The Contents.


The Method observed in Transfusing the Bloud out of one Animal into another.

This Method was promised in the last of these Papers. It was first practised by Doctor Lower in Oxford, and by him communicated to the Honourable Robert Boyle, who imparted it to the Royal Society, as follows 5

First, Take up the Carotidal Artery of the Dog or other Animal, whose Bloud is to be transfused into another of the same
same or a different kind, and separate it from the Nerve of the
Eight pair, and lay it bare above an inch. Then make a strong
Ligature on the upper part of the Artery, not to be untied a-
gain: but an inch below, videlicet, towards the Heart, make an-
other Ligature of a running knot, which may be loosen'd or fast-
ned as there shall be occasion. Having made these two knots, draw
two threads under the Artery between the two Ligatures;
and then open the Artery, and put in a Quill, and tie the Artery
upon the Quill very fast by those two threads, and stop the Quill
with a stick. After this, make bare the Jugular Vein in the oth-
er Dog about an inch and a half long; and at each end make a
Ligature with a running knot, and in the space betwixt the two
running knots drawn under the Vein two threads, as in the oth-
er: then make an Incision in the Vein, and put into it two
Quills, one into the descendent part of the Vein, to receive the
blood from the other Dog, and carry it to the Heart; and the
other Quill put into the other part of the Jugular Vein, which
comes from the Head (out of which, the second Dog's own
blood must run into Dishes.) These two Quills being put in and
tyed fast, stop them with a stick, till there be occasion to open
them.

All things being thus prepar'd, tie the Dogs on their sides to-
wards one another so conveniently, that the Quill may go into
each other, (for the Dogs' necks cannot be brought so near, but
that you must put two or three several Quills more into the first
two, to convey the blood from one to another.) After that,
untie the Quill that goes down into the first Dog's Jugular
Vein, and the other Quill coming out of the other Dog's Ar-
tery; and by the help of two or three other Quills, put into each
other, according 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 im-
petuously. And immediately, as the blood runs into the Dog,
untie the other Quill, coming out of the upper part of his Jugu-
lar Vein (a Ligature being first made about his Neck, or else his
other Jugular Vein being compress'd by ones Finger;) and let
his own blood run out at the same time into Dishes (yet not
costantly, but according as you perceive him able to bear it)
till
till the other Dog begin to cry, and faint, and fall into Convulsions, and at last dye by his side.

Then take out both the Quills out of the Dogs Jugular Vein, and tye the running knot fast, and cut the Vein aunder, (which you may doe without any harm to the Dog, one Jugular Vein being sufficient to convey all the bloud from the Head and upper parts, by reason of a large Anastomosis, whereby both the Jugular Veins meet about the Larynx:) This done, sow up the skin and dismiss him, and the Dog will leap from the Table and shake himself, and run away, as if nothing ailed him.

And this I have tryed several times, before several in the Universities, but never yet upon more than one Dog at a time, for want of leisure, and convenient suppleys of several Dogs at once. But when I return, I doubt not but to give you a fuller account, not only by bleeding several Dogs into one, but several other creatures into one another, as you did propose to me, before you left Oxford; which will be very easie to perform; and will afford many pleasant and perhaps not unuseful Experiments.

But because there are many Circumstances necessary to be observ’d in the performing of this experiment, and that you may better direct any one to doe it, without any danger of killing the other Dog, that is to receive the others bloud, I will mention two or three.

First, that you fasten the Dogs at such a convenient distance, that the Vein nor Artery be not stretched; for then, being contracted, they will not admit or convey so much bloud.

Secondly, that you constantly observe the Pulse beyond the Quill in the Dogs Jugular Vein (which it acquires from the impulse of the Arterious bloud: ) For if that fails, then ’tis a sign the Quill is stopp’d by some congealed bloud, so that you must draw out the Arterial Quill from the other, and with a Probe open the passage again in both of them, that the bloud may have its free course again. For, this must be expected, when the Dog, that bleeds into the other, hath loft much bloud, his heart will beat very faintly, and then the impulse
of blood being weaker, it will be apt to congeal the sooner, so that at the latter end of the work you must draw out the Quill oftener, and clear the passage; if the Dog be faint-hearted, as many are, though some stout fierce Dogs will bleed freely and uninterruptedly, till they are convuls'd and dye. But to prevent this trouble, and make the experiment certain, you must bleed a great Dog into a little one, or a Mastiff into a Curr, as I once try'd, and the little Dog bled out at least double the quantity of his own blood, and left the Mastiff dead upon the Table, and after he was unty'd, he ran away and shak'd himself, as if he had been only thrown into water. Or else you may get three or four several Dogs prepared in the same manner; and when one begins to fail and leave off bleeding, administer another, and I am confident one Dog will receive all their blood; (and perhaps more) as long as it runs freely, till they are left almost dead by turns: provided that you let out the blood proportionably, as you let it go into the Dog, that is to live.

Thirdly, I suppose the Dog that is to bleed out into dishes will endure it the better, if the Dogs that are to be administered to supply his blood, be of near an equal age, and fed alike the day before, that both their bloods may be of a near strength and temper.

There are many things I have observed upon bleeding Dogs to death, which I have seen since your departure from Oxford, whereof I shall give you a relation hereafter; in the mean time since you were pleased to mention it to the Royal Society, with a promise to give them an account of this experiment, I could not but take the first opportunity to clear you from that obligation, &c.

So far this Letter: the prescriptions whereof having been carefully observ'd by those who were employed to make the Experiment, have hitherto been attended with good success; and that not only upon Animals of the same Species (as two Dogs first, and then two Sheep) but also upon some of very differing Species (as a Sheep and a Dog; the former Emitting, the other Receiving.)

Note only, that in stead of a Quill, a small crooked thin Pipe
Pipe of Silver or Brass, so slender that the one end may enter into a Quill, and having at the other end, that is to enter into the Vein and Artery, a small knob, for the better fastening them to it with a thread, will be much fitter than a strait Pipe or Quill, for this Operation: for so they are much more easy to be managed.

'Tis intended, that these tryals shall be prosecuted to the utmost variety the subject will bear: As by exchanging the bloud of Old and Young, Sick and Healthy, Hot and Cold, Fierce and Fearful, Lame and Wild Animals, &c. and that not only of the same, but also of differing kinds. For which end, and to improve this noble Experiment, either for knowledge, or use, or both, some Ingenious men have already proposed considerable tryals and inquiries; of which perhaps an account will be given hereafter. For the present we shall only subjoin some

Considerations about this kind of Experiments.

1. It may be consider'd in them, that the bloud of the Emit- tent Animal, may after a few minutes of time, by its circulation, mix and run out with that of the Recipient. Wherefore to be assured in these Tryals, that all the Bloud of the Recipi- ent is run out, and none left in him, but the adventitious bloud of the Emittent, two or three or more Animals (which was also hinted in the method above) may be prepared and administred, to bleed them all out into one.

2. It seems not irrational to guess aforesaid, that the exchange of bloud will not alter the nature or disposition of the Animals, upon which it shall be practis'd; though it may be thought worth while for satisfaction and certainty, to determine that point by Experiments. The case of exchanging the bloud of Animals seems not like that of Grafting, where the Cyons turns the Sap of the Stock, grafted upon, into its nature; the Fibers of the Cyons for straining the juice, which passes from the stem to it, as thereby to change it into that of the Cyons; whereas in this transfusion there seems to be no such Per-
Percolation of the blood of Animals, whereby that of the one should be changed into the nature of the other.

3. The most probable use of this Experiment may be conjectured to be, that one Animal may live with the blood of another; and consequently, that those Animals, that want blood, or have corrupt blood, may be supplied from others with a sufficient quantity, and of such as is good, provided the Transfusion be often repeated, by reason of the quick expence that is made of the blood.

Note.

In the last Transactions was also promised an Accomp't by the next, of Monsieur Hevelius his accurate Calculus of the late Solar Eclipse's Duration, Quantity, &c. But this being to be accompanied with a Scheme, the Graving whereof was met with a disappointment; it must be still referred to another Opportunity.

An account of some Sanative Waters in Herefordshire.

This account was communicated by Dr. B. in these words.

There are two Springs in Herefordshire, whereof one is within a Bolt, or at least Bow-shot of the top of the near adjoining lofty Hill of Malvern, and at great distance from the Foot of the Hill; and hath had a long and old fame for healing of eyes. When I was for some years molest'd with Terrors on the back of one, and sometimes of both my hands, notwithstanding all endeavours of my very friendly and skilful Physicians, I had speedy healing from a neighbouring Spring of far lesser fame. Yet this Spring healed very old and Ulcerous sores on the Legs of a poor Fellow, which had been poyn'd by Irons in the Gaol, after other Chirurgery had been hopeless. And by many tryals upon my hands, and the Terrors, I was persuad'd, that in long droughts, and lasting dry Frosts, those waters were more effectually and more speedily healing, than at other times. And not to omit this circumstance, I did hold this water in my mouth till it was warm, and perchance somewhat intermingled with fasting Spit, and