others, exactly in confirmation of Ferrier's experiments on monkeys, that from destructive lesions of parts of the cortex there occur limited palsies, as of the face, of the arm; and as Charcot finds *post mortem* wasting of fibres "descending" from the parts of the cortex destroyed, the cases must, I think, be admitted as conclusive. The most likely explanation of some of Priestley Smith's cases is, that there is a monoplegia, to use the French term, comparing with other monoplegias, such as paralysis of an arm only, or of the face only, as in cases of cortical lesions described by Charcot.

Further, there is clear evidence from Ferrier's experiments, and from other experiments, that the movements of the eyes are represented not only in the cerebrum, but in the cerebellum. From experimental destruction of the right crus cerebelli in some quadrupeds, the right eye is turned upwards and outwards, and the left downwards and inwards. This which I call a skew deviation, it will be observed, is just one-half of the movement for the estimation of differences of distance. In the adjustments for distances there is more than convergence and divergence; in convergence the eyes are slightly directed downwards, and in divergence slightly upwards. Ferrier finds that several different associated movements of the eyes are developed by irritation of several particular parts of the cerebellum; but he only develops the skew deviation in animals whose eyes are placed laterally. He did not develop it in monkeys; yet such a deviation occurs in man. Lesion of the crus cerebelli was diagnosed correctly by M. Nonat from observation of skew deviation.

We see from the experiments of disease, and very evidently from Ferrier's experiments, that the ocular muscles are represented far apart in each of the two great divisions of the nervous system—in the corpus striatum and in the hinder parts of the superior and middle frontal convolutions, and also in the crus cerebelli and cerebellum. There are cerebral and cerebellar movements of the eyes.

In an earlier part of this address, it was suggested that the cerebral ocular movements are for the estimation of the superficial extension of bodies, their superficial size and shape. I would suggest that the ocular movements for the estimation of distance are chiefly represented in the cerebellum. It is of course understood that these estimations by the eyes are symbolic of tactual and locomotor movements. I believe the movements of the eyes which are represented in the cerebellum are concerned in the symbolic estimation of depth of bodies and of depth of space, and also of resistance, which is, physiologically speaking, arrested locomotion. I founded the latter part of this doctrine chiefly on the experiments of Adamük, who asserted that different kinds of movements, either parallel or convergent and divergent, of the eyes are producible by irritating different parts of the corpora quadrigemina. However, Ferrier, although he finds that irritation of the corpora quadrigemina produces movements of the eyes, has not been able to corroborate all Adamük's statements.

It interests me greatly that Priestley Smith has recorded a case in which, with loss of power to look to one side, convergence was intact. For this shows, by another kind of evidence, that parallel movements and convergent movements are separately represented. It does not, of course, follow from this that the convergent movements are represented in the cerebellum; however, Ferrier has been unable to produce convergence by stimulation of any part of the cerebral hemisphere; but he suggests that convergence might result were we to be able to stimulate simultaneously the special motor centre for the eyes in each cerebral hemisphere.

For the rest, however, I shall speak only of affections of ocular movements from cerebral disease. The lateral deviation of the eyes and head is valuable in many ways.

1. By it we estimate the gravity of a lesion; the lateral deviation is the sign of a grave lesion.

2. It will be helpful in diagnosis betwixt drunkenness and apoplexy from local brain-disease, as Prevost has insisted.

3. The lateral deviation is an exceedingly valuable symptom, helping us to a methodical interpretation of unilaterally beginning convulsive seizures.

4. It is valuable physiologically; it illustrates the order in which symptoms appear in disease of nervous centres. The deviation appears both in hemiplegia and in the hemispasm, which is one of its mobile counterparts at a certain stage of gravity of these affections; it illustrates what I call the law of dissolution, using this term as the opposite of evolution.

5. It is valuable in that part of physiology which corresponds to psychology. Its occurrence in hemiplegia and in hemispasm shows us a definite relation betwixt hand and eye movements, and thus inferentially betwixt what are psychologically tactual and visual ideas.

[To be continued.]

RECOVERY AFTER TAKING EIGHTY GRAINS OF EMETIC TARTAR.*

By F. MASON, L.R.C.P.Ed., Surgeon to the Eye Infirmary, Bath.

TARTARATED antimony has been so seldom taken in large quantities accidentally, or used either for the purpose of suicide or murder, that the number of cases recorded of poisoning by it are very few. Casper, in his work on *Forensic Medicine*, only mentions antimony in the list of irritant poisons, without giving any cases. Taylor, in the third volume of the third series of *Guy's Hospital Reports* (1857), has collected thirty-seven cases, of which sixteen proved fatal; seven of these deaths were in young children; the smallest fatal doses were in two infants, three-quarters of a grain having been prescribed for one for some disorder of the stomach following measles, and a like quantity for another recovering from measles, and, in the adult (a medical student aged 28), two grains taken for gastric disturbance; "but, in this instance, there were circumstances which favoured the fatal operation of the poison". The largest fatal dose was one hundred and eighty grains. In the other cases, the quantity ranged between ten grains and sixty grains. The largest quantities swallowed, and from which recovery has taken place, are a girl 360 grains, a man 240 grains, and a man a tablespoonful, or 478 grains.

In 1855, Palmer was suspected, and afterwards found guilty, of having murdered John Parsons Cook by administering tartar emetic in repeated doses, and finally a dose of strychnine. This case gave rise to suspicion, and the discovery that he had in the previous year poisoned his wife also by repeated doses of tartar emetic. Imitators quickly followed, and, before the summer of 1857, two persons were tried for murder and one for the attempt at murder by administering this mineral in frequently repeated doses.

As Taylor, in the ninth edition of *Manual of Medical Jurisprudence*, published in 1874, only refers to these cases reported in 1857 and to no others, it may be assumed that no case has been recorded in the interval of seventeen years.

Some time ago, the attention of the profession and the public was forcibly directed to one of the most celebrated inquiries in the annals of medical jurisprudence, in which a verdict of wilfully poisoning by tartar emetic was returned. I consider the following case, in which eighty grains of this substance were carelessly given by a prescribing druggist, of sufficient interest to bring before your notice this evening, especially as, from the lapse of time, no harm can now follow the publication.

At half-past 9 A.M., May 12th, 1848, I received a message to go immediately to a druggist's shop in the neighbourhood of my residence. On arrival, the druggist called me to the back of the shop and told me he had by mistake given a man a large quantity of tartar emetic. The man was sitting in the front part of the shop. The mistake had arisen thus. The man had gone to the shop and asked for medicine to relieve some affection of the bowels. The druggist intended to give him a dose of quinine, but was at the time engaged in preparing a quart of antimony wine, and had the eighty grains of antimony in a mortar dissolved in a portion of the wine. He took a mortar precisely similar in size, etc., and, after preparing a draught in it, turned from the counter to get a glass for the man to drink from, when, on coming back, took the wrong mortar, gave the contents a stir, poured them into the glass and handed them to the man to drink. The man left the shop and returned to his work as a stableman before the mistake was discovered. He was then sent for to come back.

I ordered tannin, in some form or other, to be given, and a drachm of tincture of galls in water was at once administered. I also requested some strong coffee or tea to be made directly, for him to drink of it as much as he possibly could.

I went home for the stomach-pump. When I returned, the man had again gone back to his work, and I sent for him. He only complained of pain in the stomach, but not more than he had had for several days, together with diarrhoea, for which he had been under treatment. After he had taken the first cup of coffee, there was slight vomiting; this must have been nearly an hour after the antimony was swallowed. I now passed the tube of the stomach-pump, and pumped in about half a pint of milk, when the efforts to vomit became so violent, that I desisted from pumping, and, before I could reverse the action, the milk was ejected through the tube.

Before using the pump, I ordered decoction of cinchona to be made and now to be given in doses of a wineglassful every twenty minutes or half an hour, and, if he threw up one dose, to give him another imme-

* Read before the Bath and Bristol Branch.

diately. I suggested that the man should not be allowed to leave the house, but that a bed should be made for him, and that he should go to bed at once. This suggestion was acted upon, and it was decided that he should remain in the house and be properly nursed until all dangerous symptoms had passed. I was compelled to leave for a time, but a friend promised to remain during my absence. At 4 P.M., I saw him again, and found the vomiting had been very great; but the most prominent and distressing symptom had been violent and frequently recurring cramps of the legs, relieved by forcible extension. His pulse was small, 108 to 114. He complained of pain when pressure was made over the epigastrium. He was dosing and very drowsy. At 9 P.M., he was still drowsy, perspiring profusely. The pulse was about 90, fuller and softer than at 4 o'clock. He had pain in the epigastrium.

May 13th, 8.30 A.M. He had passed a good night and felt much better. He was in no pain unless pressure were made over the epigastrium. When asked, he complained of the bowels feeling sore. Pulse soft and not so quick as last night.—2.30 P.M. The pain in the epigastrium was very slight. He now stated that he had had this pain, together with severe purging, for some weeks past; that it was better now than it had been for some days.—11 P.M. He was doing well; perspired freely. The pulse was 72, full and soft; tongue white. He was in no pain. He said that he had during the day a slight pricking pain in the bowels. The bowels had acted once during the day. There was no vomiting.

He now gave the following history. He came to Bath in December 1847, and was then in good health. Three months later, he was taken ill with swelling of the testicle; but, a fortnight before this came on, he had a severe purging, the bowels acting four or five times daily, sometimes oftener. He took no notice of the purging or swelling of the testicle until the latter became so large that he was obliged to give up his work as an ostler. He then applied to the late Mr. Haines, who gave him medicine and advised him to go to the hospital. He was an in-patient at the hospital from March 15th for one week under the care of the late Mr. Norman. He was relieved and went home, when the purging returned, frequently seven or eight times in the day, and this continued to the time of taking the antimony.

May 15th. He had passed a good night. He felt quite well, with the exception of weakness. He was in good spirits. The bowels had acted once; the motion was healthy. The tongue was coated with a yellowish brown fur. There was no thirst; the skin was covered with sweat. Pulse 60. He was ordered to take decoction of cinchona with sulphuric acid three times in the day.

On May 18th, he returned to work.

CASE OF PENETRATING GUNSHOT-WOUND OF THE ABDOMEN.

By J. D. CROWE, L.K.Q.C.P., Surgeon Army Medical Department.

ON January 3rd, 1876, a young soldier belonging to the battery of artillery in my charge was wounded by the accidental discharge of a fowling-piece carried by his comrade. I saw the patient immediately on his being carried into camp, about half an hour after the receipt of the injury. He was then suffering from shock, but not in a very marked degree. His face was pale and anxious; his body cool (not cold), and sweating. Pulse slow, but fairly strong. He was craving for water. It was found that the charge had struck the abdomen to the left of the mesial line, the wounds of the shots covering an oval space which measured vertically six inches and horizontally five inches. The bulk of the charge entered above the level of the umbilicus. The shots were tolerably fairly scattered over the space, but in a few places they had entered in clusters of four or five grains, close together, thus making larger wounds than those caused by the single grains. The number of shot-wounds was about one hundred and sixty; the greater number of the shots could be felt under the skin, but not in those places where they had penetrated in groups. The man complained of stinging and burning pain at the seat of the injury. There was no external bleeding. Water-dressing was applied to the wounded part, some brandy and aromatic spirits of ammonia were administered, and after about half an hour he had one grain of opium, which was repeated in two hours. A warm linseed-meal poultice was placed over the wound at bedtime. He slept fairly well, and passed urine once during the night.

January 4th. The battery marched for the next camping-place at 4 A.M., the wounded man, in charge of the apothecary, being carried in a dooley. Before starting, he had some coffee and one grain of opium. When within about a mile of the camp, his bowels acted, and

I am informed by the apothecary that the motion consisted almost entirely of black altered blood, showing that the intestinal canal had been wounded. I saw the patient immediately on his arrival in camp, and found him looking pale and exhausted. He was given one grain of opium, and was able to eat some food. At 12 noon he passed a large quantity of black tarry-coloured blood streaked with bright red blood. The opium was then repeated, and a bran poultice applied over the abdomen. In the afternoon, he was sent forward to the next stage in charge of the apothecary, with orders to be carried slowly and carefully, and to have the opium repeated twice, viz., one grain on the march and one at bedtime.

On the morning of January 5th, on my arrival in camp, the apothecary reported that the patient travelled comfortably and rested well during the night. The bowels had not been moved. His diet consisted of milk, rice, and arrowroot, and a little soup once a day. He had three grains of opium during the day. The battery halted at this stage until the morning of the 7th.

On January 6th, he had passed a quiet night with several hours' sleep. There was some tenderness over the lower portion of the abdomen, with tympanites, but no constitutional disturbance; pulse quiet, tongue clean; appetite fairly good. He was ordered to have a grain of opium every fourth hour. The bran poultice was repeated. There was no motion of the bowels during the day.

January 7th. The patient slept well during the night. He was carefully carried to the next camp, having had a grain of opium before starting. He complained of headache during the day; probably due to the opium. His pupils, however, were not contracted, and his condition generally was very satisfactory. At 3 P.M., he had a motion of the bowels, consisting of firm faeces slightly coated with black blood. From this date the dejections were perfectly normal, and the man made a good recovery. A considerable number of shots came away from time to time in the poultices, but many of them may still be felt beneath the skin.

The remarkable points of the case appear to me to be these: 1. The wounded man was only four or five paces from the muzzle of the gun when it exploded; 2. The weapon was loaded with full charges of powder and shot (No. 6); the wadding, however, used, was some raw cotton which the men had picked in the fields through which they passed; 3. The entire charge of shot struck the man's abdomen, not in a close compact body as one would have expected, considering the very short distance at which the gun was fired, but scattered over a tolerably large space.

The scattering of the shots, I think, may be explained by the fact of the soft cotton which was used as wadding not confining the charge tightly in the barrel. The power of penetration was also lessened by the same circumstance, and by the fact of the charge having passed through a number of articles of clothing worn by the man before it struck his body. These were a white cotton coat, ditto trousers, a cotton shirt, flannel shirt, and thick flannel cholera-belt; in addition to which, many of the shots passed through some of the cotton (which was used as gun-wadding) carried by the man between his two shirts at the time of the accident.

REMOVAL OF TRACHEOTOMY-TUBES.

IN the JOURNAL for May 26th, I observe, in the report of the meeting of the Royal Medical and Chirurgical Society on May 8th, 1877, an account of a case in which the cylindrical part of a tracheotomy-tube had dropped into the left bronchus. The difficulties, dangers, and delay which were encountered in the various attempts to remove it arose chiefly from an erroneous conception of the principle on which the extracting power should be applied in such cases. The copper wire is apt to hitch into the bronchial mucous membrane and bring up, as it did in the case referred to, "a large clot of blood". On the other hand, if the blades of every possible form of forceps be not equally applied on both sides of the tube when an attempt at extraction is made, the inevitable result will be to impact it more firmly. Several years ago, Professor Spence, in a case of a similar kind, discovered the true principle on which such foreign bodies should be extracted, and which, for simplicity, speed, and safety, cannot be excelled. The blades of an ordinary pair of pharyngeal forceps are introduced closed; and, acting as a probe, discover the situation of the tube. They are then passed into the lumen, firmly expanded, and equal pressure being thus established, the instrument is withdrawn, carrying the tube with it (see Spence's *Lectures*, vol. ii, p. 887). Mr. Spence, in his admirable address to the British Medical Association in Edinburgh two years ago, alluded to this plan, which, however, requires to be reiterated.

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