and that of mine (supplied me by Mr. J. H. Montague of New Bond Street, London, who also makes the glass tubes) is very much larger.

MIXED WITH NITROUS OXIDE.

In giving a mixture of nitrous oxide and either of these anaesthetics with this apparatus, the simplest way is as follows: The rubber tube from the nitrous oxide cylinders is attached to the tap, the gas is turned on, the mask applied to the face, and the patient is instructed to commence breathing at once. After a few seconds the rubber gas tube is detached from the tap, and replaced by the charged phial, which should be in this case rather more quickly emptied; satisfactory anaesthesia rapidly follows.

CHLORIDE OF ETHYL-ETHER SEQUENCE.

About nine months ago I tried the method of introducing chloride of ethyl into the ether chamber of a "Clover" inhaler through its ordinary filling orifice by first measuring into a minim measure glass a definite quantity, pouring it in and rapidly replacing the plug. This had the advantage of simplicity and could be used in "Clovers" not having a tap on the angle-mount.

On experimenting, I experienced every time a peculiar and unpleasant metallic taste and smell in the vapour, and even when administering it in this way to patients, was distinctly conscious of it, this is absent when given through the tap in angle-mount. The evaporation of the chloryde of ethyl in a large metallic chamber may account for this. I may say I tried two different "Clover" inhalers, with the same results.

The cooling of the ether chamber was very marked. But apart from this, it is a distinct advantage to be able to commence this sequence with the ether chamber ready charged with ether. There should be no smell of ether if the apparatus is well made, and the working parts occasionally taken out and vaselined. The ether chamber is now of course between the angle-mount and facepiece.

According to my experience a better induction results if the ether be gradually turned on quite early; in fact, a few seconds after the ethyl chloride has begun to be inhaled, so as to produce a mixture of the vapours. This is easily done by this method and the manipulations are simple. I am convinced that the less ethyl chloride used the better, 1½ c.cm. to 2 c.cm. being often ample if the mask fits well and the ether is turned on soon enough.

CONCLUSIONS.

The following is a summary of the advantages of this inhaler and methods of administration:

1. A measured quantity of the anaesthetic fluid is given, varying according to the age of the patient and taking into consideration the time of anaesthesia required, the nature of the operation, etc. This gives accuracy of dosage and is useful for making observations and notes for future reference. It should also help to insure against an overdose.
2. The anaesthetic can be given gradually, and that after the facepiece is adjusted; this prevents coughing, holding the breath, etc., and produces a satisfactory induction.
3. More can at any time be added if necessary, either by projecting the fluid through the large open tap or by measuring off more in the tube; also, either can be done without having to remove the facepiece, which is an advantage in some cases in which air-exclusion is necessary. On the other hand, the tube need not be emptied if satisfactory anaesthesia is likely to be produced by less than its contents. In hospital practice this is kept over for the next case for purposes of economy.
4. In the event of voluntary struggling—as is sometimes the case in children and very nervous subjects—it is easy to empty the tube by tipping it up with one finger, both hands being available to hold the mask and steady the patient.
5. If the tap is turned off before the tube is fixed on the patient will not experience the slightest smell of the narcotic when the mask is applied. This is of importance in nervous patients.
6. A perfectly free air-way, no lint, sponge, or wool to breathe through, and no freezing vapour near the patient's mouth or nose, as all evaporation takes place in the metal tube and rubber bag.
7. Nitrous oxide can be given as a preliminary.
8. By retaining the ether chamber these drugs can be given with ether or used as a sequence. All that is necessary is the glass tube.
9. Bromide of ethyl could be given with advantage by this apparatus, as it is important to be able to measure the quantity of the drug.
10. Economy in the amount of anaesthetic used.

I have given chloride of ethyl by this method and apparatus, using the paper bag invented by Mr. Richard W. Lloyd, and made by Messrs. Barth and Co., with satisfactory results, and recommend its use (instead of the ordinary black rubber one) in the case of patients suffering from tuberculosis. In purchasing a new apparatus it is as well to have the bag and facepiece of red rubber, as it stands sterilization, and as far as my experience goes these drugs have no action upon it.

In conclusion I would state that I have used this apparatus and method about 500 times, with results so satisfactory that I may perhaps be excused adding another paper to the now large accumulation on this subject.

INTRASPINAL COCAINIZATION.

BY ALFRED S. GUBB, M.D.PARIS.,
Mustapha Supérieur, Algiers.

THE method of inducing anaesthesia of the lower limbs by the introduction of small doses of cocaine into the spinal canal is one of which we have heard a great deal, though, so far as I can judge, it does not seem to have been received with favour in England, and but very few practitioners can have had an opportunity of seeing it put in practice. For this reason I thought a few notes on a recent observation here might prove of interest. The idea has hitherto always excited a feeling akin to horror in my mind, for I had not got over the dread of possible consequences as the result of penetrating that *sanctum sanctorum* the spinal canal. The news that Dr. Vincent's *chef de service* was about to amputate a thigh at the Civil Hospital at Mustapha under the influence of "rachis-cocainization," as it is styled, raised my curiosity, for I had never seen the method in operation. The patient was a man about 35 years of age, who had some time previously sustained a severe crushed and lacerated wound of the left knee. This had suppurated, and the removal of the limb was judged indispensable.

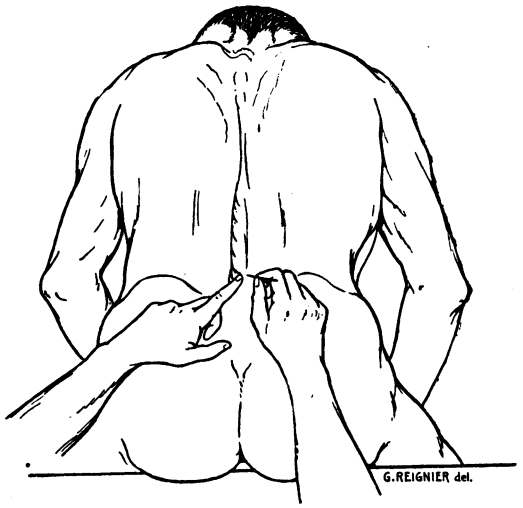


Fig. 1.—Position of surgeon and patient when making the injection.

He was naturally rather nervous, but was too much debilitated by the consequences of his complicated injury to testify much objection. He was placed in the sitting position on the operating table and the skin over the lower part of the back was carefully disinfected in the usual way. The long platino-iridium needle was sterilized by heating to redness in the spirit lamp, and the operator, seated at the patient's back, selected a spot in the spinal column on a level with a line joining the two iliac crests. Guided by a finger placed on one of the spinous processes he plunged the needle boldly into the tissues to a depth of about 2 in. The needle met with no resistance, and on disconnecting the syringe cerebro-spinal fluid escaped in rapid drops. One c.cm. of cocaine solution, contained in a sealed glass bulb, equivalent to 2 cg. (about a third of a grain) of the alkaloid was promptly poured into the syringe and injected into the spinal canal. The

puncture was dressed with cotton steeped in traumaticine (a solution of guttapercha in chloroform).

The patient was then placed on his back and a rag placed over his nose and eyes to give him the illusion of inhaling something, and in five minutes the operation was commenced. It was performed in a very leisurely way and took at least half an hour. The patient never gave the slightest indication of pain or even discomfort throughout the operation proper; in fact, he remained perfectly quiet, breathed evenly, and his pulse was steady and firm.

I must confess that it gave me a little unaccustomed shudder to follow the operation, knowing that the patient was quite conscious, and this feeling was enhanced by the fact that he resented the application of the elastic bandage and Esmarch's tourniquet, for it seems that though this method of cocainization abolishes sensitiveness to the knife it leaves that to pressure unaffected. Even the grating vibration of the saw elicited no reaction on the part of the patient, and he frankly admitted when the stump had been dressed that he had not felt anything.

This was the 231st occasion on which intraspinal cocainization had been resorted to in Dr. Vincent's service, and there has been only one mishap, and this one not due properly speaking to the method *per se* but to the clumsiness of an inexperienced assistant, who allowed the needle to become contaminated without calling attention thereto.

I have since experimented on the cadaver, and I found no difficulty in introducing the syringe except in one instance, when I succeeded an inch or so higher without difficulty.

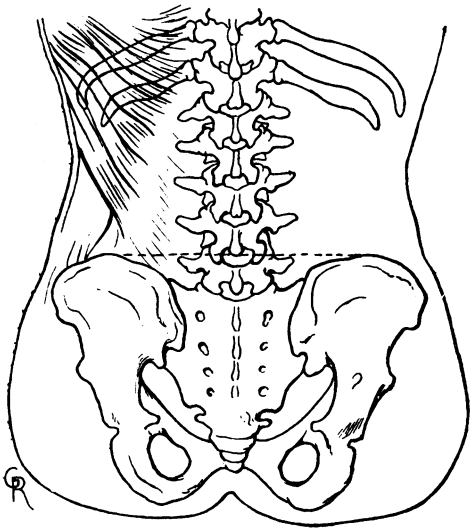


Fig. 2.—The dotted line shows the vertebra corresponding to a line drawn between the iliac crests.

What the future of the method may be I cannot say. I doubt if many surgeons would have the courage to have recourse thereto until they had seen with what ease, certainty, and satisfactory result it can be done, but my own opinions on the subject have been greatly modified by this experience. It is as remarkable in its way as must have been the earlier observations with chloroform and ether. Apart from the theoretical risk of septic infection, spinal cocainization appears to present many advantages over general anaesthesia, which, moreover, is by no means devoid of risks of its own, witness the numerous deaths that occur annually in Great Britain from this cause. Its simplicity, the readiness with which the patient is prepared for the subsequent operation—for it only takes two or three minutes—and the fact that there is no struggling, no respiratory disturbance, or subsequent discomfort are certainly very striking. The skin of the back is comparatively insensitive, so that the pain from the puncture is quite trifling.

Since writing the above I have been afforded several opportunities of performing the operation myself on the living subject. I chose the space above the last lumbar vertebra, which, when the patient is mrde to bend forward, affords plenty of room if the needle be directed from below slightly upwards and inwards. I experienced no difficulty in attaining my object. I was advised that it is well to allow a certain quantity of cerebro-spinal fluid to escape before making the injection, and some operators dissolve the alkaloid in the fluid itself instead of in sterilized water.

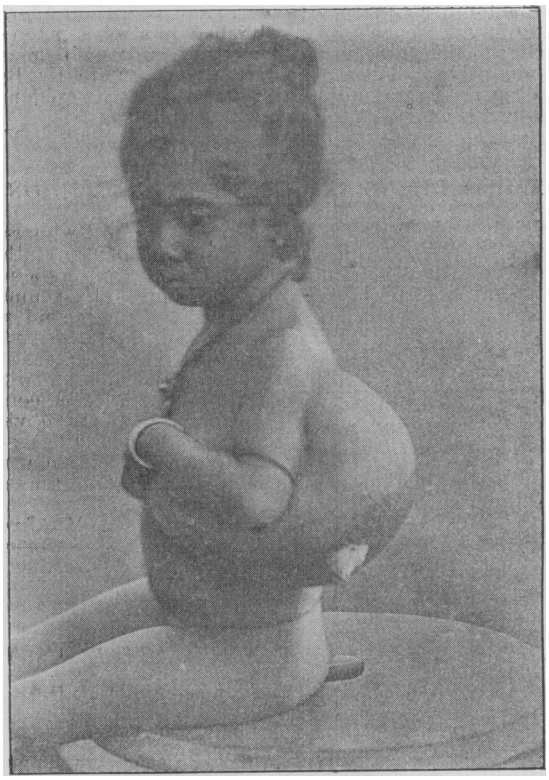
On one or two occasions there was a little vomiting, but as the patient is quite conscious it gives rise to no trouble, and is readily got rid of without hindering the progress of the operation. In a case of operation for hernia the patient left the theatre smiling, asking if she might not be allowed a square meal as she was hungry, showing the slight constitutional effects of the injection and the total absence of shock.

MEMORANDA:

MEDICAL, SURGICAL, OBSTETRICAL, THERAPEUTICAL, PATHOLOGICAL, Etc.

A CASE OF CYSTIC HYGROMA: REMOVAL: RECOVERY.

A girl aged 7 was brought to the Mayo Hospital in November, 1903, for a tumour in the left axilla, which the mother stated had been present since birth and had grown with the growth of the child until it attained the size represented in the photograph. It extended from the scapula behind, round the side of the thorax, to the outer border of the sternum, and upwards to the apex of the axilla. It was soft and to some extent compressible, but it did not appear that its bulk was lessened by pressure. It had bled occasionally from a point in its lower border, which is marked in the photograph by a plug of absorbent wool applied to check the oozing. The tumour was painless, non-pulsatile, not affected by coughing or crying, and the skin over it not altered in appearance; it did not apparently pass beneath the outer border of the scapula.



As the mother still desired that the removal of the tumour should be attempted, although the risks of any operation were pointed out to her, I decided to excise it. In order to control possible haemorrhage an elastic cord was tied tightly round the base of the tumour and an oval incision was made through the skin beyond this ligature. On cutting into the tumour, it was found to consist entirely of multiple cysts having fairly thick walls of connective tissue, which were marked in places on their inner surface by linear thickenings or puckerings. On loosening the elastic band there was no arterial and not much venous bleeding. There appeared to