fasten a catheter into the orifice of the canula. One advantage to be derived from this proceeding was the being enabled, by the application of cloths dipped in hot water to the tube, to raise the temperature of the air inspired by the patient. The other will be better understood from what follows.

The fatality attendant upon operations of laryngotomy and tracheotomy, whether performed by the surgeon or the suicide, has not been explained. In the latter case, the moral depression which leads to the action has been advanced as producing a fatal result in ever so slight an injury. But I have seen a patient who, with the deliberate intention of self-destruction, jumped out of a lofty window, recover from a compound fracture in both extremities. In the case operated upon by Mr. Wainwright, the appearances immediately and for several hours after the operation were as favorable as in the present, yet labored and stertorous breathing came on, with inability to expectorate the mucus, and the patient sunk during the night, with all the appearances of suffocation. On a post-mortem examination there was found no trace of inflammation, but passive congestion of the lungs, and serous effusion into the pleura, as we find in persons who have died of any disease after a prolonged agony.

These appearances have, I believe, been generally found in all cases which have sunk after the operation of bronchotomy. In Mr. W.'s case some of this might be attributed to the delay of two hours, rendered necessary by a difference of opinion in the consultation preceding it. At that time the explanation which I am going to offer, of the dangers arising from this operation, occurred to me, and its correctness has, to my mind, been confirmed by the phenomena observed in the present case. Isidor Bourdon, a French physiologist, first, I believe, drew attention to the important part performed by the glottis in the mechanism of respiration. The movements of the glottis were directly observed by another pathologist in the case of a suicide, and direct experiments have been made upon animals to illustrate these movements. The glottis dilates during inspiration, and is contracted during expiration; and there is an obvious reason for this. The expiration should be as much under the influence of the will as the inspiration. The duration of a natural expiration is nearly the same as that of an inspiration, but the only muscles by which an expiration can be regulated are the constrictors of the glottis. The act of expiration, as it was for the first time and satisfactorily explained by my late father, Dr. Carson, is simply mechanical, produced by the elasticity of the lungs, the weight of the walls of the chest, and the elastic apparatus of the joints of the ribs.

Take away the check of the contracted glottis, and the chest collapses immediately with a rapidity proportioned to the respiratory aperture, and not in the slow graduated manner observed in natural respiration. The necessary consequence of such a rapid collapse would be a diminution of the duration of time in which the air introduced into the lung is kept in contact with the aerating surfaces, diminished aeration of the blood, and, in consequence, gradually progressing sanguineous congestion. In addition to this inconvenience derived from the removal of the influence

of the glottis upon expiration, there is a still farther evil perhaps of greater consequence tending to produce the same result. In ordinary respiration the walls of the chest are expanded and contracted into positions intermediate between the medium capacity of the chest, and the positions of extreme dilatation and contraction. The glottis is the only check by which an ordinary expiration is prevented from becoming at all times an extreme expiration. The glottis gradually contracting during expiration, opposes a resistance to the exit of the air by diminishing the passage, and thus affords a period of repose to the powerful muscles which dilate the chest. As a necessary consequence of the extreme collapse, the dilatation of the chest would require an increased exertion of the muscular power by which it is usually effected, and during the first part of the dilatation an exercise of this power at an extreme mechanical disadvantage. The exhausting influence of this extraordinary exercise of muscular power so often repeated, would soon knock up the most powerful individual, and these two consequences of the removal of the influence of glottis united appear to me satisfactorily to explain the sinking and gradual suffocation, which have so often carried off patients after the operations of tracheotomy and laryngotomy. To obviate them in the present case, I directed an elastic tube to be inserted into the orifice of the canula, and to be compressed by the patient or an assistant during expiration, thus substituting an artificial glottis. If the tube be of sufficient length, the friction of the air in its exit will be sufficient to regulate the expiration, and so do away with the necessity of the artificial glottis.

Had the epiglottis and glottis been cauterised by the nitrate of silver when the patient entered the hospital, as recommended, I believe, by Dr. Corrigan, perhaps this might have obviated the necessity for the operation. It ought certainly to have been done immediately after; and, instead of tartar emetic, calomel and opium have been freely administered to moderate pytalism.

I remain, Gentlemen,
Your obedient servant,
JAMES CARSON.

CASE
OF
HEMIPLEGIA,
ILLUSTRATIVE OF THE EFFICACY OF STRYCHNIA
ENDERMICALLY EMPLOYED.

By G. FIFE, M.D.

[For the *Provincial Medical Journal*.]

Mr. S., aged thirty-five, was admitted into the Sunderland Infirmary on the 17th of June, laboring under paralysis of the whole of the left side, accompanied by considerable excitement, incoherence of speech, difficult articulation, and slight delirium. Face rather flushed; heat increased; pulse small, hard, and frequent; tendency to tremor; is by profession a lecturer on elocution, and had for some time been living very freely. Had experienced slight attacks on the 5th, and 10th, and was finally seized on the 15th. Several years ago he suffered from an attack of apoplexy. Ordered the head to be shaved, and

the cold evaporating lotion to be assiduously applied to the scalp; sinapisms to the inside of both thighs.

Compound spirit of ammonia, two drachms;
Pure water, six ounces. Mix. A fourth part to be taken occasionally.

Calomel, six grains;

Powdered opium, two grains. Mix. Let a powder be made to be taken at bed-time.

Croton oil, three drops;

Extract of gentian, as much as may be sufficient to make two pills, one to be taken early in the morning, and the other two hours afterwards.

18. Passed a tolerable night; in other respects the same.

Calomel, six grains. To be taken every four hours.

Sulphate of magnesia, one ounce and a half;

Tartarised antimony, three grains;

Green mint water, seven ounces. Mix. Two tablespoonfuls to be taken every two hours.

A blister of cantharides to the neck.

Vespere: Continue the powders.

19. Continue the powders and saline mixture; add two drachms of Battley's liquor opii sedativus.

Vespere: Continue the medicines.

20. Excitement much diminished, and mouth very sore from the mercury. To have a gargle of decoction of bark and borax.

Vespere: Turpentine liniment, three ounces; to be applied to the abdomen. To have six ounces of porter.

21. Excitement rather greater than at last visit.

Calomel, five grains;

Muriate of morphine, one grain. To be taken at bed-time.

22. Rather better; has more power over the arm and hand, but can only move the toes a little; pulse very rapid.

Infusion of quassia, seven ounces;

Sulphate of magnesia, one ounce and a half;

Tincture of digitalis, a drachm and a half. Mix.

Two tablespoonfuls to be taken every four hours.

Vespere: Considerable restlessness, with an unpleasant degree of drowsiness. To have an enema of half a pound of gruel, and half an ounce of spirits of turpentine, directly. Let him take of extract of conium, five grains, in a pill at bed-time.

23. Much better. Let him take of extract of conium, five grains, in a pill at bed-time; repeat the croton oil pills, as on the 17th.

24. Repeat the quassia mixture and pills of conium.

25. Continue the medicines.

26. Repeat the mixture and pills of conium; to have a gargle of

Muriated tincture of steel, three drachms;

Pure water, seven ounces and a half. Mix.

27. Repeat the pills of conium, to be taken at bed-time.

28. In consequence of excitement being increased, let him take the mixture with digitalis occasionally. The pills at bed-time.

29. Suffering from a slight catarrhal affection, with some fever.

Solution of acetate of ammonia, two ounces;

Pure water, five ounces and a half;

Tartarised antimonial wine, and tincture of hyoscyamus, of each two drachms. Mix. Two tablespoonfuls to be taken every three hours.

Repeat the pills of conium, to be taken at bed-time.

30. Continue the diaphoretic mixture as the last.

In the evening to have a gargle of

Creosote, half a drachm;

Pure water, eight ounces.

Precipitated sulphur, three drachms;

Carbonate of magnesia, one scruple. Mix. Divide into eight papers, one to be taken night and morning.

July 1. Continue the medicine and pills of conium.

2. Being in all respects better, he was ordered the following:—

Infusion of quassia, eleven ounces and a half;

Bicarbonate of potass, one drachm;

Tincture of hyoscyamus, two drachms. Mix. Two tablespoonfuls to be taken three times a-day.

Repeat the pills of conium.

3. Continue the medicines, and to have a gargle of borax.

4. In all respects better; has regained considerable power of the affected arm, but the leg continues perfectly paralytic, he being able only to move the toes. A blister of cantharides to the left lumbar region. Take of strychnia, a quarter of a grain, to be sprinkled over the blistered part.

5. Can move the leg with considerable ease, being able to push off the bed-clothes with it; some slight foul ulcers on the leg. To have half an ounce of creosote ointment; repeat the strychnia as before; take of black draught, two ounces, to be taken in the morning.

6 and 7. Continue the quassia mixture.

8. Repeat the blister of cantharides and strychnia.

10. Repeat the black draught, to be taken in the morning.

11. Continues improving. Repeat the blister of cantharides and strychnia.

12. Can walk about the ward with comfort, and assisted only with a stick; possesses perfect control over the motion of the limb, but feels it weak.

From this time he continued steadily progressing to convalescence up to the 17th, when the blister and strychnia were again used for the last time.

He left the hospital two or three days afterwards quite well, having subsequent to the 11th only required an occasional aperient—generally the aloetic pill.

REMARKS.

Several circumstances connected with the case above reported seem possessed of much interest, whether its pathology or treatment be regarded. On these I now propose to offer a few observations—

1st, as to the Pathology. However imperfect our knowledge of the nervous system may be in its normal state, the researches of modern pathologists have thrown so much light on the phenomena of its diseases, that in a very large proportion of cases the physician may form a tolerably accurate diagnosis, and one of the utmost importance to the successful application of remedial measures. Without at all entering upon the consideration of paralysis generally, and the various causes in which it may originate, I will now state my conviction that in the case before us the cause of the disease may with propriety be assigned to extravasation, limited in extent, and probably situated at the lower and posterior part of

the right hemisphere of the brain, constituting in fact the "Hæmorrhagie Moyenne" of Rostan, in whose division of cerebral hæmorrhages observation and experience lead me to concur, and to regard as theoretically correct and practically useful. In addition to the paralytic affections in the present instance a most unpleasant complication existed, which not only aggravated the primary disease, but also rendered it imperative, in my estimation, to abstain altogether from the employment of active depletion, whether general or local, which, had the symptoms of pressure indicated a more extensive extravasation, must have been resorted to at all hazards. I allude to the symptoms indicative of delirium tremens, which existed at the time of his admission and continued for several days. At one time I was much inclined to suspect that, in addition to any extravasation, there was going on a process to which the term "inflammatory ramolissement" may not be inaptly applied—which apprehension, however, the result of the case proves to have been unfounded—whilst the progress to convalescence and the symptoms accompanying it tend most decidedly to confirm the original diagnosis.

2ndly, Treatment. From what has been above stated, my reason for not having recourse to general blood-letting is sufficiently obvious; at the same time it may be asked whether the local abstraction of blood might not have been safely practised. This question suggested itself to me more than once in the course of the case, and had symptoms persisted it should have been resorted to, not, however, either by cupping or leeching in such a manner as to abstract a quantity of the vital fluid in a brief space of time, but by applying successively a single leech, so as to keep up a gradual flow of it, until the required impression on the system was produced, by which all the bad effects of the sudden shock attendant on any other method may be prevented, and yet the object be effectively secured. Although somewhat irrelevant to the present subject, I cannot refrain from impressing on your junior readers the safety and advantage of this mode of applying leeches where their more liberal and ordinary employment is matter of danger or of doubt.

The first indications were to prevent increase of excitement, to allay the morbid sensibility of the nervous system, to evacuate the intestinal canal, and at the same time to guard against the collapse likely to ensue and consequent on the sudden abstraction of the stimuli in which the patient had so recently indulged, which objects were satisfactorily attained by the treatment resorted to at the first visit. The next point was to guard against any further extravasation, and to promote the absorption of that already existing; this appeared likely to be effected by the means recommended on the 18th, viz., the saline mixture as calculated to moderate the action of the heart and arteries, and the sub-muriate given in such doses and at such intervals as to produce its speedy action on the system generally, and on its absorbent powers in particular, which effect was fully attained within the period of forty-eight hours, when they were obliged to be discontinued in consequence of severe ptyalism and a considerable irritant action on the intestinal mucous membrane. From the 20th to the 29th,

excitement and depression were alternately combated by the means recorded and the occasional exhibition of wine, negus, or porter. On the 29th he suffered from a smart attack of influenza, which continued up to the 2d of July.

On the 4th, the endermic employment of strychnia was resorted to, and with the effect above mentioned, and repeated at the intervals stated, until his discharge.

On this remedy the following remarks may not be irrelevant, as I am fully satisfied that when duly exhibited it is both safe and effective, more especially when used endermically. As a general rule it may be stated, that all excitement should be perfectly removed previous to its application—that its efficacy and safety are greater when externally applied than when taken internally—and that its action is more under the control of the practitioner. In those cases where I have given it internally it has invariably produced the most distressing tetanic convulsions, even though given only to the extent of one-twelfth of a grain; to counteract which the largest opiates were but of little avail, whereas, when introduced through the medium of the skin, where even unpleasant spasmodic twitching is the consequence, this may be speedily obviated by sprinkling the surface with a little morphia.

In conclusion, it is due to the memory of the late lamented Dr. Shortt of Edinburgh, to state, that to his kindness and friendship I am indebted for my first information as to the value of strychnia, as well illustrated by his experiments with it in the Royal Infirmary there, on which his clerk, Mr., now Dr., Balfour wrote an excellent thesis.

Sunderland, Nov. 20, 1843.

STRANGULATED FEMORAL HERNIA.— OPERATION.

TO THE EDITORS OF THE PROVINCIAL MEDICAL
JOURNAL.

GENTLEMEN,—I send you the following case of strangulated femoral hernia, should you have room for its insertion in your Journal.

I am, Gentlemen,

Your obedient servant,

THOMAS BANCKS, M.R.C.S.

Stourbridge, Nov. 25, 1843.

On Wednesday, October 25, 1843, I was requested immediately to see Mrs. Beach, of this town, aged forty-two, whom I found with constipated bowels, great pain and anxiety of countenance, and constant vomiting. On examination I found, as I suspected, the symptoms to be occasioned by a femoral hernia, about the size of a small egg, on the right side. She had had these symptoms for nearly twelve hours before my visit, but latterly they had much increased in severity. After a fair trial of the taxis, general bleeding, the warm bath, &c., she remained in the same state. I stated my conviction that nothing but an operation would relieve her, being satisfied all further interference was worse than useless, which was confirmed by two medical friends. She, however, expressed her firm opposition to the operation, and it was not until fourteen hours afterwards, when the symptoms had become much aggravated, that she consented.