man, &c. &c." Dr. Lower and Dr. Edmund King performed it in London on the 23rd November, 1667, upon one Mr. Arthur Coga, at Arundel House, and here also the patient did very well.*

I do not wish to draw any inferences from these experiments, for they are radically defective, inasmuch as I have not been able to ascertain the quantity of blood which was thrown in, nor in the French operations, with the manner in which it was accomplished; and indeed it seems as if it was kept a secret, for Paulus Manfredus, in his work on Transfusion,† states, that he is ignorant of the reason why the steps of the operation were not given to the public; he gives a plate, and a description of the manner in which it is performed at Rome.

Moreover in these operations the blood of *brutes* was used‡, and therefore I should not have thought

* The blood of a lamb was used in this case.

† De nova et inaudita medico-chirurgica operatione sanguinem transfundente de individuo ad individium.

‡ In these cases too the operation was performed on persons who were labouring under serious diseases, which *I conceive* very materially alters the features of the cases.

it necessary to have detailed them, had not a very unfair use been made of them in the present day; for it has been said, that the operation of Transfusion had been performed in the seventeenth century over and over again at Paris, not only with the blood of the brute, but also *with that of the human subject*, and that it produced such dreadful effects, that it was prohibited by Act of Parliament. But I trust that sufficient has been said to convince the impartial reader, that no case was made out to warrant the interference of the Parliament. Indeed they did not prohibit it altogether, but only *without the sanction of the faculty of Paris*. It appears that the jealousy of this body had been excited, "Quia primus D. Denys, qui tentaverat, non erat ejusdem ordinis, sive non erat in Facultate Medica Parisiensi."*

I have bestowed some pains in endeavouring to ascertain whether these were the only operations that were performed at that time, and cannot succeed in finding any more, nor do I see one case on record (before the experiments of Dr. Blundell,) where human blood was employed; and my opinion on this point is further confirmed by perusing a tract, published in 1769, after the decline of the operation, by George Abraham Mercklinus,† wherein he argues a-

* Acta Thomæ Bartholini, vol. 3, p. 86.

† De ortu et occasu Transfusionis sanguinis.

gainst the employment of the blood of brutes, and relates a case where it was tried on a consumptive patient at Rome, who died. He gives it as his opinion, that much greater benefit may be expected if the human blood were used, and tells us that it may be done by two methods, the one proposed by Daniel Major,* the other by Maurice Hoffman, and even gives plates of the two processes; but he says that he cannot recommend it with confidence as being a safe plan, because it has not yet been confirmed by experiments; his words are these, "tamen pro indubitato et infallibili præsidis *experimentorum certitudine destitutus* præfracte jactitare nondum audeo."‡

The opinion of Heister has been brought forward by the objectors to this operation; but I am convinced, that no person possessed of common candour, will place the *opinion* of any man against *positive facts*; for that the operation of Transfusion can be performed without producing any ill effects I shall presently shew. The observations of Heister were directed against the Chirurgia Infusoria, as it was called, *in general,* and not to the Transfusion of blood merely; for he distinctly says, "these *injections* and Transfusions having been produc-

* Delic. Hybern. Nov. Invent. Medic. 2. Major himself refers to this proposal in his Chirurgia. Infusoria. p. 212.

‡ Opus Cit. cap. 4. p. 109.

tive of fatal consequences, have brought the art into neglect at the present; so that being suspected and condemned by proper judges at Paris, where they most flourished, we are told they were in a little time prohibited by a public edict of that Parliament." But after telling us that almost all the patients that have been treated in this way, have either gone mad or died, he still says, in the *very next paragraph*, after he has described the manner in which it used to be done, "But whether or no this method of injecting proper medicines into the blood may succeed, especially in desperate apoplexies, anginas, hydrophobia, &c.; and whether it may not he often useful to discharge the morbid blood, and transfuse such as is sound, or warm milk or broth in its stead, ought, in my opinion to *be determined by future and repeated experiments.*"* This is, I trust, sufficient to shew, that Heister is no authority upon this subject; and it is with real pleasure I turn from his *opinions*, to the numerous and well conducted experiments of Dr Blundell.† He has proved, beyond the possibility of cavil or doubt, that *the dog at least* when dying from bleeding, may be resuscitated, and completely too, by the introduction of a comparatively small quantity of the blood of its own species, but that if the blood of another genus be used, the animal usually dies.

* Heister's Surgery, vol. 1. p. 324.

† Physiological and Pathological Researches.

Now if this holds good with regard to the inferior animals, we have a right to presume, *till we have evidence to the contrary*, that the life of a human being may, under the same circumstances, be saved by the introduction of human blood; and though in most of these experiments arterial blood was used, on account of the greater ease with which it could be supplied, yet to satisfy himself on this head, Dr Blundell instituted a series of experiments, which sufficiently proved, that it was of little consequence whether the blood was procured from arteries or from veins. This I apprehend to be a very material point, as the obtaining of human arterial blood could not be accomplished without great difficulty. But that the venous blood of a man may with impunity be injected by means of a syringe, into the veins of a woman, apparently sinking from hemorrhage, has of late been demonstrated, as far as two cases can be said to do this. The females were both patients of the City of London and Southwark Midwifery Institution; one occurring in my own district, the other in that of my friend and colleague, Mr. Doubleday. I was summoned to the first case on the 8th of August, 1825, about half an hour after delivery, and was told, that on the expulsion of the placenta an alarming hemorrhage had supervened. The patient was below the middle stature, ætatis twenty-one, of a very delicate and scrophulous habit, and one very ill calculated to bear the loss of blood. She appeared at first sight to be dead,

there was not the slightest tinge of redness on her cheeks, or on her lips, which were of a leaden hue; she had that peculiar cast of countenance, which Dr. Blundell emphatically calls "death in the face," but which it is impossible to describe upon paper. There was no apparent respiration for some seconds, and the powers of deglutition were suspended. The pulse at times was slightly perceptible, at others it could not be felt. There was still some little draining from the uterus, I therefore continued the cold applications to the belly, which had before been had recourse to, and applied warmth to her feet, which were very cold. She soon so far revived as to be able to swallow, and then brandy and carbonate of ammonia were liberally given. These measures were vigorously persevered in for the space of an hour and a half, with only temporary benefit; for although the pulse rose a little after each exhibition of the stimulus, it soon fell again. Under these circumstances it appeared to me, that the only resource left, was the operation of Transfusion. As she was now getting *generally cold*, and the drain had nearly ceased, I wrapped her up in blankets, and desiring the stimuli to be persisted in, proceeded to Dr. Blundell to request his advice and assistance, which he had previously very kindly offered me in case of an emergency of this kind. In a little more than an hour we returned, and as I at this time thought the pulse rather more

perceptible, we agreed to have every thing ready for the operation, but to defer it for the present. After waiting at the patient's bedside for about an hour and a half, we were all agreed that she had not lost ground, and for the last hour we thought her pulse beat with rather more regularity, (the stimulus had been repeated at intervals during this period.) Dr. B. and myself then left her for an hour, and when we returned again it was very evident that she was worse; her pulse was lower, and she was still lying in that alarming state of faintness, that we considered the presumption against her surviving to be so strong, that we should not be justified in leaving her without making the attempt to save her life by the operation of Transfusion. On bringing her to the edge of the bed she vomited. Her pulse was now 120, weak and fluttering. I cannot tell exactly what quantity of brandy she had taken, but should suppose from twenty to thirty ounces.

The operation was exceedingly simple, and was performed in the following manner.

A vein at the bend of the arm was laid bare for about an inch and a half, and an opening of sufficient extent to admit the beak of the syringe made into it. A little blood oozed from this orifice, in order completely to retain which, a blunt needle was passed under the vessel a little lower

down. As in these cases patients have not a drop of blood to spare, it will be fouud adviseable in future operations of this kind, not to open the vein till after it has been done. The syringe was made of brass, well tinned on the inside, and contained two ounces.

The husband having agreed to furnish the blood, was now called in, and placed near the bed. A vein in his arm was opened, and the blood allowed to flow into a common glass tumbler. From this it was immediately absorbed into the syringe, even whilst it was flowing, care being taken that a sufficient quantity should remain at the bottom of the glass to prevent the admission of air. The more effectually however to guard against the introduction of air into the vein, when the syringe was full, its nozzle was placed perpendicularly upwards, and the piston gently pressed, till we could see the blood issuing from its point. The blood was then cautiously injected in a direction towards the heart. No very obvious effect appeared to be produced by the first injection. After waiting a minute it was repeated, and towards the end of this injection, there was an approach to syncope, the pulse became somewhat irregular; there was sighing, with efforts to vomit, though nothing was ejected, and there was slight restlessness; these symptoms ceased spontaneously in the course of a minute or two.

In the present limited state of our experience, it was difficult to decide whether these symptoms were caused by the injection, or whether they were the effect of the previous hemorrhage; but as great caution is required in conducting the operation, as the patient expressed herself comfortable, and as her pulse, though still feeble, had fallen to 110, we agreed that it would be more prudent to stop the operation, conceiving that the quantity of blood injected (four ounces) though small, was sufficient to turn the scale in her favor, as far as her life was concerned. When seen about six hours afterwards, she was found in a very comfortable state, her pulse 100 and broad, complains of no pain, but said she was excessively hungry. Light and unstimulating nourishment was liberally allowed her, and although she remained weak and low for three or four days, she eventually recovered without a single unpleasant symptom. There was but little secretion of milk; and at the expiration of forty-eight hours not having passed any urine, I thought it best to introduce a catheter, (although she said she felt no inconvenience,) and drew away about twenty four ounces only. It was not till after the lapse of many days that the wound was healed, as there was no attempt at union by adhesion

The other case which occurred to my friend Mr. Doubleday, was that of a robust Irish wo-

man, who had lost a large quantity of blood from an adhesion of the placenta. Before and during the extraction of which so much blood had been lost, that although the uterus was well contracted, she was lying in that alarming state of syncope, that Mr. Doubleday feared dissolution would speedily ensue. He could not feel the pulse at the wrist, the countenance was exsanguious, the lips pale, nostrils pinched, sight indistinct, excessive restlessness, breathing hurried, accompanied with frequent sighing; the body was covered with a cold clammy perspiration. Mr. D. gave her about six ounces of brandy, after which the pulse became just distinguishable; the brandy was given at short intervals, with carbonate of ammonia. Laudanum was also given, with the view of allaying the extreme restlessness. These means were employed for about half an hour, but their influence was very transitory. The pulse, when perceptible, was very rapid. Mr. Doubleday being now of opinion that nothing short of the operation of Transfusion would save his patient, left her in the care of the gentleman who was previously in attendance, and proceeded to Dr. Blundell, who accompanied him to the patient's house.

The woman was still in the same state, and it was the united opinion of Dr. B. and Mr. D. after deliberately investigating the dif-

ferent circumstances of the case, viz. the state of the pulse, the aspect of the countenance, and the quantity of blood lost, that the chance of her recovery was so slight, that it would not be right to neglect the trial of the operation of Transfusion, which was begun in the usual manner; but the patient made so much resistance, that they abandoned the operation for the time, not however expecting her ultimate recovery. The brandy was continued at intervals, in addition to which, she was ordered to take liberally of beef tea and gruel; she also had two or three eggs beat up with a little brandy.

Notwithstanding these measures however, she grew worse, and about half-past two P.M. (about five hours after the operation had been attempted) Mr. Doubleday received a message, stating that she would most probably be dead before he could arrive atthe house. He went immediately, and found the woman all but dead, in fact, the husband said she *was* dead. Mr. D. immediately proceeded with the operation. The syringe was the same that was used in the former case; at the end of the first injection, the pulse was more perceptible, the second it was broader, at the third (when six ounces were injected) a very marked improvement in the condition of the patient was observed, she herself stating, that "she was as strong as a bull;" at the fourth she said, "she

felt the blood running up her veins;" and also stated, that she was "quite recovered."

Mr. D. here hesitated, whether or not he should stop the operation, but as there was no unfavourable symptom, and as the patient had improved upon the injection of every additional syringe full, he determined to proceed, and accordingly three more injections were employed, making in the whole fourteen ounces; she now complained of pain over the left eye, and therefore Mr. D. very judiciously discontinued the operation; the pulse was now one of considerable power. The pulse which before the operation, when it could be numbered, was 140, was now down to 104; a quarter of an hour afterwards it was 98; one hour and a half 90; it was strong, soft and full, but somewhat irregular, and continued so for two hours. About an hour after the operation she sat up and assisted her nurse in undressing and making herself comfortable, and seemed as well as women usually are when nothing particular has occurred.

Three hours after the operation, her pulse was 94, strong and full, skin hot, tongue furred, considerable thirst, some uterine pain, bowels constipated. A purgative enema was now injected. In two hours she was again visited; she had slept a little, the enema had operated twice, pulse 120, skin perspiring, tongue

moist; has had no nourishment since the operation; as she was restless, and complained of pain in the hypogastrium, sixty drops of tinct. opii were given, which procured her sleep, and brought on a copious perspiration. Three hours afterwards she took an aperient. She passed a comfortable night, but her bowels being confined, the aperient was repeated next day.

Some slight inconvenience was experienced, in consequence of a little inflammation of the vein, which was however subdued by leeches, fomentations and poultices. With this exception she went on well; the secretion of milk was so copious as to be troublesome. The seventh day after the operation, she got up to prepare her husband's breakfast, and attended to her household affairs; by which means she reproduced slight inflammation of the vein, but it gradually subsided.*

From these cases I conceive we have a right to draw the following inferences.

1st. That the operation of Transfusion is not necessarily followed by those dangerous effects which were formerly attributed to it by Heister, *whose opinion has been cited in the present day, as an argument against it.*

* A more detailed account of this case is published in the London Medical and Physical Journal for November, to which the reader may refer for further particulars. The former case was also published in the October Number of the same Journal.

2nd. That taking into consideration the difference in the *size* and in the *constitution* of the patients, it is very reasonable to presume, that the four ounces of blood injected into the veins of the first patient, were equivalent to six ounces in the latter,* and that the rally was not so immediate and decisive in the former, *on account of her naturally weak and languid habit.*

3rd. That we have a right to conclude, that the improvement in the condition of the patients, was owing to the *injection of blood,* and not *the effect of the previous remedies,* because, although they appeared to revive a little after each exhibition of the stimulus, *yet in a very few seconds they relapsed again;* whilst, on the contrary, after the injection of the blood, there was *no relapse in either case,* and in the latter the recovery was instantaneous and complete. *This perfect and sudden recovery* was often witnessed by Dr. Blundell, in his experiments on the dog.

4th. That the symptoms of syncope which were observed in the first patient were *accidental,* for not the slightest appearance of it was observed in the second.

* It will be seen on referring to the case, that when six ounces of blood were injected, the patient was completely revived; and I have not the slightest doubt, but that she would have recovered if the operation had been stopped at this period.

5th. That the inflammation of the vein is not a *constant* occurrence, for there was none in the former case, and we may *presume*, that it is not a *common* one, inasmuch as no mention is made of its occurring in the old operations which have been above related.

6th. That the blood injected did not merely act as a *stimulus to the heart*, but that it was really applied *to the nourishment of the system*, for in the latter case, no food was introduced into the stomach for more than ten hours after the operation; *prior to which, the patient had vomited up all that she had taken.*

A number of frivolous objections have been made to the operation which it is scarcely worth while to notice. It has been stated, that no woman would die from hemorrhage, if a proper supply of light nourishment was promptly administered; but even supposing it were retained on the stomach, (which it frequently is not,) is it reasonable to expect that the process of assimilation can proceed with such rapidity as in any degree to compensate for the large quantity of blood lost in these cases?

Again it has been stated, that this operation is totally unnecessary, for the very act of uterine hemorrhage is its own cure. According to this

notion, it is only necessary to allow your patient to bleed till she gets cool, and then the hemorrhage ceases *as a matter of course.* This *fanciful hypothesis* is sufficiently answered by the *well known fact,* that women now and then *die* from these bleedings, which they *ought not to do* if this idea were correct.

But it is not necessary to pursue these *theoretical objections* any farther, for I trust sufficient has been said to call the serious attention of the profession to the subject: for if by *repeated trials* it should be proved that the Transfusion of blood is a safe operation, there are many cases besides those of uterine hemorrhage in which we may expect it to be useful.

I cannot conclude without *again* expressing my conviction, that as the operation is recommended upon the broad basis of *experiment and observation,* the only legitimate source of physiological induction, we shall not be disappointed in the advantages we expect to derive from it.

FINIS.

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