error of not detecting a calculus that is present, cases have been met with where a very evident shadow was produced, and on thorough exploration no calculus has been found. To conclude: most surgeons are agreed that it is better where the signs are evident not to allow skiagraphy to have a casting vote; I have had myself two cases in private, where I had no doubt about a stone being present, refuse operation simply because *x* rays showed nothing.

Having decided to expose the kidney to remove the suspected stone, the question arises as to the best method of doing so. This should be through a lumbar incision, and, of course, behind the peritoneum. It has been advocated in cases where the pain present cannot be definitely referred to one or other organ to do a preliminary abdominal section before removing the stone through a lumbar wound. Such instances must be rare in which the pain cannot be fixed more on one side than the other, and when this is determined it behoves us to explore the more painful side. Another thing to be remembered is that even when the kidneys are palpated within the abdomen, no more certain information may be gained if the stone is a very small one. Where a stone has been felt after abdominal section it has been suggested to there and then remove it, on the supposition that no more dangerous infection of the peritoneum will have to be dealt with, say, than in dealing with an appendix abscess. This risk should not be taken, and this method cannot be sanctioned except under most unusual conditions.

The incision usually employed for performing nephrolithotomy is the oblique lumbar one, which begins above, just below the twelfth rib at its junction with the outer border of the erector spinae, and extends forwards for about 4 or 5 in. in a line directed towards the anterior superior spine. To get more room this can easily be extended above and below as may be necessary to explore the ureter, or when there is considerable induration of the perineal fat preventing satisfactory exposure through a smaller opening. Often the loin incision is made more transverse, but this involves more muscle section, and is difficult to extend.

With a view to cause as little damage as possible to the muscular wall, Abbé and Mayo Robson have exposed the kidney on McBurney's principle—the external oblique is split in a line from the tip of the last rib to the inner side of the anterior superior spine, and the internal in a line from the ninth costal cartilage to the posterior superior spine. I have not tried this incision, but its advocates claim that it gives plenty of room to thoroughly explore both kidney and ureter. In these incisions the loin must be opened out by an air-cushion or sandbag under the opposite loin.

Another incision that may be employed is that used by Edebohls for nephropexy. Here the patient is put in the prone position with an air cushion beneath the abdomen to push the kidney into the wound. The incision is along the outer border of the erector spinae; the fibres of the latissimus are separated, the lumbar fascia cut through, and the perineal fat and back of kidney are readily seen. I have used this method for one case—that of the lad K., from whose kidney I removed 21 calculi, one large branched, and the others small, which I here show you. Although this was on the right side there was some difficulty in bringing the kidney well up into the wound, but this was in the main due to considerable induration of the perineal fat. I think it might be more difficult on the left side, and, in any case, would be so when the distance between the last rib and iliac crest was limited.

In all these operations in freeing the organ after exposure care must be taken not to drag too violently on the structures composing the pedicle, for tearing through of the renal vein has been recorded.

Having got the kidney up into the wound and steadying it between the thumb and finger, the question comes where to incise it. It is an established fact that wounds through the parenchyma heal very readily, so such an incision is usually selected. This should be a vertical one about the convex border, passing well into the pelvis so that the finger can be easily introduced to make a thorough exploration; the bleeding, which may be free at first, very readily stops with pressure. With reference to this incision, Kelly has drawn attention to Broedel's researches on the distribution of the renal vessels in the parenchyma. There are two sets of arteries, the larger set supplying the whole of the anterior aspect and a part of the posterior, and a lesser set for the rest of the posterior aspect. If the incision is made in the line between these two there should be very slight haemorrhage; this line will be situated on the posterior surface about

one-fourth of its breadth behind the outer border. This line, Kelly says, is much more defined when the renal pelvis is distended, and accordingly he has suggested artificially producing such distension by catheterizing the ureter and injecting fluid.

A systematic investigation of the pelvis and calices should be made with the finger and sound, and any stone removed with forceps or scoop. The surgeon should not omit to pass the sound down the ureter, so that no stone may remain behind lodged in this position.

If the stone is felt at the start in the pelvis, should it be cut down upon? Apart from the fact that great care must be taken in making such a cut, owing to the tendency to divide a branch of the renal vein, wounds here in the past have been frequently followed by a fistula, and as such a sequel is unusual with wounds through the parenchyma, the latter has been the approved method. Morris is, however, of opinion that, provided the wound in the pelvis is sutured, it tends to heal readily enough.

In suturing up the wound in the kidney in the ordinary way the stitches frequently, on tying them, cut through. To avoid this, in my last two cases I have again followed Kelly, who advises the use of mattress sutures; the stitches used have been No. 1 catgut.

In the case we are considering to-day the operation had another termination. The extreme thinning of the cortex, and the riddling of what remained of it with calculous particles, showed us that the kidney was completely disorganized, and any attempt at saving it useless. The only course was to do nephrectomy, which was thereupon done.

The after-progress of the case has been most satisfactory, both as to the condition of the wound and as to what was of greater importance—namely, the secretion of urine. Although there was sufficient amount of urine being passed before the operation—and from the state of the left kidney, presumably, all this came from the right side—yet there was just the element of doubt as to the effect of doing the nephrectomy. Had we considered before the operation the possibility of having to nephrectomize our patient, we might have ascertained the amount of secretion from the respective kidneys. This may be done by a Luys's separator, which divides the bladder into two halves, as some of you saw me do in another kidney case recently. That the removed kidney did not secrete any urine is shown by the measurements and quality since the operation. The average amount passed has been 36 oz., having 6 gr. of urea per ounce, the same as before operation. The urine now has a specific gravity of 1010, is acid, without any albumen or pus.

NOTES ON LOCAL ANALGESIA.

By ARTHUR E. BARKER, F.R.C.S.,

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OF late so many inquiries have reached me by letter and otherwise in regard to the method I occasionally employ for the production of local analgesia, and these are so difficult to answer offhand that it appears desirable to publish the newest experiences in this field. This seems the more necessary as, since a former paper, many details have been worked out and fresh observations made which simplify and perfect the procedure very materially. My own part in formulating the method has been a modest one, and yet many who have either used local analgesia themselves or have seen it employed by others state that my results are in most respects far more complete than they have obtained or seen elsewhere. If this be so the reason is not far to seek. There are, scattered through the literature of local analgesia in different countries, many most interesting observations—anatomical, chemical, pharmacological, physiological, and clinical—bearing on the subject. Some of these have apparently escaped the notice of those who have practised local analgesia or have not perhaps been fully appreciated. I have merely studied these, tested those which required it by careful experiment, and endeavoured to combine them all into a simple clinical procedure embodying their good points. This has resulted in the formulation of a procedure which I venture to think is an addition of some importance to surgery.

A careful study of the principles underlying the method is indispensable for efficiency, together with considerable experience in a variety of cases. This is a little laborious at first, but extremely interesting and well worth the trouble.

To obtain the best results from the injection of β eucaine many facts have to be kept in memory, although this drug is the only local analgesic employed in the method under consideration. We have first the discovery by Corning in America, and simultaneously (1885) by Feinberg, in Russia, that cocaine applied to the trunk of a sensory or mixed nerve abolished sensation throughout the whole distribution of the same. The practical significance of this last fact is still apparently not fully realized by many who try to carry out the procedure in question. Schleich, who undoubtedly did much to popularize local analgesia, gave it too little weight in his rather cumbersome procedure. But later Cushing gave it its full value in his very interesting observations. Of equal importance was the discovery of Oberst that if the circulation of a part was retarded by a ligature or the application of cold the action of the analgesic compound injected into it was maintained and even intensified so long as the circulation was controlled or retarded.

Based upon these observations the employment of local analgesia has grown considerably during the last few years and has improved in proportion to the full recognition of the importance of each. But its employment has been limited by two considerations. First, by the fear of the toxic effects of cocaine which restricted the use of this drug to small quantities over comparatively narrow fields of operation, and, secondly, the relatively short analgesia in those parts of the body where Oberst's method of restraining the circulation by band could not be applied. But the discovery of β eucaine which is far less dangerous than cocaine, while possessing analgesic properties little if at all inferior to it, has removed the first of these objections while Braun's suggestion of the concurrent use of adrenalin for the purpose of securing a retardation of the circulation equivalent to Oberst's constriction of the part has removed some of the objections both as to the duration of the analgesia, the extent of the area which can be dealt with, and the amount of the toxic drug to be employed.

It is now well known—Schäfer, Moore, and others—that adrenalin possesses the property of constricting the smaller vessels of a part into which it is injected. Such a part is seen to be blanched and anaemic, as though emptied of blood by constriction or cold. Now, when adrenalin combined with β eucaine is injected, several very notable effects are produced. By the retardation of the blood flow the eucaine remains in the area injected, and is not washed away at once by the blood stream into the general circulation. From this it follows that its effects on the nerves of the part are intensified and prolonged to a large extent, and therefore if combined with adrenalin less of the drug is required to produce a full effect. Moreover, as it is thus retained in the tissues locally for a long time, often hours, it only reaches the circulation, and through it the higher nerve centres very slowly, if it ever reaches them at all in the form of β eucaine. For there is reason to believe (Braun) that before it is parted with by the local tissue elements it is altered in their protoplasm into other compounds innocuous to the nerve centres. At any rate, it has been found experimentally that a dose of cocaine capable of rapidly killing an animal if injected alone, is quite harmless if combined with adrenalin.

A knowledge of these facts enables us on the one hand to employ less of the drug when adrenalin is added, seeing that its analgesic action is thereby intensified, and on the other justifies us in increasing the area of injection, and if necessary the amount of eucaine, seeing that its general toxic effects are restrained or abolished. As a matter of fact, I have several times injected more than 6 gr. of β eucaine combined with adrenalin in adults where large areas had to be dealt with, no ill effects being noted. Of course it is necessary to be very careful with a new drug, and I prefer to regard 6 gr. as the maximum, especially as in practice it suffices for the largest operations. To utilize these data in clinical work we have to keep in view several questions.

1. How to reach on the proximal side of our area of operation the nerve branches supplying it, and how to saturate them as far as possible with the solution containing the drugs mentioned.

2. How far we can dilute the latter so as (without forfeiting their potency) to have enough of the medium to carry the active agents to all the parts required, even if extensive.

3. How to maintain the analgesia long enough for any ordinary operation without being obliged to infiltrate further, as in the older methods (Schleich).

1. The first of these questions is mainly an anatomical one, best met by considering the course and distribution of all the

possible nerves which supply a part. There are, of course, gaps in our knowledge of the ultimate distribution of many nerves, notably of those supplying the parietal peritoneum; but these are being steadily filled up by the anatomists (vide Ramström, Dogiel, Timofejew).

In reaching the nerves of a part hollow needles of varying length are thrust into their immediate neighbourhood or across their course at some distance from the area of operation, and thus the fluid injected through them is carried as near to them as possible. We can also make use of fascial planes and areolar spaces, along which the fluid will pass easily. For instance, in removing the vermiform appendix in the stage of quiescence we have to deal with the skin, muscles, parietal peritoneum, and its reflexion to form the mesenterium of the vermiform appendix. To render the skin and areolar tissues insensitive is a simple matter. We have only to inject a somewhat larger area of these than we are likely to cut (= local analgesia). The muscles are not quite so easy to deal with. Here we enter a very long, blunt, hollow needle through the skin already infiltrated about 2 in. outside the line of incision at its lower end and push it slowly upwards between the layers of the muscles, injecting slowly as we go until we have nearly reached the costal margin and used 10 c.cm. of fluid. From the upper end, in the same line, the needle is now pushed downwards through the deeper layers as near the peritoneum as possible, using another 10 c.cm. We thus cross the line of the nerves supplying both muscles and peritoneum (Ramström). In some cases I have injected the subperitoneal tissues underneath the caecum and appendix, either from above the iliac crest or from below Poupart's ligament, just inside the anterior iliac spine. I had done this previously on the cadaver with blue injecting fluid and been surprised at the way the fluid spread along the iliac fossa.

This is simply an illustration of how the nerves of a part can be reached ("regional analgesia"). For the groin no better guide can be taken than some diagrams published at the proposal of the subject by Cushing. These are especially valuable for radical cure of hernia and for removal of the testicle, of which I have had several cases in markedly phthisical patients, whose lungs would hardly have tolerated either chloroform or ether.

As to abdominal organs, it appears almost certain (Lennander) that they are *per se* insensitive to pain so far as they are independent of the parietal peritoneum in any of its reflexions. For instance, I have watched a patient's face while inserting a trochar in several directions deeply into the liver, and it showed complete indifference. When asked, he stated that he felt nothing. The incision through the abdominal wall had been previously made under eucaine. Again, I have several times divided the vermiform appendix with the actual cautery without pain, though the analgesic fluid had only been applied for the parietes. But a drag on the mesenterium or on adhesions about the vermiform appendix is felt as gripping unless the injection have reached them.

It is plain, then, that our injection must in every case be carried out with special reference to the nerves of the part (regional analgesia).

2. The strength of the β eucaine solution has only been settled after much practical experience. We must, on the one hand, keep within the safe dose of the drugs, and on the other have at our disposal a large enough quantity of the fluid medium to render it possible to spread the analgesic agents over large areas. If we suppose 6 gr. of β eucaine to be about the full dose when combined with adrenalin, a good deal of fluid will be required. My own experience (now a long one) leads me to the conclusion that for ordinary surgical work the following solution answers well:

Distilled water	...	...	100 c.cm. = 3½ oz.
β eucaine	...	...	0.2 gram = 3 grains.
Sodium chloride	...	...	0.8 gram = 12 grains.
1 pro mille adrenalin chloride solution	...	...	m xx

The actual strength of adrenalin in this solution is one in two hundred thousand (1 : 200 000).

All this quantity of fluid can be used in an ordinary case if necessary, and is quite sufficient for most. But I have often injected twice as much when large areas had to be dealt with, and have seen no ill results from the six grains of eucaine or m xx of adrenalin. The latter amount corresponds to just about 1 mg. of adrenalin, namely, m xx = circa 1 c.cm. of 1 pro mille solution.

I have also used 4 grains β eucaine to 100 c.cm., but noted no appreciable increase of analgesia.

I have made several observations on this fluid with Beckmann's apparatus to prove its osmotic tension, and found

that it is as nearly as possible isotonic with the blood. If not isotonic such a solution would produce pain on injection, and might also lead to necrosis of the tissues into which it was injected. This was actually the case in the practice of a friend of mine, who used 2 per cent. of eucaine simply dissolved in boiled water without any addition of sodium chloride. The analgesia was excellent, he told me, but necrosis of the injected tissue followed. To test the osmotic tension of a 2 per cent. of β eucaine alone I froze it in the Beckmann's apparatus and showed him that it registered -0.28 C. as against human blood -0.56 C. Hence his trouble.

With the solution given above we have never seen the slightest sign of loss of vitality. In short it was "isotonic" and "indifferent" to the tissues. It is very easily made. In a Jena glass beaker, or 7 oz. wide-mouthed flask into which a syringe will go, $3\frac{1}{2}$ oz. (= 100 c.cm.) of distilled water is put and boiled. To this is added a powder containing the β eucaine 3 gr. and pure sodium chloride 12 gr. After a couple of minutes' boiling it can be let cool to blood heat, or cooled by standing the flask in cold water. Then 10 drops of the 4 per thousand adrenalin chloride solution of commerce is added, and the solution is ready for use.

Fig. 1.

Fig. 4.

Fig. 2.

Fig. 5.

Fig. 3.

Fig. 6.

The adrenalin solution is best measured by drops from the bottle itself with a loosened stopper. Other ways of measuring are wasteful, and above all expose the fluid to air and light which soon spoil it, and to septic contamination of the whole bottle, which would be dangerous. If it is dropped as described, and the stopper refastened, the fluid in the bottle will keep good for months in my experience, if left besides in its box in the dark. I have often tested these drops with a standard measure, and find about 18 or 20 go to the cubic centimetre. Adrenalin solution should not require boiling. It is already sterile or will not keep. I have sometimes put the drops into the solution while boiling and found that this did not destroy its specific properties, but they seemed to pass off more rapidly than when the drops were added from the bottle direct to the solution at

blood heat. Any alkali spoils it at once, hence the Jena glass. The syringes must of course be boiled, but not in the usual soda solutions, for the same reason. The needles are best sterilized in alcohol. Figs. 1 and 2 represent the syringe and needles which will be found most suitable out of a large number of patterns. The ordinary Freienstein's needles (Fig. 3), fitted into fine caps screwed on to hollow rods (Fig. 4), answer all the purposes of limited injections, the finest size being used for the skin, the larger for moderate depths of tissue. But where greater distances have to be reached—for example, the whole length of the inguinal canal—a longer needle is necessary. For this I have devised a needle which so far answers all purposes (Fig. 2). Two sizes—1 mm. and $\frac{1}{2}$ mm. thick—are used. Each is 5 in. long. As such a length of fine steel tubing is very flexible and difficult to force through the tissues, especially if blunt (as it should be to avoid injury to vessels), it is so arranged by a little device of my own that it can be set to begin with at a short length until it has entered the tissues, when it can be lengthened up to $4\frac{1}{2}$ in. This is provided for as follows: Each needle is a plain, straight, fine tube slightly bevelled at the distal end or closed blunt with a lateral opening. It is passed through the lumen of a small section of $\frac{1}{4}$ -in. of the finest rubber catheter (Jaques). This little rubber collar just fits into the screw-cap (Fig. 5), which is then screwed up on the straight rod into which the needle runs, the other end of which fits on the syringe. When the cap is screwed down on the rubber the needle is fixed water-tight. When it is unscrewed a turn or two the needle can be drawn out of the hollow rod or pushed in and again fixed. All these needles should be washed in plain hot water after use, to remove the salt solution, and then be washed in spirit, their stylets being finally replaced in them. The rubber cap should also be removed from them, as it spoils the metal if left long in contact with its bright surface. When thrusting these blunt needles through the skin it is well to prepare the way by a puncture with a large sharp-edged needle through the spot previously anaesthetized by the fine needle of the first injection.

3. The duration of the insensibility is secured by the admixture of the adrenalin. Without it sensation is only abolished by eucaine for about 15 minutes, with it for three or four hours—that is, as long as the anaemia lasts. But, on the other hand, the analgesia is produced more slowly when adrenalin is employed with the eucaine. It is therefore well, before all larger operations, to wait some 30 minutes after injection to allow time for the insensibility to become fully developed. After this the effect appears to deepen for a couple of hours. In one case of operation for a recurrence in the breast involving the removal of a mass of skin as big as half my hand, I had injected $2\frac{1}{2}$ hours before. Sensation was still absolutely abolished, the patient spontaneously expressing her wonder and delight that she had felt no pain at all. She made an interesting remark besides—that is, that she could tell when a knife was used and when a needle by the touch, but both were absolutely painless. Others have said the same, showing it is not anaesthesia but analgesia. Waiting for half an hour or so may sometimes be inconvenient unless the time be utilized for preparation of instruments, etc. In hospital it gives little trouble. Three or four cases can be infiltrated at once, or one after the other, and left in the wards while some other operation requiring general anaesthesia is done. They can then come in in succession.

Waiting has another advantage which places this above the earlier methods of repeated infiltration of eucaine alone. When the latter is employed the operation must be practically done at once. It will then be found that the tissues are still in a state of artificial oedema from the amount of fluid injected. This oedema may mask the anatomical details unpleasantly for beginners. When, on the other hand, adrenalin has been added to the eucaine solution, and we have waited, say, forty minutes, the artificial oedema has disappeared, and we cut through pale and almost bloodless tissues, where the details are very clearly seen. Rapid injection is to be avoided; the sudden distension of the tissues is disagreeable if not painful. The fluid should not be allowed to become cold or be used too hot for the same reason. These and other small details will soon be learned by any one who is in earnest and patient.

Of course all dragging on the parts is to be avoided, lest structures be pulled upon which lie beyond the area of infiltration. This is the crux of abdominal operations. The parietes can easily be rendered insensitive to pain over a large area. But if the hand has to be introduced it will in many cases reach beyond this area and so produce pain, for the parietal

peritoneum is particularly sensitive (Lennander, Dogiel, Ramström). Again, in handling the intestines (themselves insensitive), say, in a colotomy, one must be careful not to drag on the mesentery, which has the reflexions of the parietal peritoneum at its root. For these reasons, at all events for the present, it appears undesirable to employ this method alone for the longer operations on the abdomen where dragging to some extent is unavoidable. But in such cases the prolonged use of the general anaesthetic can be much curtailed by the previous injection of the tissues by this method. Then the abdomen can be opened, and when the patients begin to feel pain chloroform can be given perhaps only for a few minutes until any dragging manipulations are over. Then the chloroform can be at once stopped and the tedious stitching, whether of the insensitive intestines or infiltrated parietes can be finished without pain. For instance, in an appendectomy in the "free interval" this course was pursued. My patient had chloroform for just one minute, a matter of some importance to her lungs and kidneys, and the avoidance of subsequent sickness, as she was a lady past sixty. She said the pain of tearing some adhesions round the appendix was slight and she could have borne it easily, but took the few drops of chloroform at my request. Another patient had seven or eight minutes of chloroform while I was finding and separating the appendix. Here there was short after-sickness.

As for general anaesthesia so also for the local the preparation of the patient beforehand is most important. But here a preliminary fast is not desirable. Those who have had a light meal previously are always, *cæteris paribus*, the better for it. The rule is to give them an egg beaten up with some milk and a little brandy, or a cup of tea or coffee not long before the operation. Again, some patients if anxious are soothed by a little morphine hypodermically. The feeling of *bien être* thereby induced enables them to bear the tedious lying on the back all the better. Of course some individuals are nauseated by morphine, and if this is known of any particular patient it will be avoided.

With a little experience the surgeon, too, will have confidence in the method; and by manner and a word or two will communicate this feeling to the patients. It is a very bad policy to suggest to them that they may have pain. At the very most, if they inquire, they can be told that, at their slightest wish, they shall have chloroform at any moment. A cup of tea or coffee given during the operation is a way of distracting the attention of the patient frequently employed with the best results.

As to the question of depressing effects following on the use of β eucaine, I can only say that I have never seen any in a long series of operations, although in several up to 6 gr. of the drug have been injected exceptionally. To judge from the reports of those who employ cocaine for producing local analgesia, the contrary is the case, and they recommend the subcutaneous injection of strychnine and the use of camphor and other stimulants during the operation (Lennander). They also insist that the patients should be kept quietly in the horizontal position for some hours after operation. With eucaine patients have taken no harm from walking away from my house, even when it had been used freely, and in hospital no after-treatment has been necessary. This appears to be a strong point in favour of eucaine in contrast to cocaine if the abolition of pain is in any degree equal in each. And from what I have seen and heard, the method here described appears to have given better results in this respect than those in which cocaine was employed; and the fact that all the injections can be finished before the operation has been begun, and need not be repeated, places it for long operations far above those in which (Schleich) injection has to be done over and over again in the course of an operation. With painstaking study and watchfulness in a large number of cases alone has it arrived at its present stage of efficiency; and that, with longer observation and wider experience, it is capable of further development seems certain. But when, during twenty-four hours, I have been able by this method to perform the following operations with the most satisfactory results, it must be admitted that important progress has already been made: (1) Amputation through the knee-joint for gangrene of the foot due to diseased arteries and diabetes; (2) abdominal section and opening of the stomach and jejunum in search of a source of severe bleeding (not found); (3) removal of a cyst of the thyroid; (4) Bassini's radical cure of inguinal hernia; (5) removal of a silver wire from round the patella.

There is one further point which contributes largely to

success. It is that the surgeon should operate with delicacy, and without dragging more than is absolutely necessary on the structures in the field of operation. From this it follows that whoever injects shall be quite familiar with the details of the operation from beginning to end. It is undoubtedly better, therefore, for the operator himself to make the injection; but if this is inconvenient he must have an assistant who is quite familiar with all his methods and style of operation; in short, one who has frequently seen and assisted him, and is perhaps an operator himself. Such an assistant I can now rely upon for injecting my cases, and his results are all that can be desired.

With the following list of operations performed recently under eucaine analgesia before me I find it difficult to understand why any one still employs cocaine, which is admittedly far more dangerous, and can hardly yield better results.

Numerous samples of the drugs above mentioned are sent to me from time to time from both home and foreign sources. Some are in solid, some in liquid form in sealed glass capsules. They are designed to save time in the preparation of the injection fluid. After much laborious testing of various methods, it appears to me that greater certainty and safety are secured by making the solution for oneself as above described, and that no time is lost thereby. The preparation of the fluid is simplicity itself, and it is all the safer from being made fresh for each case.

This paper is not intended to suggest doubts as to the benefits we all derive wholesale from general anaesthetics. But we need no reminder that the latter have their drawbacks. And, from what I hear almost daily, this method appears likely to play a useful rôle, especially in the country and the Colonies, where the skilled anaesthetist is not always at hand. But, even among ourselves in town, there are many cases in which the chief anxiety of the operator is how the patient will bear the general anaesthetic, often necessarily prolonged. The diabetics—one of the amputation cases in the following list was on the borderland of acetonaemia—the aged people with strangulated hernia, the people with goitre, and even those simple cases where there is practically no danger from the operation itself, all undergo a certain risk from general anaesthetics, which can be avoided by the above procedure. It requires some patience and experience to master the details of the latter, but it is certain that these are not thrown away.

Last Series of Operations Performed under Eucaine Analgesia.

Abdominal sections	...	...	8
Herniae	...	...	23
Amputations (knee, 2; arm, 1; toe 1)	...	...	5
Varicose veins	...	...	12
Thyroid tumours	...	...	3
Orchidectomy	...	...	3
Internal derangement of knee	...	...	3
Pre-patellar bursae	...	...	3
Malignant tumours	...	...	4
Large papilloma of axilla	...	...	1
Fistula in ano	...	...	2
Large lipomata	...	...	3
Rodent ulcers of face	...	...	2
Empyema	...	...	1
Incisions of ulcers	...	...	5
Hydrocele	...	...	1
Varicocele	...	...	1
Cyst of breast	...	...	1
Adenoma of breast	...	...	2
Smaller operations	...	...	8

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INTERNATIONAL CONGRESS ON ACCIDENTS TO WORKMEN.—It has already been stated in the BRITISH MEDICAL JOURNAL that an International Congress on Accidents to Workmen will meet at Liège on the occasion of the Universal Exposition to be held there in June, 1905. M. G. Francotte, the Belgian Minister of Industry and Labour, and Baron van der Bruggen, Minister of Agriculture, are honorary presidents of the Congress. The following is the programme of discussions as at present arranged: (1) Traumatic lesions and post-traumatic affections; (2) the organization of first aid for the injured, especially workmen who are the victims of accidents in the course of their work in large cities and industrial centres; (3) uniformity and centralization of medical statistics in regard to accidents to workmen; medical evidence relative to such accidents.