

carry them to the proof, although, as far as fevers are concerned, I have myself tested their value with considerable success.

And now to apply this theory to some diseases. Erysipelas occurs at the damp seasons of the year, when vegetable matter is in large quantities decaying on the earth. We have spoken of the state of the secretion of the liver.

Cholera, again, occurs at those seasons and places where there is much vegetable decay going on; at least such is the case in this country; and in this disease the liver does not perform its functions. A quantity of light matter is poured out, known under the name of rice-coloured stools. My own conviction is, and it has been verified by my experience in English cholera, that the treatment is to stimulate the liver to renewed action; and not, as recommended in the public journals, to lock up the intestines with opium, astringents, &c. There is a poison in the system, and that poison must be got rid of.

Again, to pass from disease to the ordinary habits of life with some persons. A full meal is taken at night, perhaps an hour before retiring to rest. See the quantity of solid matter that is taken into the blood; and what are its effects? It acts as a poison; the individual has heavy, almost lethargic, sleep; or is restless and dreaming, showing that the nervous system is oppressed; he has no perspiration of much amount; rises with a dry, brown tongue, and, in some instances, slight sordes round the teeth; in fact, he is in a state somewhat similar to typhus; and from it he experiences no relief until he has had a discharge which shall carry off the superfluous hydrocarbon. Again, after taking wine or spirits, the same thing occurs; and in delirium tremens the alvine discharges will frequently be nearly black.

But in the case both of eating and drinking, if the party take sufficient muscular exertion to exhaust the hydrocarbon, he may remain for some time in comparative comfort and safety.

When we take into consideration the vast quantity of carbonaceous matter which is daily taken into the stomach of even the most abstemious person, consisting of animal, vegetable, and fluid materials, and how much of this is superabundant, is it not feasible that this, if kept in the system by a suppression of the natural secretions which carry it off, should act as a poison?

Mr. Taylor, in his work "On Medical Jurisprudence," says the symptoms of poisoning by carburetted hydrogen are,— "Vertigo, cephalalgia, nausea with vomiting, confusion of intellect, loss of consciousness, general weakness and depression, partial paralysis, convulsions, and the usual phenomena of asphyxia;" and how many of these symptoms do we find in the diseases already mentioned? In a greater or less degree, almost all of them.

If, then, it be not true that carburetted compounds are the poisons which are taken into the system, there is a verisimilitude about the whole which is very striking, and which is worthy of a much deeper notice than it has hitherto attracted.

I believe that much more danger, and certainly much more disease, is attributable to the emanations from decaying vegetable, than from decaying animal matter; and in such a case it is more attributable to the carburetted compounds than any other. I state this more from experience than theory. During upwards of three years that I was connected with a public dispensary, and at which time I had nearly eight thousand cases under my immediate care, the severest were always those which occurred in situations where vegetable matters were allowed to collect.

It is interesting to examine what quantity of carbonaceous matter is passed off by the natural secretions of a person in health.

The kidneys secrete, according to Simon, a mean of 432 grains of urea in twenty-four hours. Now, on referring to the table at the end of Dr. G. Bird's work, we find that 100 grains of urea contain 19.99 grains of carbon. Now if, for convenience, we take the quantity passed at 450 grains, we have 89.95, or nearly ninety grains of carbon passed off by the kidneys. The quantity of uric acid is thirteen grains, or, for convenience, we will call it ten grains, giving 3.6 grains of carbon. The colouring matter of the urine is here left out of the question, but, according to Dr. Bird, it is from forty to sixty grains, and this taken at fifty, will give carbon 29.2. There is a great uncertainty as to the quantity of bile which is secreted during the twenty-four hours, but let us take it at one ounce, or 480 grains, say 500. This gives a further supply of 342 grains of carbon.

The perspiration carries off, according to Seguin, quoted by Bird, 107 grains of organic matter, mostly nitrogenous, but

still, no doubt, there is some carbonaceous matter. Taking this at thirty-five grains, or rather more than one-third, we shall have the following total of carbon passed off in a healthy state of body:—

Urine	119.42
Bile	342.
Perspiration	35.

Total... .. 496.42

or, in round numbers, 500 grains. If, then, even half this quantity be retained in the blood, have we not sufficient evidence of a large quantity of poisonous matter acting on the nervous system? Our plan of treatment becomes more rational, and we are enabled to place medicine on a much firmer basis, when such considerations as these are taken into account, in reasoning on the sources of disease. I purpose, at a future period, giving some cases in illustration of this theory.

Claremont Cottage, Stoke Newington Road, July, 1849.

OBSERVATIONS ON THE EFFICACY AND METHOD OF EMPLOYING CHLOROFORM IN VETERINARY PRACTICE.

AND ON A CASE OF TETANUS SUCCESSFULLY TREATED WITH CHLOROFORM.

By PEARSON FERGUSON, Esq.,

LATE VETERINARY SURGEON, ROYAL 12TH LANCERS, AND PREVIOUSLY A DEMONSTRATOR AT THE ROYAL VETERINARY COLLEGE, LONDON.

MR. FERGUSON, after calling attention to the objections against the use of anæsthetic agents in veterinary practice, which have been started by Messrs. Morton, Henderson, Cherry, &c., remarks:—

When, however, the details of these experiments are examined, it becomes at once plainly evident that they have been remarkably defective in many particulars. The principal defect, however, is attributable to the apparatus employed, which has either allowed the free admixture of atmospheric air with the vapour in inhalation, or, on the other hand, has been so constructed and applied as to cut off all communication with the atmosphere, and to compel the animal to breathe the same air over and over again.... I must mention, as the greatest difficulties in the way of using chloroform in the horse, next to that of imperfect apparatus, are, the universal fear of lying down when labouring under sickness, and also the great danger of serious bodily injury to so large an animal falling in a state of intoxication. In my practice, therefore, in order to avoid these dangers, and to secure the perfect administration of the agent, I have always had the animal cast; after which, somnolence may be obtained in a very short time, by a method of the simplest nature, which not only secures the inhalation of pure chloroformic air, but also permits perfectly free and unimpeded expiration, and entirely obviates the danger of suffocation.

Mr. Ferguson then cites the following cases:—

A large, powerful, and irritable grey horse, the property of Mr. Hadfield, of Manchester, having disease of the fetlock-joint of long standing, was cast on the right side. A piece of coarse sponge, of the proper size to fill the transverse area, was placed in the left nostril, and saturated with chloroform, through which the animal inhaled the vapour, while the right nostril was closed with the right hand. Then expiration was performed by releasing the right nostril, and closing the one containing the sponge with the left hand; and thus the alternate movements of inspiration and expiration regulated by these manipulations were allowed to proceed for rather more than two minutes and a half, when insensibility was complete, the respiration having become exceedingly slow, the pupil much dilated, and the pulse somewhat increased in frequency. The leg was then fired most severely, the skin having been cut through in many places, but not the slightest symptom of pain was evinced. In this case rather more than an ounce and a half of chloroform was used. The somnolence continued for thirty minutes, when, on sprinkling some cold water on the face of the animal, he got up, and walked somewhat unsteadily to his box.

CASE 2.—A valuable steeple-chase horse, sent from Liverpool by Mr. W. Harrison, who, on placing him under my care, informed me that he had been a long time lame, and treated in various ways without success. On examining him I concluded that the lameness was situated in the foot, and I suggested an operation as the only means likely to relieve it. To this Mr. Harrison consented, and as the animal was ex-

ceedingly irritable, and the operation, (excision of a portion of the middle plantar nerves,) under ordinary circumstances, was extremely painful, and somewhat difficult to perform, it was determined to put him under the influence of chloroform. He was therefore cast, as in the former case; the sponge saturated with chloroform was placed in one nostril, and inhalation being regulated by manipulating the nostrils in a manner similar to the foregoing, in less than a minute he was seen to be much affected. The breathing had become deep, the pupil dilated, and the pulse increased, and in two minutes and a few seconds he had inhaled sufficiently, and was quite insensible. The leg was then unshackled, and the operation successfully performed on both sides of the limb without symptoms of pain or the most trifling struggle, although it was necessary to turn him over from the left to the right side. After the operation, which occupied altogether little more than five minutes, he was permitted to remain down for some time, during which respiration was very slow, the pulse fell to the natural standard, and he appeared to be enjoying a sound sleep, with the exception of the eyelids not being properly closed. In this state he remained for about twenty-five minutes, when consciousness began to return. He was then excited to rise by dashing cold water on the face.

In several other cases chloroform was exhibited with similar success, and it only remains in this place to state that the quantity required to produce insensibility averaged an ounce and a half, and the time from the commencement of the operation until somnolence was about two minutes and a half.

I feel it necessary to direct attention to the circumstance, that in administering this agent care should be taken to observe the state of the muscles of the neck; and on the depressors showing symptoms of being overcome by the force of the elastic ligament at the back of the neck, (which will be evinced by the gentle drawing back of the head,) the apparatus must be at once removed, for if insensibility be not then absolutely perfect, it will certainly become so almost immediately, and continue for some time.

I believe that chloroform will, if judiciously applied, be found most useful as a remedial means in veterinary practice, more especially in diseases of a spasmodic nature.

To this belief I have been led partly by theory and partly by an experiment which I shall relate:—Just prior to the introduction of chloroform, a highly-bred bay mare, the property of Dr. Hatton, of Oxford-street, in this city, was, during his absence in the country, attacked with tetanus, and remained without medical treatment for four days, when my assistance was requested. On my arrival at the stable, the poor animal was found to be affected with general tonic spasms to a most aggravated degree. The jaws were closed, the limbs stiff and immovable; the neck was drawn up, and the tail elevated. The stable-boy mentioned that the mare had not passed any evacuations, or eaten or drank for three or four days. The hopeless nature of the case was evident. It was a good opportunity to try the effect of anæsthetic agents, and having obtained the consent of Dr. Hatton, six ounces of sulphuric ether were placed in an apparatus, which was applied to the nose. This apparatus, like most complicated instruments, was not perfect, and permitted the access of much atmospheric air. Nevertheless, after half an hour's inhalation, (imperfect though it was, even with the addition of five ounces of the ether,) the muscles became so relaxed that she was on the point of falling, the eyelids being half closed, and respiration slow and not difficult. At this juncture, the apparatus unfortunately became detached and broken, and our experiment was frustrated; for the fright occasioned by half falling, coupled with the free admission of pure cold atmospheric air to the lungs, aroused the mare from her stupor, and although the jaws had so far relaxed as to enable medicine to be given, and to admit of her taking a little gruel in the evening, the spasms returned, and paroxysms succeeded each other until the next morning, when she died at seven A.M.

Now, although unsuccessful in the result of this experiment, enough was elicited to induce me to conclude that, with a proper mode of administering anæsthetic agents, we may reasonably hope for beneficial results, not only in the treatment of tetanus, but also in spasmodic affections generally; and it afforded me much gratification to find, on perusing *THE LANCET*, that a case of tetanus had been successfully treated, in the human subject, with the aid of chloroform.

I have had the opportunity of testing its utility in the treatment of spasmodic colic; and I can state that it is most beneficial when given internally, in doses of two drachms, with the same quantity of tincture of opium, and an ounce

and a half of spirit of nitric ether. Were the term specific at all admissible in the practice of medicine, this compound, as an antispasmodic, might have a fair claim to the designation.

Veterinary Institution, Manchester, 1848.

The foregoing observations were written in the autumn of last year, but their publication has been unavoidably postponed to the present. Since then, I have had an opportunity of testing the efficacy of chloroform as a remedial agent in the treatment of tetanus, and the result has fully answered my most sanguine anticipations.

Last month, a carriage horse, the property of Mr. John Preston, of Manchester, was, after severe work and exposure to cold, seized with tetanus. The attack came on late at night, and I was requested to see him the following morning. On arriving at the stable, I found the animal unable to move about the stall, and "emprosthotonos" was the form the disease had assumed. The head was drawn down to the level of the knees; the back arched, the hinder extremities being very much under the body; the abdominal muscles tense, and the pelvis drawn forwards; trismus, however, had not taken place. I at once decided to try chloroform, but not in such quantity as to make him fall.

The apparatus was then applied, (allowing a small quantity of atmospheric air to mix with the chloroform in inhalation, so as not to alarm the patient,) and, after he had been inhaling for about four minutes, the gradual relaxation of the muscles of the neck and flank were really wonderful to observe. He continued to inhale it for about fifteen minutes, by which time, he broke into a sweat, and his head was raised to the level of his back, that being just the height at which the elastic "ligamentum colli" will support it, unaided by muscular action. His legs, too, became quite flexible; and it appearing that he would fall if more were administered, the apparatus was removed. A very powerful purgative, and also an enema, were then exhibited, and a large quantity of warm clothing being put on, he was left alone, with strict orders that he should not be disturbed.

On visiting him in the evening, he appeared quite tranquil, and had passed three stools, the last of which was somewhat softer than the others, but not sufficiently so. Another cathartic was given, and the clothing, which had become damp with the perspiration, being changed, he was left for the night.

On examining him the following morning, there were again some tetanic symptoms, but they were confined to the neck, and principally affected the levator humeri on each side, but more particularly the left. The chloroform was again had recourse to as before, and in about twelve minutes, having inhaled about an ounce of the agent, the rigidity entirely disappeared, and he purged profusely. From that time he went on most favourably, under the treatment usually adopted in convalescent cases, and is now well.

Manchester, March 5, 1849.

ON A DEATH FROM IMPACTION OF FOOD IN THE GLOTTIS, THE EPIGLOTTIS BEING IMPERFECT.

By D. HOADLEY GABB, Esq., M.R.C.S., Hastings.

A SOMEWHAT similar case to Dr. Cotton's, mentioned in the "Half-Yearly Abstract," vol. ix., occurred in my practice some time ago, which may be worth recording. I was sent for in haste, to come to Mr. I—, aged fifty, living two miles distant in the country, whom I had attended for epileptic attacks, and who was in an almost imbecile state. It was now stated to me that he was in a fit. I immediately went on horseback, but on my arrival found him dead. His wife told me that they were at dinner, and, as usual, she cut up his dinner for him, —he ate so greedily that she could not trust him to do it. Putting a large piece of mutton chop, uncut, on one side of his plate, she turned her back to reach something off the side-board, when he took advantage of the opportunity, and tried to bolt the piece of uncut meat. He began gulping, but in a few seconds seemed relieved; again he commenced doing so, when a neighbour came in, who, with the handle of a table-spoon, tried to ram the meat down his throat. He died almost immediately afterwards. By order of the coroner there was a post-mortem examination.

The face and neck were congested, and a fulness could be felt above the larynx. On opening the throat we found a piece of mutton, weighing half an ounce, very firmly impacted in the rima glottidis, requiring some force to dislodge it. The