(p. 123); and Aëtius expresses a similar opinion in very decided terms: "Siquis igitur mox in principio aut coarctatum, ea quæ efferentur cohibere aggrediatur, is majoris mali auctor erit."

Finally, Dr. Johnson says, "There is no disease which so forcibly impresses upon us the necessity of a *cathartic* method of treatment, in the widest sense of that term" (p. 125); while Aëtius says, "Adjuvare etiam oportet per sedem excretionem."

Aëtius, having condemned "repressive drugs", and pronounced them to be useless, tells us that the patients "evacuatione opus habent", and advises that, when the discharges are not freely carried off, vomiting should be excited by tepid water, and the patient be directed to vomit. He objects to sweetened water, but recommends "aqua verò oleo mixta", which "auget fluxiones"; and adds, "Per vomitus itaque opportunitam provocationem, vomitus ipse solvitur et cessat."

I may add, that Aëtius recommends, in the advanced stage of the disease, the moderate use of a mild astringent wine; and that an attempt should be made to procure sleep, for which purpose he prescribes a decoction of poppy-heads with starch to be administered as an enema.

It is worthy of observation, that every particular of the treatment of cholera recommended in the brief account of the disease given by Aëtius is sanctioned by the high and respected authority of Sir Thomas Watson.

ON THE USE OF OBSTETRIC INSTRUMENTS.*

By JOSEPH GRIFFITHS SWAYNE, M.D.,

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IN treating of obstetric instruments and their use, I intend to restrict my observations to those which are employed in assisting labour, and to give as much as possible the results of my own experience as to the best manner of using them. I propose taking the stages of labour in the order in which they occur, and describing the instruments which are adapted to each. In the first stage of labour artificial assistance is scarcely ever necessary, because delay in this stage seldom arises from mechanical obstacles, and is very rarely dangerous as it is in a protracted second stage. Still, however, it is sometimes necessary to have recourse to artificial dilatation of the os uteri. The cases requiring such aid are of three kinds. In the first class of cases we have to anticipate nature, and commence dilating the os uteri artificially; as, for instance, in the induction of premature labour. In the second class, we have to assist the powers of nature when they are inert and sluggish, or when they meet with a greater mechanical obstacle than they can overcome, as in protracted first stage from inefficient uterine action, or from rigidity of the os uteri. In the third class, we are obliged to hasten the natural process of dilatation on account of complications, such as convulsions, which render a speedy termination of the labour necessary. The instruments for accomplishing these purposes are various. They effect their object as dilators by powers of expansion which are the result either of inherent elasticity, or of their capability of being distended by fluids injected into them. Accoucheurs have at different times invented a great variety of these dilators; but those which have now come into common use are of three kinds, and have all in turns been employed by me according to the exigencies of each particular case. When the os uteri is so contracted that it will not admit the tip of the index finger, dilators of the smallest and most rigid kind must be had recourse to. For this purpose none are so good as tents made of the dried stem of the sea-tangle (*Laminaria digitata*). These are much more expandible, and therefore much superior to those made of gentian-root, which, until lately, were more commonly used than any other vegetable substance for the purposes of dilatation. They are readily obtained at most surgical instrument makers' shops, where small boxes are usually sold containing ten or a dozen pieces of tangle, most of which are about one and a half inch in length, and about the thickness of a porcupine quill. When one of these pieces of tangle is inserted into the os uteri, and left there for some hours, it will imbibe moisture and swell to the size of a man's fore-finger. They are easily introduced into the os uteri, but not so easily retained, for their hard polished surface causes them to be readily extruded, and it is generally necessary to keep them *in situ* by means of a plug. The best mode of introducing them is to pass them up through a full-sized speculum, by means of a dressing, or polypus-forceps. A soft silk handkerchief, previously well oiled, should then be passed up to keep the tent *in situ*, and the speculum withdrawn. Some improvements have of late years been made in the laminaria tents; for instance, Dr. Greenhalgh, at one of the meetings of the Obstetrical Society, in

1865, exhibited a new form of Uterine Tent, made from the stem of the *Laminaria spiralis*; the peculiarity being, that it was a hollow tube instead of the solid stick heretofore used; and, at a subsequent meeting in the same year, Dr. Barnes showed an instrument made for him by Messrs Weiss, for the purpose of facilitating the introduction of the perforated laminaria tent. It consisted of a wire stem, on which the tent was mounted, connected with a flexible tube like a catheter. The tent thus supported was introduced into the os uteri as easily as an uterine sound, and being there, by pushing up the flexible tube, the wire was withdrawn from the tent, leaving this *in situ*.

In cases, however, which require a greater amount of dilatation, something more efficient than the tangle tents must be used, and for this purpose nothing is better than pieces of compressed sponge. These may be made of various sizes and lengths, from an inch long, for instance, to as much as two inches and a half. They may be bought ready made; but, for my own part, I always prefer making them myself, which I do in the following manner. Having selected a conical piece of sponge of firm texture, and not exceeding two and a half inches in length and two in thickness at the base, pass a strong loop of tape through the base of the tent. This is for the purpose of withdrawing it after it has dilated to its full extent. The sponge, previously well washed and cleansed, is then to be dipped in a solution of gum arabic of the consistence of thick syrup. A metal stilette, previously well greased, is then to be thrust down its centre from the base nearly to the apex. For this purpose an ordinary kitchen skewer will answer very well. The sponge is then to be compressed firmly by a piece of strong whipcord, which is to be rolled round it very tightly in regular spirals, lying close to each other, from the apex to the base of the cone, where it is fastened off, much in the same way as a boy would wind a piece of string round a peg-top. After this the tent is to be put in an oven or on the hob of a fire-grate and left until it is quite dry. The cord is then unwound and the stilette withdrawn. After the inequalities on its surface have been removed by a rasp, the tent should be smeared with cerate or with spermaceti ointment, and is then ready for use. To apply it, it should be mounted on an uterine or an ordinary metal sound. If the os uteri be very high and the tent required be small, it will be more convenient to pass it up through a full-sized tube speculum. If, however, the os uteri be somewhat dilated, so as to admit one or two fingers, the tent required will be too large to introduce properly in this way. The best plan, then, is to place the woman on her left side, in the ordinary obstetric position. Having inserted the tips of the fore and middle fingers of the left hand into the os uteri, pass the tent up along the groove between the two fingers into the os uteri nearly as far as the base of the cone. A silk handkerchief, well oiled, is then to be introduced into the vagina as a plug to keep the tent in its place. When the plug can be inserted through a speculum the operation is rendered much easier, and is much less painful for the patient. After the tent has remained some time in the os uteri it absorbs the moisture secreted by the part, the gum arabic is slowly dissolved, and the sponge, thus released from the power which held it together, swells by its own elasticity to four or five times its bulk in the dried state, and thus most effectually dilates the canal of the cervix. There is one great objection to sponge-tents, however, and that is the horribly offensive odour which they acquire after they have been retained many hours in the vagina; and there is, indeed, some danger from absorption of the putrid discharges which are thus kept in contact with the mucous surface. On that account, I make it a rule never to leave one of these tents longer than twelve hours in the cervix uteri, but always remove it before that time, and substitute a fresh one if required. Certain improvements have recently been made in the sponge-tents, principally with a view to obviate this inconvenience. For instance, Dr. Aveling deodorises them by introducing into their central canal about two grains of finely powdered permanganate of potash, and this is found to answer the purpose very well. Mr. Ellis prefers carbolic acid, and uses the cacao butter or oil of theobroma, in preference to mucilage of gum arabic, for keeping the tent together. About a drachm and a half of pure crystalline carbolic acid is to be mixed with an ounce of the butter, whilst kept in a fluid state by being held over a small flame or placed in a hot water bath. In making the tent, the dried sponge is to be folded round a metal stilette, and compressed by winding tape round it. It is then to be immersed in the melted cacao butter "for a few seconds, so as to saturate only the outer layer of the sponge, and this it does, penetrating readily through the tape. The tent is then placed in a very cool place, and, after it has solidified, the tape is cut and unrolled. All that is now necessary to complete it is to dip it once more into the same preparation—which for this latter purpose must be much cooler than before, and of about the consistency of cream. By this means a smooth and uniform covering is given to the tent, and it is ready for use." (*Obstetrical Transactions*, vol. ix.) Mr. Ellis lays great stress upon the advantages of making these tents of an ovoid form, so as to

* Read before the Bath and Bristol Branch.

adapt them more readily to the shape of the cervical canal, and of a length not exceeding two inches.

By far the neatest and most ingenious method of dilating the os uteri is by the use of elastic bags into which water can be injected. We thus obtain a close imitation of the dilator which nature employs during the first stage of labour, viz., the bag of the waters. The best bags for this purpose are those which have been recommended by Dr. Robert Barnes. They are made of caoutchouc, and are of a fiddle shape, having, when distended, a narrower, cylindrical, central portion, dilating at each end into a bulging expansion. The object of this is to prevent the bag from slipping forwards into the uterus or backwards into the vagina. The bag is prolonged into a long narrow tube, with a stop-cock at the end to keep in the water when injected; the injecting medium is the ordinary Higginson's syringe. Three bags of different sizes are sufficient. To facilitate the introduction of the flaccid bag into the cervix uteri, a small pouch is attached outside, to receive the end of the uterine sound, which, guided by the finger of the left hand applied to the os uteri, serves to push the bag into the cervical canal. I have myself frequently employed these bags, and have found that, when they can be applied, they dilate the os uteri more speedily and certainly than any kind of tent; and they have this advantage also, that the vagina need not be plugged to keep them in place. The chief objection to them is the difficulty which there is in introducing them when the os is not in the slightest degree dilated. This can readily be understood when we consider that the bag has to be folded round the sound before it can be introduced; and it is always better to use the largest sized metal sound which can be procured, in preference to the ordinary uterine sound, because the extremity of the latter, being smaller, is much more likely to be forced through the India-rubber pouch which receives it.

The next subject for our consideration is the class of cases which require artificial dilatation of the os uteri. And the first cases which naturally engage our attention are those in which it is advisable to induce premature labour. Now, it is by no means necessary that the os uteri should be artificially dilated to induce premature labour, for we can bring on uterine contractions by the old methods of puncturing the membranes, or separating them partially from the uterus, or by the administration of the ergot of rye, or by the more modern plans of injecting water, or passing up a foreign body, such as a catheter, between the membranes and the uterus, or by electricity or galvanism. Nevertheless, I believe that in theory it is much more scientific to imitate nature and commence the labour by dilating the os uteri, than to invert the process and induce expulsive action previously to dilatation; whilst, in practice, it is undoubtedly much safer for the child, and most probably for the mother also. I therefore always commence the process by the dilatation of the os uteri, and for this purpose I begin with a small sponge or (if the os be very contracted) tangle-tent. After this has been left in the canal about ten hours, I remove it, and introduce a sponge-tent of larger size; and so on, leaving each tent in for about the same time. It usually requires three of these tents to dilate the os uteri to the size of a crown, and at least thirty hours will generally elapse before uterine contractions take place. If it is desirable to complete the labour more speedily, we may do so with the elastic bags; but, on the whole, I prefer in most cases the more slow but sure action of the sponge-tents. I usually find that when the os uteri is pretty well dilated efficient pains will set in; but, should this not be the case, they may be excited by puncturing the membranes and giving ergot. I do not think it is safe to continue the dilating process more than three days, as the long-continued presence of the tents is not unlikely to produce great irritation and inflammatory softening of the uterine neck. I once saw a case in which rupture of the uterine neck, ending fatally, was in all probability due to this cause. It was necessary in this case to induce premature labour at the end of the eighth month. For that purpose sponge-tents and India-rubber bags were used, but the os uteri was high and the dilatation difficult, and the process occupied nearly a week. At the end of that time, violent pains came on, and the child, which unfortunately presented transversely, was expelled without assistance in a doubled state. The great strain was too much for the already weakened fibres of the uterine cervix.

The next class of cases admitting of artificial dilatation are those in which the first stage of natural labour is protracted, either from inefficient uterine action or from rigidity of the os uteri. In by far the greater number of these instances, as all here present can testify, time and patience are the sole requisites, and the issue may be left to the powers of nature, which will at last accomplish her object safely. Nevertheless, we occasionally meet with an os uteri so minute or so unduly rigid as to require artificial dilatation. For this purpose, no dilators are so good as the caoutchouc bags, provided the os uteri be large enough to admit the tip of the forefinger. If it is too minute for this, it will be necessary to commence the operation with a tangle-tent.

In the third class of cases, artificial aid is required for the purpose of

hastening the natural process of dilatation, on account of some complication of labour, such as convulsions, which render speedy delivery necessary. In these cases the quickest method is the best, and no dilators are so good on that account as the elastic bags. The first size can generally be used, for the os is always dilated to some extent, accoucheurs being mostly of opinion that it is not good practice to deliver artificially, in such cases, unless some symptoms of labour have already set in. I witnessed a case of puerperal convulsions not long ago, in which these bags were of the greatest service in thus shortening the first stage of labour.

In my next communication, I propose treating of those instruments which are used to assist the second stage of labour, more especially the forceps.

THERAPEUTICAL MEMORANDA.

ON THE USE OF CHARCOAL RESPIRATORS IN DISEASES OF THE LUNGS AND AIR-PASSAGES.

By WILLIAM MARCET, M.D., F.R.S., Assistant-Physician to the Hospital for Consumption.

I HAVE been recommending the use of charcoal respirators to sufferers from phthisis and (as a rule) from inflammatory affections of the lungs and air-passages (larynx and pharynx); and these patients have undoubtedly derived benefit from this very simple means of protection against the admission of impure and cold air into their lungs.

The property of charcoal of acting as a sieve for the removal of fine particles of dust or other mechanical impurities contained in it, is, I believe, not so generally known or acknowledged as its power of purifying air from any gaseous contamination. I had an opportunity some years ago, when assistant-physician to the Westminster Hospital, of judging of the value of charcoal as a means of purifying air from the very finest dust. On this occasion, a chaff-cutter applied to me to be treated for chronic bronchitis of a severe form. He complained of the dust, which he was constantly breathing while at work, causing much irritation in the chest. It then occurred to me that, by wearing a charcoal respirator, my patient might be saved from the obvious cause of his illness. Having procured one of these respirators, made so as to protect both mouth and nose, I went to see the man at work. He was enveloped in a cloud of dust, mostly of the finest description, which was accumulating about the room to a considerable depth. On my standing close to the chaff-cutter, I was actually suffocated by the dust; but, from acquired habit, he could bear it. I then put on the respirator, and was astonished at finding that, in the thickest of the dust, I could breathe as freely and as comfortably as in pure air. The man took to wearing the respirator when chaff-cutting, and often since then gratefully acknowledged the benefit which he derived from it.

It is hardly necessary to insist on the importance of preserving diseased lungs from solid particles suspended in the air which is breathed. I need only remark that, especially in large towns, minute particles of various substances are constantly floating about in the air; and that they must be a constant cause of irritation, from which it is important to preserve inflamed or otherwise affected organs of respiration.

With respect to air contaminated with foreign gases, these may act either as a source of irritation to the lungs or throat, or be taken up into the blood through the lungs, interfering with the already reduced power of nutrition.

Charcoal retains a certain proportion of the heat of the expired air, imparting warmth to that which is taken into the lungs.

A number of my patients attending the Consumption Hospital, Brompton, have been wearing charcoal respirators of a rough construction, from which they derive relief and comfort. Mr. Rooff, of 7, Willow Walk, Kentish Town, has made, at my request, an improved charcoal respirator, which is inexpensive, and will, I think, be found to answer its purpose quite satisfactorily.

The following extract from Watt's *Dictionary of Chemistry* bears directly on this subject:—"Wood-charcoal and other porous forms of carbon have the property of absorbing large quantities of gases. . . . This property of charcoal has been applied by Dr. Stenhouse to the construction of ventilators and respirators for purifying infected atmospheres. In a pamphlet bearing the title *On Charcoal as a Disinfectant*, Dr. Stenhouse observes: 'Charcoal not only absorbs effluvia and gaseous bodies, but, especially when in contact with atmospheric air, rapidly oxidises and destroys many of the easily alterable ones.'"