

*An Essay towards the Calculus of Functions. Part II.* By C. Babbage, Esq. Communicated by William Hyde Wollaston, M.D. Sec. R.S. Read March 14, 1816. [*Phil. Trans.* 1816, p. 179.]

*Experiments and Observations to prove that the beneficial Effects of many Medicines are produced through the Medium of the circulating Blood, more particularly that of the Colchicum autumnale upon the Gout.* By Sir Everard Home, Bart. V.P.R.S. Communicated by the Society for Improving Animal Chemistry. Read March 21, 1816. [*Phil. Trans.* 1816, p. 257.]

The *Eau medicinale* of Husson, says the author, has most fortunately been discovered to be a specific remedy for the cure of gout; and he considers it to be now ascertained, by experiments of different persons, that this medicine is a vinous infusion of the *Colchicum autumnale*, or Meadow Saffron. He therefore hoped that an endeavour to ascertain its mode of action would be interesting to the Society for the Promotion of Animal Chemistry, whose objects are not confined to mere chemical combinations, but include the effects of galvanism on the nerves, and of mineral and vegetable solutions on the blood, and thereby on the healthy and morbid actions of life.

Although the late Mr. Hunter had ascertained, by experiments, that medicines injected directly into the circulating system produce in general the same effects as when taken into the stomach, he was not aware that even in the latter case (as has been proved by later experiments) these effects are not produced till they have reached the circulation by means of the absorbent system.

With respect to mercury, which appears to be the only specific hitherto known for any disease, it is completely established (says the author), by experiment, that this remedy, when in the circulation, is as effectual for the cure of recent chancre from the original application of venereal matter, as for constitutional symptoms in consequence of its absorption into the circulation.

It is observed, that the effect of *Colchicum autumnale* on gout is more rapid than that of mercury on the venereal disease, which admits of explanation, upon the supposition, that one is more rapidly received into the circulation than the other. With respect to the powers of this drug, the author speaks from experiments on his own person, having himself taken it at least six different times, for relief from local symptoms of gout, which it has removed, once in six hours, and at others in less than twenty-four hours.

With a view to ascertain the effects of this medicine introduced directly into the circulation, he substituted a dog as the subject of experiment. This dog's pulse in a natural state was 140 in a minute. In five minutes after injection of thirty drops of a vinous infusion of colchicum, diluted with a drachm of water, into the jugular vein, the pulse became fluttering, accompanied with a tremulous motion of the muscles, and nausea, but without retching to vomit. In less than a quarter of an hour the pulse intermitted, and was 180 in a

minute. In four hours the pulse had fallen to 120, but still intermitted. In seven hours the dog had a natural motion. Its pulse had returned to the natural standard of 140 in a minute, and he appeared perfectly recovered from the effects of the experiment.

After three days, sixty drops of the same infusion were given to the same dog to swallow. In two hours he became languid; his pulse wiry and weak, but still 140 in a minute. In four hours the languor was less, the pulse natural. In eight hours he had a natural motion, and in eleven hours appeared perfectly recovered from this dose.

The effects of this medicine upon the dog and upon Sir Everard Home, as far as they were sensible, were very similar, but differed in degree. Sir Everard, in consequence of an attack of the gout, took sixty drops of the *Eau medicinale*. In two hours he became hot and thirsty. In three hours the pain became tolerable while the limb was at rest. In seven hours he had a confined motion from the bowels. There was a degree of nausea. The pulse, which is naturally 80, was lowered to 60 in a minute, with occasional intermissions. In ten hours little remained except some degree of languor, with the pulse at 70, which on the following morning was restored to its natural standard, with removal of all symptoms of gout.

If these observations shall be confirmed, says the author, we must conclude that the different kinds of substances which produce specific diseases are first carried into the circulation, in the same manner as mineral and animal poisons; and that the medicines by which they are acted upon go through the same course before they produce their beneficial effects.

*An Appendix to a Paper on the Effects of the Colchicum autumnale on Gout. By Sir Everard Home, Bart. V.P.R.S. Read April 25, 1816. [Phil. Trans. 1816, p. 262.]*

In the paper on this subject, lately read to the Society, the author hoped to establish two facts which seemed to him of primary importance; first, that this medicine can be received into the circulation without permanent mischief; and secondly, that its beneficial effects upon gout are produced through that medium; and hence the sudden relief it gives can, he thinks, be readily explained.

The criterion by which he judges of the influence of the medicine is the pulse, which he has found to be invariably diminished ten or twenty beats in about twelve hours after it is taken; and since this effect is also produced when the same medicine is injected into a vein, he was satisfied that in the former instance the lowering of the pulse depends upon its arrival into the circulation, and not upon the state of the stomach.

The author has since been induced to try whether the effects of a larger quantity injected into the veins would also correspond with those produced by an overdose taken into the stomach.

One hundred and sixty drops of the infusion of colchicum before