anaesthetist's armamentarium. As the operating surgeon has several methods which he may adopt in the radical cure of hernia, so I think it is advantageous not to be too stereotyped in our methods of administering an anaesthetic, and to suit the anaesthetic and its method of administration to the case and condition of the patient, for, after all, the personal element is a great factor in anaesthetic work.

Those members of the Association who visited the Mayos' Hospital in Rochester when at the annual meeting last year, have seen the method adopted, it is said, in every case; but I must confess I myself would not apply it in every case, because I do not think it suitable to all the different types of patients one meets with here in England. Their habits may be different; either it may be that the climatic conditions in this country are different, and so the rate of evaporation of ether is not the same, or the ether itself may have a specific gravity unlike that used in America; which cause is at work I am not prepared to say.

I have long been an advocate for the open method of ether administration, using solely an Allis inhaler; but it is not my purpose in this short note to enter into the *pros* and *cons* of the open or closed method; I wish to describe a method which appeals to me on account of the simplicity of the apparatus which we all possess, since it consists merely of a Skinner's inhaler, a piece of gauze or Gamgee tissue, and a bottle with a gauze wick.

The Bottle and Wick.—An ordinary 6 oz. or 8 oz. medicine bottle answers the purpose well; a slit is made in the side of the cork to allow of the passage of a strip of gauze, which ought to reach to the bottom of the bottle, as, if this is the case, we are better able to regulate the flow.

The Inhaler.—The pattern known as Schimmelbusch's is perhaps as suitable as any; over it is placed a piece of stockinette bandage, which appears to answer more advantageously than flannel, and may easily and instantaneously be changed; lastly, we require a strip of gauze rolled into a ring, with a diameter sufficiently large to encircle the patient's nose and mouth; some use a piece of Gamgee tissue, with a hole to admit the nose and mouth, which answers the purpose equally well.

The Method of Administration.—First place the Skinner's mask over the patient's face as in using it for chloroform; allow a few drops of ether to trickle on the mask, and when the patient has become used to the smell, put the ring pad of gauze round the nose and mouth, resting the Skinner's mask upon it, and increase the rate of flow of the ether by tilting the bottle; it is necessary to keep this flow constant, either at a diminished or increased rate, according to the requirements of the case.

In conclusion, I may say I have used this method in children and adults: with children, for example, in circumcision operations it appears to be universally satisfactory, and with adults it answers well in thin anaemic females or extremely exhausted subjects, but in the plethoric man or fat woman it requires much patience and much ether to produce an anaesthetic state.

There are one or two points which ought to be observed during administration; it is well to keep the patient's head inclined, so that if mucus be secreted in excess it may not gravitate into the trachea and set up bronchial affections; should the inhaler inadvertently get too soaked, it also prevents any drops of ether getting into the fauces, and so setting up violent coughing; these are untoward incidents which may happen during first efforts, and it is just as well to bear them in mind; although I trust eventualities, which may happen in any method of producing anaesthesia, will not prevent the adoption of this method should occasion arise.

In a recent article on insurance companies, the *Daily Telegraph* says that of all those who work for these companies, few render such valuable service as do the medical examiners, but little is heard about them. The success of any company largely depends upon the skill with which the medical men connected with it do their work. There are some pitfalls in their path, but happily for insurance companies the medical profession as a whole possesses a very sensitive conscience, and the reports made are as accurate and as fair as possible. In everything to do with insurance work doctors as a whole have a very fine record. The tornado of scandal in connexion with insurance companies which ruined so many reputations in America not long ago, left those of medical men not only unsmirched but even unassailed.

AN OPEN CONTINUOUS DROP METHOD OF ADMINISTERING ETHER.

By ALEXANDER BROWNLEE, F.R.C.S.E.,
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With Remarks by

J. LYNN THOMAS, O.B., F.R.C.S.

ETHER, as is well known, has been given in various open and semi-open methods for many years. For the past twelve months I have been giving ether by an open continuous drop method. Last January I read a short paper before the Cardiff Division of the British Medical Association on the subject, and the present paper was in the course of preparation when Dr. Gardner's article appeared, in the *JOURNAL* of November 23rd. Miss Alice Magaw, an American lady anaesthetist, records 14,000 cases of ether administered by the drop method "without a death directly due to the anaesthetic," and I am indebted to Mr. Lynn Thomas who saw her practising it, for my initial instruction in it.

The apparatus is simple and inexpensive. The mask is slightly larger than the ordinary Schimmelbusch's and fits the face more closely. It is covered with about 16 layers of sterilized gauze. The drop bottle is an ordinary 6 oz. bottle, with a plain cork in which two grooves are cut. One groove is larger than the other, and a strand of wool passes through it, the smaller groove allowing air to pass into the bottle and the ether coming out by capillary action. By means of this simple arrangement, a steady drop is obtained. Although I have tried many of the ordinary drop bottles, I have not been able to get the same regular steady drop with one of them. I find it best to have 2 drop bottles, the grooves in the corks being cut so that a large drop is got from one and a smaller drop from the other. It is essential to bear in mind that ether should never be poured on the mask. If this be done, the result generally is that some ether gets into the patient's mouth, and there is an attack of coughing. In some of my early cases, in which I fell into this mistake, a rigid condition of the abdominal wall was the result, and I had to dispense with ether and "push" the administration of chloroform to overcome it.

The patient having been put on the table, the mask is placed on the face, and the administration commenced by slowly dropping ether on the mask until the patient becomes somewhat accustomed to the smell. The ether is then dropped more rapidly, and the mask surrounded, if necessary, by a towel until the patient's face is completely hidden. As the patient goes "under" the towel may be removed. The administration can then be continued with the smaller drop bottle. I am bound to say, however, that I find considerable difficulty in inducing anaesthesia in strong or alcoholic men by this means, and in the case of such subjects I begin with a mixture of chloroform and ether (CHCl_3 1 part, ether 3 parts), get the patient fairly well under with this, and then continue with ether alone. Once anaesthesia is established there is no difficulty in maintaining it. In the cases of children, women, and in men in any way emaciated or weak, complete anaesthesia can be induced by this method with ether alone in from three to ten minutes.

Up to date I have conducted 257 administrations, and the results have been, I consider, highly satisfactory. The ages and conditions of the patients operated on have varied within wide limits. Thus my youngest patient was 2 years old; my eldest 73. The cases have included all classes of patients—strong, healthy men, alcoholics, neurotic women, patients emaciated by malignant disease and other debilitating conditions, and serious accident cases. The shortest administration lasted seven minutes, the longest three hours. In the great majority of the cases the condition of the patient was very satisfactory. There is not the anxiety associated with the administration of chloroform, while many of the objectionable features of ether administration with the Clover or other closed apparatus are eliminated. There is less secretion of mucus than when the latter is employed, and the respiratory excursions of the abdominal wall are not so vigorous—a point not without importance to the surgeon in operations requiring fine manipulation. The breathing is invariably of a regular snoring type, the pupils

moderately contracted, and reacting very sluggishly, or not at all, to light, and the colour is good. The last point is one which presents a great contrast to the condition almost always prevailing when a closed apparatus is used—that of cyanosis.

As regards after-effects, post-anaesthetic sickness is lessened, and there is assuredly less shock than when chloroform is used. In the course of my administrations by this method I have only had one really bad case.

The patient was a boy aged 16, with advanced tuberculosis of the knee-joint; excision of the knee was performed, and the operation lasted an hour and a half. Anaesthesia was induced and maintained throughout with ether by the drop method. For forty-five minutes the patient's condition was good, and presented the ordinary signs of ether administered in this way, but at the end of that time it changed, the breathing becoming shallow and the patient pale and cold. The pulse, however, remained fairly good. The anaesthetic was withdrawn for fifteen minutes without any sign of consciousness returning, but he then developed a clonic condition of the muscles of the leg, and the operator desired more anaesthetic given. This was done, but as he soon showed signs of extreme collapse, it was withdrawn entirely and finally twenty minutes before the operation was finished. Half an hour after being returned to bed there was no improvement in his condition, and the ward sister remarked that he seemed to be very deeply under the anaesthetic. An hour after the termination of the operation the resident medical officer ordered a brandy-and-coffee enema, but it was not retained. However, after sleeping for three hours, he gradually came round, and ultimately made a complete recovery.

In contrast to this, I have had many cases where prolonged operations, involving considerable shock, have been extremely well borne.

A man of 46, suffering from carcinoma of the stomach, bore an extensive operation very well, although the ultimate result was unfavourable. In this case about three-fourths of the stomach was removed, together with a part of the duodenum, the hepatic flexure, transverse colon, and splenic flexure. The operation lasted two hours and twenty-five minutes, and the patient left the table with a pulse of 84. He did well for four days, but on the fifth day he developed symptoms of pneumonia and died within twenty-four hours.

Another case was one of prostatectomy in a man of 71. This patient was in very bad condition, as he was slightly under the influence of morphine and was suffering from toxæmia. The breath had a urinous odour. The operation lasted one hour, but he stood it well and made a complete recovery.

The longest administration—three hours—was for the removal of gall stones. The operation was well borne, and the patient made a perfect recovery.

One case, where death was possibly attributable to the anaesthetic, falls to be recorded. This was a case of goitre in a girl of 19. Anaesthesia was induced with the C.E. mixture and maintained with ether. The whole administration lasted seventy minutes, and there was no cause for any anxiety throughout. However, on the evening of the operation the temperature shot up, physical signs of pneumonia developed, and she died on the fourth day after the operation.

In summing up I may say I do not claim that this method of administering ether is perfect. It has, like other anaesthetics and methods of administering them, advantages and disadvantages, but the former in my opinion far outweigh the latter.

The only disadvantages I have experienced are (1) the difficulty in inducing anaesthesia in strong or alcoholic men in a reasonable time with ether alone, (2) the quantity of ether used, which is undoubtedly greater than when a closed apparatus is used.

The advantages are numerous (1) it is cleanly in the surgical sense. The mask can be boiled and sterilized gauze used. Contrast this with ether administered with a closed apparatus, where the patient rebreathes his own expired vitiated air from an apparatus which cannot be sterilized and is in fact with difficulty kept clean. (2) The cyanosis, violent respiratory movements, excessive secretion of mucus with the consequent gurgling, frothing, coughing, etc., are greatly diminished and in many cases entirely abolished. (3) There is less shock than when chloroform is used. (4) Many of the unpleasant after-effects commonly associated with ether administered from a closed apparatus, are done away with.

REMARKS BY MR. J. LYNN THOMAS.

The first time I saw the method used was at the hospital of the brothers Mayo, of Rochester, Minnesota; subsequently I saw it employed in Dr. Ochner's practice. Having seen the method used over a hundred times, I was favourably impressed with it, and it has been

adopted almost entirely in my practice during the last twelve months. Its advantages over giving ether in Clover's inhaler are:

1. There is less capillary haemorrhage during operations.

2. There is less sickness after operations.

3. The surgeon is not bothered with the bag, which may or may not be sterile, when operating about the chest, neck, face, or head.

4. The whole mask is easily sterilized.

5. There is much less anxiety to the surgeon when it is given by an anaesthetist of little experience.

In one of the cases referred to by Mr. Brownlee the operation lasted two and a half hours. After removing three-fourths of the stomach and a large portion of the duodenum, together with the whole of the transverse colon with its mesentery and glands, I had to occlude the ends of the duodenum, of the ascending colon, and the descending colon, and had to perform a gastro-jejunostomy under difficulties, because the stump of the stomach would not be brought out to the surface. I had also to perform an ileo-sigmoidostomy, and although the operation was very extensive the shock could not have been less. The patient recovered and was quite cheerful within six hours.

So far I have seen no case in which there has been any anxiety from the administration of the anaesthetic, either during the operation or subsequently. I consider it a method well worth trying, as it is simple and clean, but a little more expensive on account of the larger quantity of ether used.

MALIGNANT ENDOCARDITIS LASTING OVER SIX MONTHS WITHOUT BRUIT.

By ROBERT CAPES, M.R.C.S.ENG., L.R.C.P.LOND.,

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THE interesting point in the following case is that, although the illness and the pyrexia lasted seven months, at no time was a bruit ever heard, though the patient was seen by five medical men, all of whom were looking out for signs of heart disease. The rapid wasting at the end, with the enlargement of the liver and spleen, and loss of consciousness, made the theory of growth seem likely, though the continued rise of temperature for so many months was against it.

Hence although the petechiae, the pyrexia, and the slightly increased heart-rate all pointed to a possible fungating endocarditis, a positive diagnosis was not arrived at. Even towards the end, as the liver became quite as much enlarged in proportion as the spleen, the diagnosis still remained doubtful. Cases not infrequently occur in which for a long time there is no bruit, or only a very doubtful one; but it is very exceptional for a case of such prolonged duration to remain without a bruit throughout.

History.

J. M., a male, aged 64, was first seen on February 26th, 1906. He gave the following history: Had been confined to bed for ten days or a fortnight with influenza, followed by pain and swelling of the calf of the left leg, and subsequently by a similar condition, though not so severe, in the right leg. His condition corresponded with the history; his temperature was normal in the mornings, but occasionally in the evenings reached 99.4° F. or 99.8° F.; the heart sounds were normal and the breath sounds also, with the exception of slight crepitation at the base of the left lung. He was kept in bed until the condition of the legs had cleared up, when he was allowed to get about with an elastic stocking on each leg; and afterwards he went to Hastings for change of air.

On his return from Hastings, on March 20th, he said he was not feeling much better, his chief complaint being that he easily got tired. His temperature was usually over 99° F. in the evening, more especially after exertion, but was normal in the morning.

On April 11th he went to Matlock, and from there to Liverpool, and back to town about April 25th. He still said he did not feel any better, but resumed business.

On May 3rd I found he was still going up to business, but always returned home tired out, and with the evening rise of temperature.

On May 10th he was seen by Dr. Goodhart, who reported no physical signs of disease, condition of organs normal, and advised a further period of rest to be followed by change of air. Dr. Goodhart in a subsequent letter wrote: "I remember