

thank my colleagues at the Victoria Hospital, Dr. Ridge-Jones, Dr. Colcott Fox, and Dr. Drewitt, for allowing me to make use of their cases in the wards, and the house physician, Mr. Gale, for valuable help in the examinations of the blood.

Bloomsbury-square, W.C.

## A MODIFICATION IN JUNKER'S CHLOROFORM INHALER,

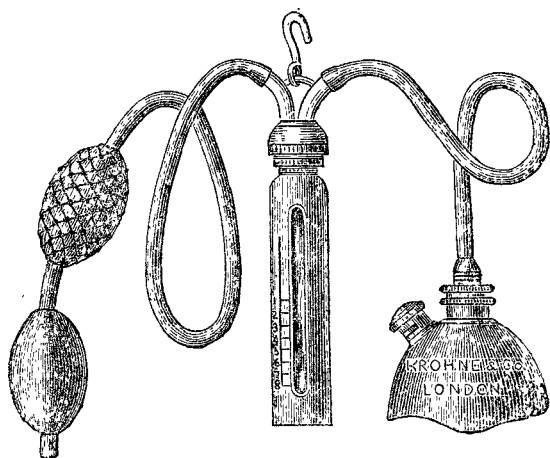
SPECIALLY DESIGNED TO PREVENT CERTAIN ACCIDENTS WHICH HAVE FROM TIME TO TIME OCCURRED WITH THE ORDINARY APPARATUS.

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JUNKER'S chloroform inhaler is now so widely used that there is no necessity to refer at any length to its merits or to describe it in detail. Many use this apparatus whenever chloroform has to be administered; some employ it only for maintaining anæsthesia during operations within the buccal or nasal cavities; there are others who consider the inhaler specially serviceable in obstetric practice, and only have recourse to it for allaying the pains of labour. But all will, I think, agree that Junker's apparatus is one of the most useful ever brought before the notice of the profession. I reproduce, for the benefit of those who are not fully acquainted with the ordinary inhaler, an engraving showing its main features.

FIG. 1.



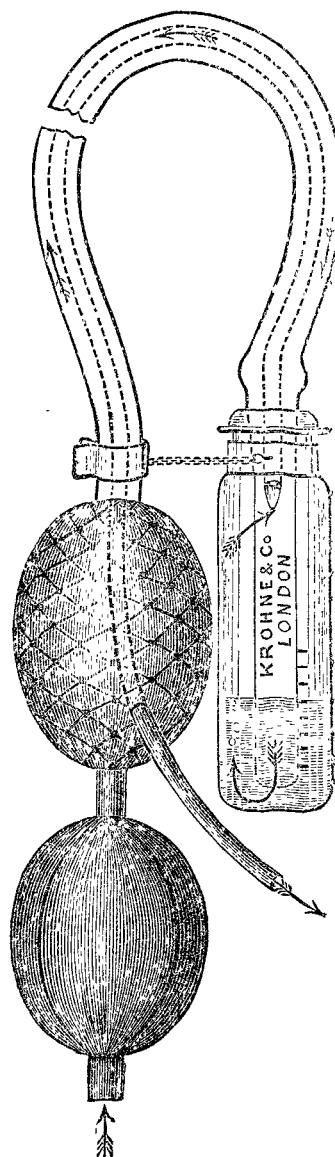
The bottle, filled to about one-third with chloroform, is suspended by a little hook from a button or button-hole of the coat of the administrator. Air is pumped through the anæsthetic by means of a hand-bellows, an indiarubber tube, and a long metal tube passing to the bottom of the chloroform bottle. The last-named must be imagined, as it is not seen—or, rather, is only partly seen in the engraving. The air, laden with chloroform vapour, escapes from the bottle by a short metal tube at its upper part, connected with an indiarubber tube terminating in a face-piece. The indiarubber tube leading from the bellows to the bottle may be termed the afferent or bellows tube; that leading from the bottle to the face-piece may be termed the efferent or face-piece tube. When it is desired to keep up chloroform anæsthesia without employing a face-piece, as in certain mouth and nose operations, the face-piece is disconnected, and the efferent tube, usually terminating in a bent metal mount, is passed into the buccal or nasal cavity.

Now there are two accidents which have from time to time occurred with this apparatus: 1. By an oversight the flexible afferent and efferent tubes have been attached to the wrong metal tubes of the bottle—i.e., the afferent or bellows tube has been fixed to the short metal tube of the bottle, and the efferent or face-piece tube has been connected to the long one. The result has been that liquid chloroform has been pumped into the face-piece, and in some cases, when a mouth- or nose-tube has been used, into the mouth or nose of the patient.

2. Owing to the bottle containing the chloroform being simply attached by means of a hook to the coat of the administrator, it is liable, unless constant care be exercised, to become tilted, so that the liquid gains access to the exit or efferent tube leading to the face-piece. This latter accident is most likely to take place if the bottle is suspended in such a manner that it is liable to touch the pillow of the table or couch when the anæsthetist is leaning over his patient. Should the administrator be tall, there is, of course, less liability to this accident than under opposite conditions.

Although the above accidents are rare, it seemed to me that it was worth while to try to prevent the possibility of their occurrence by some slight modification in the construction of the inhaler. Whilst fully recognising the undesirability of modifying such an excellent apparatus as that under consideration, I nevertheless felt that I might be excused if the attempt had the effect of overcoming the liability to

FIG. 2.



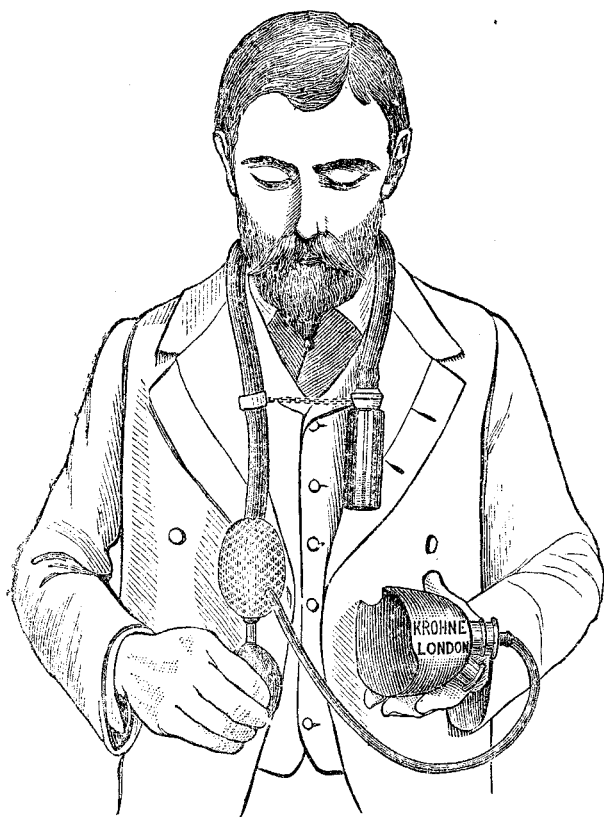
the accidents to which I have alluded. That such accidents have taken place there is ample proof; and, unfortunately, fatalities have on more than one occasion resulted. This, I trust, will be a sufficient reason for my adding another "modification" to the already long list. It may be argued that everyone who gives an anæsthetic should see that the apparatus is in order, and should be careful in the use of it. This must, of course, be admitted. But we are all of us liable to mistakes; operations are often conducted under conditions which are not the most favourable for forethought and attention to detail; and an apparatus such as Junker's may be so unexpectedly required during an operation that the anæsthetist may overlook the fact that the tubes have been reversed.

The accompanying engraving (Fig. 2) shows the modification which I have ventured to make in Junker's inhaler. It is a very slight one, and in no way interferes with the ingenious principle of the apparatus. Air enters, as usual, at a valve in the bellows. The indiarubber afferent or bellows

tube is considerably wider than that ordinarily employed. The same may be said of the long metal tube in the bottle to which the bellows tube is attached. Air passes through these, as in the ordinary apparatus, to the bottom of the bottle, and, when the bellows is working, bubbles up through the chloroform, as shown in Fig. 2. The arrows indicate the direction of the air-currents. The air, now laden with vapour, returns from the bottle by very much the same route as that by which it entered, but through tubes contained within those already described. *The efferent tube travels back—in fact, through the afferent tube, the space between the tubes serving for the afferent current.* The efferent system commences at a small orifice in the upper part of the long metal tube of the bottle. To the inner aspect of this orifice in the wall of the long tube is soldered one end of a short metal tube of such calibre as to be readily contained within the larger tube. This small metal tube quickly joins the indiarubber efferent tube, and thus allows of a communication between the latter and the interior of the chloroform bottle. The rubber efferent tube passes on and on through the larger afferent tube (as shown by the dotted lines) till it emerges from the hand-bellows. Arrows indicate the efferent current. By this plan there is no possibility of the mistake above alluded to being made; the inlet and outlet tubes of the bottle cannot have the wrong indiarubber tubes connected to them.

The modified inhaler is very conveniently worked, as shown in Fig. 3. The wide afferent tube, which contains

FIG. 3.



the efferent tube, is passed round the neck. Attached to the upper part of the bottle there is a short chain, at the free end of which there is a clip for grasping the afferent tube. In this way a kind of collar is formed, and the whole apparatus is rendered much less mobile than usual. The bottle is so high up that there is no likelihood of its getting tilted by the pillow, even though the anaesthetist be of short stature. In addition to these points, I have found that there is a great convenience in being able to work the inhaler without the two long flexible tubes ordinarily supplied with it. When space is limited, and when there are several assistants, as in protracted and difficult jaw and mouth cases, the long tubes of the ordinary inhaler are liable to become entangled, or kinked, or to get in the way of the operator.

I may say, in conclusion, that I have used this apparatus for the last nine months, and find that it answers my expectations in every respect. Messrs. Krohne and Sesemann, of Duke-street, Manchester-square, are the makers.

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## THE TREATMENT OF THE PEDICLE IN OVARIOTOMY.

By SKENE KEITH, M.B., F.R.C.S. Ed.

WHEN we review the history of ovariectomy we find, in the treatment of the pedicle, a beautiful example of how our methods improve with increasing general knowledge; and how experience gained, perhaps in different branches of practice and of science, assists us in many ways. When we look back, with our increased knowledge and experience, and condemn some form of practice, we must not therefore judge and disparage those who adopted it; for although we now know that it is not desirable, yet at the time it may have been better than any other. It is easy to criticise the past by the knowledge of the present, and in doing so there is a proneness to forget that we also would, in all probability, have congratulated ourselves that we were doing the best for our patients had we followed a like practice. In the early days of ovariectomy it was evidently supposed that the distal end of the pedicle would, or might, slough, or that it would not be safe to leave a ligature in the abdominal cavity without having some means of exit kept open for its removal. The ligatures, therefore, were left long, and were brought outside at the lower angle of the wound. There was usually more or less suppuration, from which it was concluded probably that the distal portion of the pedicle became disintegrated. The ligatures loosened and came away easily, though at times their withdrawal was effected with much difficulty. Bearing in mind what was known of this subject thirty years ago, it was a great advance when, instead of allowing the pedicle to slough inside the abdominal cavity, as it was supposed to do, and sometimes undoubtedly did do, it was fixed by means of a clamp, so as to allow of its sloughing outside, and in a position of comparative safety. The results obtained by most surgeons with the clamp were not particularly brilliant, owing to want of knowledge and appliances. The results would have been not only successful, but brilliant, had it been recognised that septic formations about the clamp could have been prevented by the use of antiseptic dressings; or if formed, their access to the raw surface of the wound or passage into the peritoneal cavity averted. We have abundant evidence of this at the present day. Every now and again a woman, the subject of ovarian disease, presents herself for operation, who also suffers from prolapsus uteri. In those cases the womb must be fixed up by a clamp on the pedicle; and the patient recovers as easily and as well as when the pedicle is treated intra-peritoneally. A greater advance in every sense of the word was made when Baker Brown used the actual cautery. It must be remembered that no one at that time could explain why the short or long ligatures or the clamp seemed often to be responsible for the death of a patient. The value of rigid cleanliness—asepsis—was not thoroughly and generally understood, though it was evident that some surgeons did understand its value. It was not till Sir Joseph Lister insisted on the destruction of septic agents that there was any general and real advance in this direction; and it has since been found that they can be excluded or rendered harmless if everything be perfectly clean. Baker Brown did away with ligatures and with clamps; and by preventing bleeding from the pedicle by the hot iron, he eliminated one great source of danger and of death. The cautery gave unrivalled results, and its universal adoption in the treatment of the pedicle was, I believe, alone prevented by increase in our general knowledge, teaching us to have our ligatures in a condition of perfect cleanliness. The cautery has still advantages over the ligature, the chief one being that if there be bleeding it will occur at once, and not, as is the case with the ligature, some time after the abdomen has been closed. When the pedicle is specially broad the cautery does admirably. On the other hand, when thin and easily compressible, the ligature is as safe, and perhaps somewhat more easily applied. The method of use is simple; the pedicle is compressed by a clamp, and in spite of the numbers that have been made, that of Baker Brown remains the best. The blades are screwed together as tightly as possible, and a damp towel is placed below the clamp, to prevent burning of the skin. The cautery irons should be large, so as to give out great heat; and