

then inserted into the opening, to keep it patent. Spasms continued during the operation. As Mr. Eddison could not get the cage satisfactorily inserted, the edges of the opening in the trachea were kept asunder by a pair of dressing forceps. Ten minutes after the operation, it was noted that there was a copious fluid secretion flowing from the mouth; the spasms were less severe; the muscles not so rigid; panting continued. The wound was then closed with the fingers; dyspnoea became more urgent; spasms increased. Three hours after the administration of the first dose of strychnia, with no tube on the trachea, the dog was in rigid general spasm; head raised above back; fore legs extended at right angles with body; hind legs drawn backwards; tail hung rather loosely; sometimes right hind leg remained for a short time relaxed, but was soon drawn out rigid again with a jerk. She would then lie comparatively relaxed for two or three minutes, till seized with another spasm, which usually continued for about two seconds, and quickly passed off. An increase of spasm could be excited and kept up by blowing on or touching the animal. A considerable quantity of watery fluid had flowed from the mouth, and some urine had been passed. Towards death, the spasmodic rigidity gradually lessened, and the paroxysmal exacerbations became less prolonged. She died three hours and a half after having swallowed the first dose of strychnia. Shortly after death, the tongue was very livid, and the muscles were rigid. Twenty hours after death, there was some *rigor mortis*. The right side of the heart contained much blood; the lower lobe of the right lung was engorged.

In the second experiment, the dog died in the first convulsive fit, which was very severe, before the windpipe was opened. There was much *rigor mortis* the day after death.

On *post mortem* examination the right side of the heart was full. Both lungs were dark coloured and collapsed.

The third experiment did not differ very much from the first, except that the windpipe was opened, and the cage fixed in its place, by Mr. Thomas Wright, before the spasmodic paroxysms began. During the convulsive attacks, it was observed that the pupils dilated; when the muscles became relaxed and the breathing easy, the pupils contracted to the normal size. The value of an opening in the windpipe, in modifying the paroxysms, was tested in the following manner. When a violent fit came on, a plug of sponge, which had been placed in the opening in the cage, was removed, and the fit lasted for fifty seconds afterwards. In a short time, the dog had two other fits, decidedly less severe, and which lasted for a shorter time. The sponge was again inserted, and there was a series of jerks, succeeded by a severe fit, in which breathing was suspended for thirty seconds, very little for fifteen more, and then the dog appeared to be dead. The plug was removed, and almost immediately he began to revive; and, after passing through another fit, panting again came on. In the last fit, when the plug was out, suspension of respiration only lasted for five seconds. By a repeated resort to these expedients, and uniformly with similar results, the beneficial effect of a free opening in the trachea, in the spasmodic paroxysms produced by strychnia, was amply tested and proved. The dog died, however, with the cage in his windpipe, and the opening in it free. At the *post mortem* examination the right side of the heart was found to contain rather more blood than the left.

REMARKS. The last experiment proves that, in the spasmodic convulsions produced by strychnia, there is some laryngeal obstruction, as the paroxysms were mitigated by the existence of a free opening in the windpipe. In a case of poisoning by strychnia, benefit would be derived from tracheotomy, although this operation alone would not appear to be sufficient to save the patient's life. The danger caused by laryngismus would be averted, but not the greater and fatal danger arising from spasm of the respiratory muscles.

The manner in which strychnia destroys life is still a vexed question. Whether death is caused by exhaustion, by laryngismus, by spasm of the respiratory muscles, or by failure of the heart's power, is not yet determined. Exhaustion could hardly have been the cause of death in the dog the subject of the second experiment, as more than five minutes did not elapse from the first seizure with tetanic spasms till his death. Laryngismus was not the cause of death in the dog last experimented upon, because, when he died, there was a large and free opening in his trachea. Dr. Pavy is of opinion, from experiments described in *Guy's Hospital Reports*, that death is always caused by asphyxia from spasm of the respiratory muscles. In a dog in which violent spasms had been induced by strychnia, he kept up artificial respiration for twenty minutes; and, during this period, the heart

acted vigorously; but, when the respiration was discontinued, the heart's action soon ceased. He performed a similar experiment upon a rabbit with a like result; and he believes, and I think rightly, that other observers failed to prolong life by artificial respiration, from not having removed the influence of the strychnized muscles by cutting through the cartilages of the ribs and opening the chest, so as to allow the lungs to collapse and expel the air they contain. It would also appear from these experiments that strychnine has no direct effect upon the heart, and that its action is arrested because of the cessation of respiration. The right cavities of the heart, in the experiments which I have described, contained more blood than the left, indicating death by asphyxia.

FATAL INVAGINATION OF COLON, ETC.

By JOHN F. NICHOLSON, Esq., F.R.C.S., Stratford Green.

I was called, on March 8th, 1856, to see a male child, eight months old, at the breast, that had never been ill until the last two days. On the evening of March 5th, it was laid down asleep by its mother, who soon afterwards heard an unusual shriek, and found that it had vomited. It kept crying, and drawing its legs up to the abdomen as if in pain. It took the breast eagerly, and vomited; the milk curdled almost as soon as swallowed. The bowels had been moved twice during the day, and the motions appeared healthy. It now passed a small greenish motion without straining. One of Steedman's teething powders was given, but it was immediately rejected. The child continued crying and screaming during the night, and was carried in the morning to an intelligent practitioner, experienced in the treatment of children. He considered it to be a case of serous diarrhoea, and prescribed an aromatic chalk mixture. The symptoms continued unrelieved, and on the following evening, I found the child drowsy but unable to sleep owing to sudden seizures of pain, causing contortions of the face and jactitations of the extremities. It constantly retched, and vomited directly whatever was given to it. There was great prostration, a tendency to pallor and coldness of the surface, an exceedingly quick thready pulse, and dry brown tongue. Twice only during the day it had passed apparently without much effort a small quantity of a grumous slimy matter, a mixture of blood, serum and mucus, without a trace of feculent matter. The mother stated that nothing but this kind of matter had passed since the child fell ill, with the exception of the greenish stool passed on the evening of March 6th.

The nature of the case was not clear to me, but it appeared to possess more the symptoms of dysentery than of ordinary diarrhoea. I prescribed a warm bath, Dover's powder and grey powder, and a sedative mixture. The child became more tranquil, and was thought better by its mother, but this arose from increasing exhaustion: it was too prostrate to cry. The vomiting continued unaltered; there was no abdominal tenderness, nor perceptible enlargement; and the belly was normally plump and flaccid. An irruption of a profuse perspiration, a slight flush, apparently less suffering, and involuntary discharge *per anum*, succeeded, and death at last closed the scene after sixty hours of suffering.

Post mortem appearances twenty-four hours after death. The body was fat and healthy. The abdomen was not distended; there was about an ounce and a half of clear brown serous fluid in the pelvis. The peritoneum seemed softer than natural; but not a trace of lymph nor other inflammatory product was observed. The bowels generally were empty; and, more especially below the umbilicus, redder than usual.

The colon was only to be found on the left side, and before reaching the sigmoid flexure for about ten or twelve inches this gut appeared to be distended with faecal matter, which stopped abruptly just above the point where it enters the pelvis. The upper and middle portions of this obstructing body were thickest, and at its termination it gradually contracted into a round point. On tracing the colon upwards, its transverse portion was apparently twisted upon itself, so as to drag down the gall-bladder and hepatic vessels and duct. Here the ascending colon was lost to view, and not a trace of it could be seen on the right side. A part of the ileum, the whole of the caecum, the ascending and part of the transverse portion of the colon were invaginated, and where the gut was apparently twisted upon itself was the commencement of the inversion. The finger could be passed into this opening down the side of the gut as it passed within. The

whole was carefully removed; and, on making an incision into the lowest portion upon the obstructing body through the coats of the colon, the inverted mucous membrane was seen of a dark chocolate colour, and covered with a thick grumous, offensive matter, exactly similar to what passed *per anum* before death. The membrane generally was like strangulated intestine, and covered with an albuminous exudation. There was thus presented an even uniform surface of a closely packed, sausage-shaped body: on drawing this out of the intestinal sheath and putting it upon the stretch, it exhibited a regular plaited appearance, from being so firmly compressed, each plait was matted to its fellow by the albuminous secretion before named. On cutting through this dark invaginated body longitudinally, it presented four different membranous surfaces, with the intervening muscular and cellular tissues, namely, two peritoneal and two mucous, the latter being most external. The appendix vermiformis cæci was lying compressed at the lowest portion of the mass, and within the cæcum several inches of the ileum were seen lying collapsed and flattened, forming the very centre of the intussusception, and in all probability the commencement of the displacement.

REMARKS. The intussusception, therefore, comprised three portions of intestine: first, several inches of ileum, as the centre or nucleus, were drawn into the cæcum, which contracted upon it; and lastly, both these were sucked onwards into the colon, which formed, as it were, the investing envelope or covering of the malposition. The peristaltic action of the bowels, doubtless, tends to increase such a displacement, and if continued long enough with violent tenesmus, would cause the invagination to protrude *per anum*, as has been noticed in some instances.

Emetics have been recommended as likely to afford relief in these cases, but on grounds that seem to me unreasonable; for first, in what way can they act beneficially? And secondly, as vomiting is always present, and perhaps the most painful symptom, what good can be gained by provoking additional emesis, and aggravating the distress and suffering which are so quickly exhausting to the vital powers? The mechanical treatment by shot and quicksilver is, at any rate, unscientific, if it be not barbarous and cruel,—for even in the dead subject I defy any impression to be made in a favorable direction. It must always be a point of doubt and uncertainty in which direction the invagination has proceeded, whether retrogressive towards the stomach, or progressive towards the anus; for, according to the course taken, the shot ought to be administered, viz., in the opposite direction, if it can ever be of any service. Injections of warm water, if they can be retained, which scarcely ever happens, may afford some comfort, if no positive replacement follows their administration. But in such a case as the one I have described, there can be no resource available but gastrotomy. Considering, however, that the symptoms during life are not sufficiently precise and clearly marked to determine the nature of the malady (which, in most cases, a necropsy only reveals), surely he will be accused of exercising more rashness than careful judgment, who exposes his patient to the risk of an operation, the chances of recovery from which it is scarcely possible to appreciate or define. Opium, in its fullest influence, seems to promise happier results; for it not only alleviates pain, and renders the last hours of suffering more tolerable, but it may, by relaxing spasm, counteract the abnormal force which has caused, and still keeps up, the displacement; while in the less serious cases, at any rate, we may hope by its means to stop the further progress of the malady, and enable nature to regain her lost power, and once more establish the equilibrium of the vital forces.

INJURY OF RIBS AND LUNGS: SIMPLE TREATMENT: RECOVERY.

By FRANCIS DAVIES, Esq., Pershore.

On August 8th, 1856, I was requested to see J. Collins, a lad fourteen years old, who had been leading a cart, loaded with one ton and a half of gravel, drawn by two horses, down a slope into a farmyard belonging to the late F. Woodward, Esq., Bricklehampton Hall. The boy, in checking the horses, got jammed in between the post and the cartshaft. The father said, "If the shaft had been a pecked un, it would have been *throw* him." The point of the shaft, which was blunt and bound with iron, took the boy under the left scapula, and fairly jammed him against the post point-blank; the father being obliged to back the horses before he could release the boy.

On examination, I found a lump on his back, as large as half a cocoa-nut: and it felt like a bladder full of dominoes. It expanded with every inspiration, and left a most unpleasant crackling under the hand. He expectorated a large quantity of blood, of a brilliant colour, and very frothy. The skin was cold; the pulse feeble, 120.

I placed two soft napkins on the swelling, and bound him as tightly as I could with a four-inch flannel bandage. He felt much relieved; his breathing, which was very difficult, was much improved by the application of the bandage.

I went up to the Hall, and remained there four hours. On returning, I found the boy tolerably comfortable. I sent him blue pill and hyoscyanus in a pill, and digitalis and nitrate of potash in a draught.

It is useless to detail the daily treatment. He got well without one bad symptom, and was in the church in a fortnight.

This case may be useful to students, as showing that the heroic plan of treatment is not always necessary in extensive injury to the lungs. To older practitioners, it will only show what immense mischief nature will repair with very little assistance.

Reviews and Notices.

REPORT OF THE SURGICAL STAFF OF THE MIDDLESEX HOSPITAL TO THE WEEKLY BOARD AND GOVERNORS UPON THE TREATMENT OF CANCEROUS DISEASES IN THE HOSPITAL ON THE PLAN INTRODUCED BY DR. FELL. Printed by order of the Quarterly Court. 8vo. pp. 114. London: Churchill.

THE joint authors of this report doubtless found no easy task in addressing the Weekly Board and Governors upon a plan of special treatment, to be on the one hand scientifically accurate, and on the other sufficiently untechnical to suit the occasion. The difficulty of their position has been, however, well met; and the result of their labours reflects on them great credit. It is remarkable for its candour, and offers a most satisfactory justification of what was stated of these gentlemen, Messrs. Shaw, De Morgan, Moore, and Henry, in the review of Dr. Fell's *Treatise*, published in the number of the BRITISH MEDICAL JOURNAL for June 27th, as follows:—

"We must not conclude without referring to the conduct of the surgeons of the Middlesex Hospital. These gentlemen have been, in our opinion, most unjustly reflected upon in connection with this affair. Their names alone should have shielded them from all imputation of wrong. There are not to be found in the profession men more honourable and high-minded than they, or men in whose hands the dignity of the profession would be more jealously guarded. We are thoroughly satisfied that whatever they have done, has been done conscientiously, and as duty dictated; '*fais ton devoir, adieu que pourra*' has been their device. The subject demanded their cognisance, and they investigated it. There were *proofs* that Dr. Fell had eradicated tumours in a novel way; that he had operated with an unexpected degree of success in cases which Hospital surgeons had refused to touch. The Middlesex Hospital had wards specially appropriated to cancer; and their founder had particularly desired that investigations of this nature should take place there."

But to turn from the authors to the report itself. First of all, what does it say of Dr. Fell's "remedy"—of the sanguinaria—applied locally?

"For the purpose of destroying cancer, it appears to be practically inert. No single fact that has come before us would arouse the suspicion that constitutionally it has any effect, one way or the other. Under this, as under previous modes of treatment, cancer retains its notoriously malignant character; that is to say, its capacity for spontaneous and destructive growth in its primary seat, for obstinate recurrence after what has appeared to be the most complete extirpation, and for progress, if not for reproduction, in other and, it may be, distant organs of the body. The degree of that malignancy has varied in different cases. Each case has had, and maintained throughout the period of our observation, a character of its own, a specific character, as distinct and appreciable as we have been accustomed to recognise in similar cases which had been subjected to other treatment, or to no treatment at all.