finer bronchial tubes; but he looks upon the spasm as secondary, and agrees with Weber in believing the primary change to be a swelling or tumefaction of the bronchial mucous membrane, dependent on a fluxionary hyperæmia, itself due to a vaso-motor nervous influence, the principal rôle being played by the pulmonary fibres of the vagus. According to this view asthma is an irritative and reflex pulmonary neurosis. It agrees, in many respects, with the theory of asthma adopted by Dr. Andrew Clark in the discussion to which I have alluded, and which I hold myself as the most consistent with the clinical history and phenomena of the asthmatic paroxysms.

The morbid state, upon which the asthma depends, may— affect (1) the nerve itself, or (2) the coverings of the nerve, or (3) the tissues adjacent to the nerve.

Max Schaeffer lays great emphasis on the third of these conditions—viz., that morbid states of the structures adjacent to the nerve may influence and disturb the nervous currents. Tumours such as nasal polypi, hypertrophied tonsils, swollen cervical or bronchial glands (temporary hyperæmia of these glands), can, according to their position, cause irritative pressure on nerve filaments connected with the respiratory centres. He found that many of his asthmatic patients were the subjects of nasal catarrh, or pharyngeal catarrh, or laryngo-tracheal catarrh. He noticed that swellings of the mucous membranes of these parts were attended with asthmatic paroxysms, and patients would constantly refer the seat of their discomfort lower or higher in the throat, according to the seat of the swelling, and he concludes that all the symptoms of asthma are symptoms of irritation brought on by pressure on nerves which are in connexion with the pulmonary portion of the vagus, and especially in the upper part of the respiratory tract—the pharynx, larynx, and trachea.

He examines carefully the nose and throat, and applies the electrodes according to the seat of the disease. Usually the two electrodes are placed on each side of the neck about two centimetres below the angle of the jaw, and sometimes a little lower down in front of the sterno-cleido mastoideus. The current must be of good strength, so that the patient can feel the stream go across the larynx and soft palate. In bad cases it should be applied twice a day from fifteen to thirty minutes each sitting. He states that in the most severe cases it has acted “like witchcraft.” He has never found the constant current do any good, but he has never failed with the induced current.

Certainly the result of the application of the induced current in the case that came under my own observation was very remarkable.

Hertford-street, Mayfair.

THE ASPIRATOR AS AN AID TO DIAGNOSIS IN CASES OF OBSTRUCTION OF THE BOWEL ;

WITH DESCRIPTION OF AN ENTEROTOMY TUBE.¹

By RODERICK MACLAREN, M.D.,
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I PURPOSE illustrating the use of the aspirator in cases of obstruction of the bowel by giving an account of the instance which drew my attention to its value; and as there are some other points in the case which are worthy of note, I will record its essential features.

Mrs. R—, aged forty-three, wife of a market gardener, was first seen by me on Tuesday, April 20th, 1880. She stated that she had not had her bowels moved since the previous Thursday, though she had taken aperient medicine, and that she had vomited frequently for two days. She was seven months gone in pregnancy. On the following day (April 21st) she miscarried, the child living only a short time. The treatment prescribed consisted in purgatives and frequently repeated enemata, some given with the long O’Beirne’s tube. As this failed to give relief, she was next brought under the influence of opium, and subsequently belladonna was given. Each and all seemed to make her worse, and her condition was

best when she was least interfered with. When she had been four days under treatment—this being eight days after the last motion—her state had become urgent; her pulse was very feeble, the vomiting frequent, and the abdomen distended and tense, so that the propriety of operative interference had to be considered. The probabilities were in favour of the obstruction being in the great bowel, for the following reasons: the symptoms were not very acute; the patient always passed plenty of urine; and she stated that for the previous six months she had difficulty with her bowels. This was not due to costive motion, for when she did succeed in getting them to act the consistence was natural. She had occasionally passed blood and mucus. Physical examination, however, gave no help; and it was a matter of extreme doubt in which part of the great bowel the obstruction occurred.

The abdomen on April 23rd was uniformly and intensely distended; it was everywhere resonant, a trifle less so in each loin, and I thought rather less tympanitic in the right than the left, but the difference between either of these regions and the rest of the abdomen was very slight. No hardness or tumour could be felt. No fæcal vomiting occurred. About a pint was the largest enema which could be given, and this usually returned unstained, but occasionally there was slight fæcal colouration. Nothing abnormal could be felt per anum. There was no appearance of cachexia; the patient was a stout florid woman.

It was at this stage that I found the aspirator of essential service. So uncertain were the indications of the seat of stricture that it was a question whether it would not be better to open the small bowel close to the cæcum rather than risk a colotomy, with the possibility of finding the bowel obstructed above the opening. It occurred to me, however, that by inserting an aspirator needle into the loin in the position of the colon I could ascertain whether this contained liquid fæces or not. The patient being placed under chloroform, with the kind assistance of my friend Dr. Murphy I aspirated the colon on the right side, preferring this to the left, because it was slightly less resonant on percussion. The aspirator withdrew air and liquid fæces, giving evidence that the closure of the bowel was below this point. I therefore performed right colotomy. The incision was a deep one, owing to the great amount of abdominal fat; and there was, from the same cause, some difficulty in finding the bowel,—the reverse of what is usually encountered. When the bowel was found, sutured to the skin, and opened, a large amount of flatus and fæces escaped. From the date of the operation the patient did thoroughly well. Five days after the colotomy some liquid fæces passed per anum. On the following day the same occurred, the motion containing much mucus. On the seventh day blood, mucus, and fæces were passed. From this period there was almost always a daily motion per anum, gradually increasing in consistence until she regularly passed a well-formed stool. At the same time liquid fæces escaped freely from the wound. On one occasion, a month after the operation, the bowel prolapsed through the wound. A recurrence of this prolapse was prevented by making her wear an enterotomy tube.

Six weeks after the operation the patient was out of bed. A week later the motions were so natural that I determined to see the effect of plugging the wound before deciding whether or not to let it heal. This was done by closing the tube. I arranged to see her again in a week, during which time she was to wear the plug if she felt no inconvenience from its use. On the morning of the day on which I had promised to see her she was found dead in bed by her daughter, who slept with her.

A post-mortem examination was made in the evening. The heart was found with a considerable covering of fat; the muscular fibre pale, and under the microscope mostly devoid of striation (her pulse had always been feeble and the heart sounds indistinct). Brain, lungs, liver, and kidneys were healthy. The large intestine was distended with air and contained a considerable quantity of solid fæces. The meso-colon was unusually free and large. A couple of inches above the sigmoid flexure was a cancerous mass, measuring an inch in thickness, two inches from above downwards, and occupying most of the circumference of the bowel. A great part of it was undergoing colloid degeneration, and there was some pus in the interior. The opening through the stricture into the lower bowel was a fairly free one. The post-mortem examination was a very instructive one. It was evident why medicinal treatment had failed: purgatives merely forced the contents of the bowel against a closed stricture; sedatives paralysed the bowel and allowed flatus, &c., to accumulate.

¹ Read before the Border Counties Branch of the British Medical Association.

From ulceration or the absence of pressure, or some such cause, the stricture, after the operation, became permeable, and during the last few weeks of her life allowed fæces to pass readily. The free attachment of the great bowel explained how it was that the dulness on percussion, which is usually present above a stricture, could not be detected, the intestine not being in close contact with the abdominal wall.

Obstructions of the bowel are so often obscure that any aid to the diagnosis of their position, or any expedient which will help us in treating them, deserves careful trial. In the aspirator we have an instrument which will determine whether any given portion of the ascending or descending colon contains liquid or not. If it does, it is of necessity above the seat of stricture. The puncture involves no risk. I once saw a post-mortem examination on a case in which the aspirator needle had been pushed into various portions of the bowel within six hours of death, and yet all traces of its use had disappeared. When the presence of liquid fæces in a portion of the colon is ascertained, we know that opening the bowel there will relieve the urgent condition. In the above case the needle was of great service as a guide to the bowel (there is not usually any difficulty in exposing it; but this patient was so fat that the wound was a very deep one, and the intestine was covered by a layer of fat). The class of case in which aspiration is most likely to be useful is: when no stricture or fæcal accumulation can be felt per anum; when there is no decided evidence by percussion dulness of a large accumulation in either ascending or descending colon and yet the symptoms point to stoppage of the great bowel, not the small one. I should certainly trust to it to guide me whether to perform colotomy or, on the other hand, to do abdominal section, with the object of removing the obstruction, or opening the lower end of the small bowel.

I have mentioned that I used an enterotomy tube for preventing a prolapse of the bowel. This is a contrivance which I had formerly found of much use in cases of colotomy; it prevents prolapse of the bowel, keeps the opening from closing, and can be made so as to a great extent to prevent contact of fæces with the wound and skin. It consists of a piece of large-sized drainage tubing fastened at right angles to a plate of perforated zinc. The tube is passed into the bowel, the zinc lies on the skin, and is kept there by a band of tape going round the body. The tape is fastened to the zinc plate by india-rubber rings, so as to keep it tense. If it is desired to protect the skin, the tube is passed into the wound through a sheet of gutta-percha tissue. It has a considerable general resemblance to a tracheotomy tube.

Carlisle.

CASCA BARK *VERSUS* DIGITALIS.

By DAVID DRUMMOND, M.A., M.D.,
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IN the Gulstonian Lectures of 1877 Dr. Lauder Brunton pointed out the close resemblance which existed between the cortex erythrophloei and digitalis in their physiological action. To use Dr. Brunton's words, the action of casca is to strengthen and slow the heart, to contract the arterioles, and increase the urine. For the past two years I have used the tinctura erythrophloei (as it is proposed to style the drug) in a good many cases, a few of which I shall shortly cite with the view of comparing the therapeutical value of the two drugs, especially as regards the certainty and rapidity of their action. The tincture of casca I procured from Messrs. Brady and Martin, of Newcastle, who recommend the dose of five to ten minims, founded on Dr. Lauder Brunton's observations. I believe the strength of the tincture is 1 in 10.

Ellen H— was one of the earliest of my cases in which the drug was tried. Into the details of her malady, or that of the cases to follow, it is unnecessary to enter. Aged eighteen, she had suffered from rheumatism, which left her with a constricted mitral orifice, as evidenced by presystolic murmur, thrill, &c. On the 26th of April, 1879, whilst the heart was beating at the rate of 90 per minute, five-minim doses of the tincture were ordered three times daily. The first evidence of its action occurred in the shape of an attack of epistaxis—i.e., increased arterial tension. On April 30th

the pulse was 88. There being no return of the epistaxis, the dose was increased to eight minims. On May 1st the pulse was 80. On May 2nd ten minims of casca was given, which dose was continued up to the 21st, during which time the pulse remained at about 70. Then it was observed that the patient passed a great deal of urine. The effects of the drug were allowed to pass off, and on June 9th fifteen minims of tincture of digitalis were given thrice daily, the effect of which was to lower the pulse ten beats per minute in about a day. The patient was soon after discharged, the pulse remaining at from ten to fifteen beats below the average until she left.

Alice G—, aged twenty, suffering from mitral insufficiency. Her average pulse was about 100. On April 20th five-drop doses of the tincture were administered, which were gradually increased to fifteen minims three times daily; but owing to an attack of hæmoptysis on April 23rd the casca was stopped, at which time the pulse was at 90. On the 30th, the pulse still remaining about 90 to 95, eight-drop doses of the tincture were given, and continued until May 19th, during which time the pulse scarcely varied at all, but remained about 90, the only noticeable effect of the drug being a diminution in the quantity of urine passed. Dr. Brunton has shown that one of the toxic effects of the drug is to diminish the renal secretion; however, in spite of the small quantity of water passed, the dose was increased to fifteen minims thrice daily; but on the 21st, the flow becoming less, the exhibition of the casca was stopped. The pulse during this time had increased rather than diminished in frequency. It was found that it was only necessary to omit the casca for two days to allow the flow of urine to become normal again. On May 24th fifteen drops were again given three times in the day, and continued till the 31st; but the drug appeared to have lost its effect, for on that day the pulse was at 120 per minute. The tincture of digitalis was substituted, in ten-drop doses. On June 4th the pulse was down to 100, when the digitalis was increased to fifteen drops. On the 9th the pulse was at 50; in consequence the digitalis was stopped, and in a few days the pulse again became rapid—i.e., 100; but now the digitalis had lost its influence, for fifteen- and twenty-drop doses thrice daily failed to bring down the number of beats.

In the next case the drug was pushed much more energetically.

Wm. W—, aged fifty-four, presented unmistakable symptoms of mitral stenosis. Although there was no murmur, yet the rapid, irregular heart, the cyanosed face, the congested lungs, with hæmoptysis and dyspnoea, told a tale of obstruction on the left side of the heart. On the 14th of July, 1879, the heart—counted with the stethoscope, as many of the beats did not reach the wrist—was at 160 per minute, irregular and intermittent. Ten-drop doses of the tincture of casca were given three times a day. On the 17th, the pulse was much steadier, and reduced to 100. All the beats seemingly reached the radial. The quantity of water passed was much increased. The administration of the drug was continued, and larger doses employed, the increase being gradual. On Aug. 1st, thirty drops three times a day were given, and in a few days the dose was increased to thirty-five drops. On the 11th, a week after the maximum dose named had been employed, the pulse was at 110, and very irregular. The drug was then discontinued, the urine being diminished in quantity. On Aug. 16th—no medicine was given in the interval—the heart was beating at the rate of 152 in the minute, 120 of which only reached the radial. Digitalis was then exhibited—twenty drops of the tincture three times a day—the immediate effect of which was to steady the cardiac pulsations, and to render them both slower and more regular; for, on the 18th of the same month, the heart beats were 120, all of which reached the wrist. The digitalis was continued until Sept. 16th, 1879, on which day the patient left the hospital, his pulse much more regular, and at 80 in the minute.

This patient came again under treatment in the hospital on May 25th of the present year, at which time his pulse was at 150, and very irregular. He was ordered ten-drop doses of the casca administered as before, which was increased on June 4th to twenty drops, the pulse remaining unaltered. On the 12th the pulse was steadier, and reduced to 120 in the minute. Then camphor-water was substituted and continued for eight days, during which period the pulse rose again to about 150, and became more irregular, being with difficulty counted. On June 20th the camphor-water was discontinued, and in place twenty-drop doses of the