

LV. *An Account of Dr. Bohadsch's Treatise, communicated to the Royal Society, intituled, Differtatio philosophico-medica de utilitate electrificationis in curandis morbis, printed at Prague 1751: extracted and translated from the Latin by Mr. Wm. Watfon, F. R. S.*

Read Jan. 23,
1752. **T**HE treatise, of which I now offer an extract to the Royal Society, was sent hither from my friend and correspondent Professor Bose at Wittemberg, who is always desirous of testifying his zeal and attachment to the Royal Society, by communicating to us whatever he imagines worthy our notice. The author of this treatise, Dr. Bohadsch, is a Bohemian, a very learned and ingenious gentleman, who, while he was in England about two years since, was frequently at our meetings, and was very conversant with, and much esteemed by, many of our body, from whom he received very great civilities. He was more particularly taken notice of by his Grace the late Duke of Richmond, whose loss we yet lament: His Grace did me the honour to recommend him to me, as a gentleman not less remarkable for his great knowledge in various kinds of literature, than for his exemplary modesty: and it is with great pleasure that I lay before you what comes from the hands of one, for whom I have so great an esteem.

X x

This

This treatise, from its title, promises only an account of the advantages of electrification in medicine: but this is not the whole of which it treats; it exhibits also a series of observations of the effects of electricity upon both solid and fluid bodies, upon animals in a state of health, as well as upon those distemper'd. Of each of these I propose to lay before you some account in the course of this extract.

Our author first takes notice, that electricity, being continued for some hours, lessens the weight of the body electrified. He exemplifies this first on fluid bodies; two equal portions of which, before electrifying, he accurately weighs; and then the difference between these two portions, one of which has been electrified between four and five hours, and the other, though in the same room, not electrified at all, is attributed to the operation of the electric effluvia. His globes, I observe, are rubbed by the hands of an assistant.

Four ounces of river water exposed in a glass vessel of four inches diameter were electrified five hours, and lost in their weight eight grains.

Four ounces of river water, in the same kind of glass, but not electrified, lost in the same time only three grains. The difference then to be attributed to the electricity was five grains. The like quantities of the fluids hereafter mentioned were exposed, as the water was, and the effects were as follow.

	Grains
Oil of olives, by electrifying, lost	o
Vinegar	ij.
Water impregnated with nitre	iij.
New milk	iv.
	Urine

	Grains
Urine	vij.
Spirit of turpentine	vij.
Spirit of wine	viii.
Volatile spirit of sal ammoniac	xi.

Four ounces of rain-water were exposed in a tin vessel of four inches in diameter, and electrified as before, and the loss was ten grains.

A like quantity of the same water under the same circumstances, electrifying excepted, lost only three grains. In this instance, the effect to be attributed to the electrifying was seven grains.

He then put to the trial, in a tin vessel instead of a glass one, the several liquors before-mentioned; and except the oil of olives, the water impregnated with nitre, and the milk, the rest lost by electrifying a few grains more of their weight.

He afterwards exposed three ounces and a half of river water in a glass vessel, whose diameter was but an inch, and this lost by a like electrification only two grains. The same quantity of water, under the same circumstances, electrifying excepted, lost in the same time nothing of its weight: so that, in this instance, the effect to be attributed to the electricity was two grains. The various liquors before-mention'd were likewise electrified in a vessel of the like capacity as that containing the last water, and they lost much less by the operation, than when they were exposed under a larger surface. All these liquors, electrified for the space of ten hours, as well in vessels of tin, as of glass well stopped, lost nothing of their weight. From hence our author concludes, 1. That electricity

augments the natural evaporation of liquors, unless those of a viscous kind, as oil of olives, which from their tenacity lose nothing of their weight. 2. That electricity increases the evaporation of liquors in proportion as they are more or less volatile: for volatile spirit of sal ammoniac suffered a greater evaporation, than either spirit of wine or spirit of turpentine. These last lost more than water, and even this lost more than the solution of nitre and the vinegar, as we see by the experiments. 3. That electricity operates most in those vessels, which are most permeable to its effluvia, viz. in vessels of metal more than those of glass. 5. That the effects of electrifying are not observed in vessels closely stopped.

He afterwards put to the trial several substances of a more solid form. A pear weighing four ounces and a half, electrified five hours, lost of its weight 6 grains. A pear of the same kind, not electrified, lost nothing: so that the difference arising from electrification was 6 grains. He then subjected other substances to this trial, and the effects were as follow.

	Grains.
A piece of dry oak lost	o
A bunch of keys	o
Two new-laid eggs	ij
A piece of new crum of bread	ijj
——— raw beef	ijj
——— salt beef	iv
——— sponge lightly moisten'd	vi
A bunch of grapes	vij

From

From these experiments our author observes, that the electricity diminishes the weight of solid bodies, if these are impregnated with humours liable to evaporate: for the dry wood, metals, and other bodies, which seem to have no fluids, lose nothing of their weight; and therefore it is only upon the fluids in them that the electricity operates:

Our author then exhibits some experiments made by persons of credit, in order to discover, whether or no electricity would accelerate the growth of plants; and from several trials found that it did. There then follows a series of experiments, which prove, that electricity augments the transpiration of animals. These experiments were made upon puppies, pigeons, yellowhammers, and chaffinches; and the effects of those electrified, compared with those of the same kind, which were not, evince, that electricity does increase the transpiration of animals. Our author here has annexed several curious tables, comparing the loss of weight of the animals, while electrifying, to what they lose in the same time without electrifying. Whoever therefore is desirous of perusing them, must consult the work itself.

Dr. Bohadsch proceeds to give us a theory of those distempers, in which electricity seems to have the greatest effects. He confines himself however more particularly to the *hemiplegia*; of which distemper he gives us the history, corresponding with what we find in the best medical writers. He likewise gives us the usual method of cure, and shews, that the attempts of relieving this malady by electricity, nearly square intentionally with the remedies most celebrated in practice. That the electrical sparks and

and commotion produce the same effect, though in a more powerful manner, as warm sulphureous baths, frictions, sinapisms, stinging with nettles, &c. generally made use of in the cure of this distemper. This reasoning does very well in theory; but I should have been glad to have seen it justified by practice, and his own observations. But instead of these, our author contents himself with giving us over again the lying stories of Pivati: to which he has added the four cases published some time since, and transmitted to the Royal Society, as well as to myself, by Professor Sauvages, of Montpellier. These cases indeed do credit to electricity, but we want more of them.

Our author finishes this dissertation, by deducing several conclusions from what he has premised, and these are as follow.

- I. That electricity may be advantageously applied to medicinal purposes.
- II. That it augments the natural transpiration of animals.
- III. That this acceleration of transpiration in men is through the exhaling capillary vessels, and not through the subcutaneous glands.
- IV. That the nervous fluid may be called the electrical fluid.
- V. That the nerves subservient to sensation are not different from those subservient to motion.
- VI. That the immediate cause of the *hemiplegia* is the impermeability of the nervous fluid through the nerves.
- VII. That of all other distempers the *hemiplegia* seems most properly the object of electricity.

VIII.

- VIII. That it may be of use also in intermitting fevers.
- IX. That a palsy in the left side of the body is owing to the right side of the brain, and *vice versa*.
- X. That anger, the parent of numerous evils, is sometimes useful to paralytics.
- XI. That as long as the paralytic limbs are rigid, it is an argument, that the bursal ligaments of the joints, and the sheaths of the tendons, are deficient in the fluid, adapted by nature for their lubrication.
- XII. That every species of palsy does not arise from the nerves being either obstructed, or compressed.

In concluding this account, I cannot help observing, that, contrary to his usual modesty, our author has been guilty of a slight plagiarism in this work; as, without quoting his author, he has translated from the French into Latin the tables above-mention'd, as well as his experiments, proving that electricity forwards vegetation, from our worthy brother the Abbé Nollet's treatise, intitled, *Recherches sur les causes particulieres des phenomenons electriques*. See Nollet pag. 358 to 380. Dr. Bohadsch has only alter'd the date 1747 to 1750. But it is to be remember'd, that these accounts were calculated for the meridian of Prague, and not for those of London and Paris.