but it must be great. The question now is, upon what tissue is this increased elastic pressure expended to produce the phenomena of *ætherization*, among which, insensibility to physical pain and suffering is the most conspicuous? Is it chiefly or solely through the channel of the blood-vessels or the nerves of the lungs, that this exaggerated pressure or irritation is conveyed to the *sensorium commune*? for it appears that the physiological climax is there exploded.

To solve, in some approximative manner, this point, and to see how far the law of *endosmosis* might be concerned in the first part of the process, I inclosed, at the common temperature, some rectified æther, in a piece of recently killed lamb's small intestine, which, after being firmly secured and made perfectly tight by ligature, was found to weigh two drachms, including the contents, which only filled one half of the cavity to allow of safe expansion. This little sac of æther was, with the assistance of Mr. Hallsworth, apothecary of the Union Hospital, immersed and kept down in a vessel, containing about six ounces of blood, freshly drawn from a healthy adult, and which was placed in another vessel of water, kept at the temperature of 100° Fahrenheit. The sac of æther was gently kept under the surface of the blood by a stiff feather, without agitation, and being withdrawn after ten minutes, was washed clear of blood, and cooled down to its temperature before immersion, when it was found to have lost fifteen grains, or about one-eighth of its former weight. This loss was entirely of the æther, for the gut-membrane was the same as before; it was still tight to liquid æther, and therefore the loss must have been by *exosmose* through the gut-membrane. Besides, the blood at the end of the experiment smelled strongly of æther.

This rude and simple experiment may be taken for as much as it is worth, but I cannot help considering it as very much countenancing the view, independent of a *priori* probability or reasoning, that the vapour of æther, through the elastic pressure which it exerts, permeates the walls of the air-cells of the lungs, becomes absorbed by the blood currents, is thence conveyed directly to the heart, and so quickly carried in a direct stream to the brain. All this may be done in less than ten seconds, according to the experiments of Mr. Blake on the transmission of poisons by the blood-vessels. After the vapour reaches the blood current, its elastic pressure is still kept up, if not increased, by the heat of the heart and other internal tissues. This adventitious force will at most, only increase the reaction of the central organ, and distend, more or less, the elastic calibres of the efferent vessels; but when the distending agent reaches the brain in the current of the circulation, this elastic force meets with a counter pressure in the resisting case of the calvarium; its tension will therefore become increased, and the consequence will be, the cerebral mass will suffer pressure, even to paralysis of some of its functions. This adventitious pressure being, however, occasioned by elastic vapour, and not by fluids, however attenuated they may be, as alcohol, it may not, and does not seem in general to lead to any serious or permanent lesion; in most cases the brain soon becomes relieved by the dispersion of the very permeating vapour throughout the tissues, if not by its decomposition,

Professor Christison mentions two cases where inhalation of sulphuric æther produced,—in one, intermitting lethargy for thirty-six hours, with depression of spirits and lowness of pulse; and in the other apoplexy for some hours, and the person would have perished had he not been discovered. Brande appears no farther acquainted with its physiological effects than that “it produces a remarkable species of intoxication when its vapour is respired, mixed with air.”

It is unnecessary to advert much to the actual phenomena that occur after inhalation, as corroborating the views of excentric pressure and distension obtaining in the heart and blood-vessels, with more or less corresponding irritation. We witness, where the process has been successful, frequency and softness of the pulse, swelling and general fulness of the vessels of the neck, head, and face, with laborious breathing, congestion of the eyes, and dilatation of the pupils. It would appear that in many cases, while there seemed to be perfect insensibility to pain, and a suspension of all voluntary movements, yet a consciousness of the surrounding objects and operations remained, rendering this state very similar to that of the mesmeric trance. This appears to be the most difficult part of the question to solve, and requires the most refined analysis for explanation.

Not to leave the solution of this very interesting point altogether unattempted, might not the partial dislocation of nervous function be occasioned by the newly imbibed pressure on reaching the encephalon, being at first and for a time, expended on the base of the brain, which is more immediately in contact or connection with the arteries that convey the blood directly from the heart. The sensory ganglia are here also more exclusively located, and will first suffer suspension of their functions; but if the blood has taken up an undue charge of the elastic vapour, or if inhalation be continued too long, or if the subject is of feeble resistance, the whole parts and functions of the brain will suffer, and enervation, apoplexy, or death, may follow.

Without intruding farther upon your columns at present, I have only to say, that as the whole subject is full of interest, it is very desirable to withdraw it as much as possible from the domain of speculation into that of science; and if the few observations which have here been made tend to provoke some more exact and experimental researches on this engrossing subject, the writer will feel gratified to see the physiology of the matter placed upon a more satisfactory basis than it is at present.

Manchester, March 15, 1847.

ON THE EMPLOYMENT OF NUTRITIVE ENEMATA.

By KENRICK WATSON, Esq., F.R.C.S., Stourport.

The following cases may perhaps be interesting to some of the junior members of the profession as shewing the confidence which may be placed in enemas in those cases, in which either from severe injuries of the throat or fauces the power of swallowing is lost, or on account of irritability or exhaustion the stomach rejects whatever is swallowed. I am very

well aware that there is nothing new in these cases, but I am convinced that life may be frequently prolonged by the simple means which were used in them.

CASE I.

—, aged 40, was in the fourth month of her pregnancy. She has had seven children born at the full period, and abortion has taken place upon several occasions. Once or twice after the expulsion of the placenta she has suffered from profuse hæmorrhage, and her life has been saved with difficulty. The abortions have likewise been attended by profuse discharges. When pregnant, she has always been apprehensive that she should die from flooding when she was delivered.

Upon the 10th of January, 1847, she travelled for a short distance upon a rough road, which she complained made her feel very uncomfortable, and upon the night of the 12th she was very much alarmed by the appearance of hæmorrhage from the vagina. I saw her at noon, a few ounces of blood had been discharged, perhaps about four, but it had ceased. It was evident from the state of the os uteri that abortion would take place, and the usual precautions as to posture and temperature were had recourse to. As she had a violent cough, a few grains of hemlock and Dover's powder were directed to be taken at night, and a solution of Epsom salts in infusion of roses in the morning.

No material change took place until the 23rd, when about nine at night a considerable discharge took place. I immediately plugged the vagina, applied ice externally, and gave her a dose of ergot of rye. She began to yawn frequently, and shortly afterwards the pulse ceased at the wrist. Brandy was freely administered with ammonia and opium; but the pulse very shortly became imperceptible, though during the space of an hour it revived a little occasionally from the stimulus of the brandy. Warm bottles were applied to the extremities and to the epigastric region, and mustard plasters to the feet and cardiac region. The hands and arms were deadly cold; there was no pulse at the wrist; the carotids beat firmly, and the brain retained its integrity except for a few minutes, when she complained of being deaf. About this time slight uterine pains occurred, followed by vomiting, the plugs were forced from the vagina, and the fœtus and secundines expelled. A pint of milk, in which an ounce of isinglass was dissolved, was injected, and directed to be repeated every six hours. The anodyne was repeated.

About three o'clock she began to vomit, and from this time till nine on the night of the 24th nothing remained upon the stomach, and there was no pulse at the wrist during the whole of these eighteen hours.

At the suggestion of Mr. Cole, of Bewdley, who kindly assisted me in the treatment of the case, it was proposed to have recourse to transfusion, but the objections of the patient were so decided that it was considered that the alarm might be immediately fatal to her.

About three o'clock vomiting again took place, and from this time the stomach retained no nourishment; the injections were well retained and were regularly

repeated. The natural warmth gradually but regularly returned, and an effervescing draught remained upon her stomach, and then a tea-spoonful of brandy, and during the night three spoonfuls of beef-tea.

In the morning the pulse could be counted, about 130. She continued to take nourishment, the injections were continued,—sometimes of broth, at others isinglass and milk; her pulse became regular, and she gradually recovered.

CASE II.

Ann Randal, aged 70, after having made three previous attempts at self-destruction, cut her throat with a razor upon the 16th of April. The os hyoides was separated from the larynx; there was no large vessel divided, and the patient was in a quiet manageable state. Two stitches were passed through the integuments, and the chin fixed in a proper position. The discharge of saliva from the wound was so great that no dressing could be retained, and the discharge was removed from time to time by a sponge.

As she had quite lost the power of swallowing, a pint of milk was conveyed into the stomach through an elastic tube, and an enema, containing an ounce of isinglass, dissolved in a pint of milk, was directed to be injected every eight hours.

The next day she objected so very much to the passing of the elastic tube that I determined to try how long she could be supported by enemas, and from that day, until the 16th day of May, she never swallowed a morsel or drop of any description, unless it was saliva; on that day she swallowed a little milk, which was daily increased, but still she continued to depend principally upon enemas, as a means of support, for several weeks. No union took place between the lips of the wound, and it granulated so very slowly that she continued under treatment until the 26th of July.

During the whole of this period her general health continued good. The enemas occasioned no irritation, and occasionally it was necessary to give an aperient enema. In case the bowel should become irritable, an injection of starch and opium was directed to be used.

Stourport, February, 1847.

CASE OF FALSE PUPIL.

TO THE EDITOR OF THE PROVINCIAL MEDICAL AND SURGICAL JOURNAL.

SIR,

The accompanying case occurring at Southam Infirmary, appears to me to be of some interest in reference to the physiology of the iris, with which, notwithstanding all that has been done, we are hardly yet sufficiently acquainted. Should you think it likely to gratify your readers, it is much at your service.

I am, Sir,

Yours truly,

HENRY LILLEY SMITH.

Martha L—, aged 13, admitted Feb. 22nd, 1847. The right eye presents the following appearances:—The pupil is not correctly circular, seeming as if