very small sprigs about an inch apart, so that their sharp points might project slightly on the rough side. I have not found this necessary, being careful when lifting the bandages to hold firmly with the fingers. By this means, the whole layer of bandages can be lifted between the two hands and dipped in fluid plaster; but before doing so, a second layer of bandages must be made ready in the same manner. No water having been as yet employed, all these arrangements can be gone about with perfect leisure, and it may be well to cause the patient to lie down on the arranged bandages to make sure that the correct size has been taken. If the jacket is to be strengthened with slips of tin, these should now be cut to the proper length and laid at hand. Everything being now ready, a thin mixture of plaster is prepared by mixing two pounds in forty ounces of water, and this is then poured on a flat tray broad enough to accommodate the depth of the jacket.* One of the layers of bandages is now drawn slowly through the plaster on the tray twice or thrice, care being taken that it is thoroughly saturated, by turning first one side and then the other down; which having been properly done, it is laid aside on any convenient place. The other layer of bandages, having been treated in the same manner, is laid on the bed behind the patient, being carefully placed on the spot previously marked, and the layer which was first dipped then laid upon it. By placing them in this order, the first dipped, and therefore nearest setting, will be first applied to the patient. The patient is now laid back carefully on the bandages, the arms extended as before, and, the slips of wood having been detached from the upper layer, each bandage in succession is brought round and overlapped in front. The slips of wood holding the ends of the bandages firmly between them having prevented the saturation of these portions with fluid, an assistant, while they are being crossed in front, pours on with a spoon some of the fluid plaster from the tray. The second layer is put on in the same way, pieces of tin being interposed where thought desirable. As much as may be necessary of the remaining liquid plaster is now smeared over the surface of the jacket, and smoothed with the hand as it sets. The whole procedure, after commencing to mix the plaster and water, occupies, with ordinary despatch, about five minutes; and on the last occasion, the patient being a child, the whole time occupied, after placing the patient on the bed till the jacket was completed, was fifteen minutes. I have only had four opportunities of employing this method, the last two being by the courtesy of the surgical staff of the hospital. The cases have not been suitable for ascertaining the effect of the recumbent position as compared with that of suspension in straightening the spine and adding to the stature, but Dr. Walker speaks decidedly on this point. The best opportunity of testing the matter would be, in the case of an adult patient about to have a jacket removed, which had been put on during suspension, his height being carefully noted before its removal, and again after the application of a new one in the recumbent posture.

THE PHYSIOLOGICAL EFFECT OF PILOCARPINE IN CONJUNCTION WITH THE ADMINISTRATION OF CHLOROFORM.

By ALFRED L. GALABIN, M.D., F.R.C.P.,

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ELIZABETH W., a married woman, aged 35, was a patient of the Guy's Hospital Lying-in Charity. She was subject to epileptiform convulsions, which, from the description given of them, appeared to partake in some degree of the hysterical character. These convulsions were usually increased in severity and frequency on any excitement. During her last labour, epileptiform fits had occurred. Assistance was sent for at 2.30 P.M. on September 6th, 1879, on account of the onset of repeated convulsions. She was then at about the full term of her eighth pregnancy. The fits appeared to be purely epileptiform in character, but without any violent clonic convulsion. During the fit, the eyes were widely open, conjunctivæ insensitive to touch, teeth tightly closed and ground together, with saliva flowing from the mouth; limbs rigid and semiflexed. Each fit lasted about two minutes, and ended in a deep inspiration, after which consciousness returned. Weak and infrequent labour-pains had occurred, and the os was found to be dilated to about the size of a florin. The obstetric resident, on visiting the patient at 3.30 P.M., found the pulse to be 120, temperature 100.6°. A small quantity of urine was withdrawn by the catheter, and found to be free

from albumen. Fifteen grains of hydrate of chloral, with the same quantity of bromide of potassium, were then administered every half-hour.

I was summoned to see the patient about 7 P.M. The fits had then diminished in frequency, three only having occurred within the last forty minutes. The patient in the intervals was not fully sensible, but could answer questions, although somewhat incoherently, and was able to swallow. The pulse had fallen to about 80. The membranes were ruptured, but the os uteri was scarcely so much as two-fifths dilated, and its edges were rigid and undilatable. Labour-pains had almost entirely ceased, and the body of the uterus was lax. A sphygmographic tracing showed the pulse to be regular, and of somewhat high pressure, the maximum good working pressure being six ounces, and the systolic summit somewhat broad, but without any distinction between primary and tidal wave.

The hypodermic syringe having been accidentally left behind, one-third of a grain of pilocarpine was administered by mouth. As scarcely any manifest physiological effect was produced, a second and a third dose of the same amount were given after intervals of twenty minutes each. Soon after the third dose, salivation commenced. A little later, violent vomiting came on; and, upon this, sweating, hitherto scarcely noticeable, became profuse. The salivation also became very extreme, and the condition of the patient generally very miserable. No labour-pains occurred, the uterus remained quite flaccid, and the os unrelaxed. A sphygmographic tracing was again taken, the pulse having risen from 80 to about 90. The curve had now become somewhat higher and more pointed, and a slight notch was shown between the primary and tidal (or predicrotic) wave. The maximum good working pressure, however, was only very slightly diminished, being now five instead of six ounces; still remaining, therefore, above the normal level. Thus some degree of diminution of arterial tension was shown as the effect of the pilocarpine, but much less in degree than that which may be easily produced by a moderate dose of nitrite of amyl, although the general physiological effects of the drug were developed in extreme degree.

With the object of facilitating digital dilatation of the os uteri, and the subsequent application of forceps, the administration of chloroform was now commenced. Before, however, anaesthesia had been fully produced, an alarming change took place in the pulse. Having been previously full, strong, and regular, at the rate of about 90, it ran up suddenly to at least 180, becoming at the same time extremely irregular and compressible, and fluctuating so much with respiration that, during the inspiratory period, it could scarcely be felt at the wrist. The chloroform was at once discontinued, since it appeared dangerous to prolong the administration. As soon as consciousness had returned, the pulse again became strong and regular, at its former rate of about 90. Chloroform was then again administered, in order to test whether the effect really depended upon its use. Again, before the stage of rigidity had passed, the pulse became rapid, irregular, and almost imperceptible, its rate going up to quite 200. As before, it returned to its original quality and rate as the effect of the chloroform passed off.

Digital dilatation of the os, which remained rigid, by means of the fingers of one hand in the form of a cone, was then continued for about an hour. After this, forceps was applied by the obstetric resident, Mr. Pedley, the diameter of the os having now reached a diameter of two inches and a half, and the head being still high up in the pelvis. A living male child was delivered, about half an hour being occupied in the extraction. No uterine action whatever occurred until the forceps was applied; but, under the stimulus of their use, some pains came on.

Since the effect of chloroform in labour is ordinarily to diminish the rapidity of the pulse, the effect on the pulse in this case must have been due, not to the chloroform alone, but to chloroform acting in conjunction with a large dose of pilocarpine. Since pilocarpine is known to have an accelerating effect upon the heart, it would seem probable that the chloroform paralysed some inhibitory mechanism by which this influence was kept in check so long as consciousness existed. As in this instance it did not appear safe to continue the anaesthetic, the case appears to suggest that there may be an inconvenience in treating puerperal eclampsia by pilocarpine, when it is likely that an anaesthetic will soon afterwards be called for in order to terminate the delivery.

No convulsion occurred after the administration of the first dose of pilocarpine, although fully three hours elapsed before delivery was completed, and notwithstanding the prolonged digital dilatation of the os, and the slow extraction by forceps, both which proceedings in a case of eclampsia would be likely to bring on convulsions in the absence of an anaesthetic. Some complication was introduced by the fact of chloral and bromide of potassium having been given previously; but, since there had been no interval free from convulsion longer than about fifteen minutes until the administration of the pilocarpine, there appeared to

* For hospital use, a modification of the machine, figured by Dr. Walker in his paper, would be a convenient appliance. It would be necessary to make it sixteen or eighteen inches long, without the spindles for carrying the bandage, but having the fan-roller.

be no doubt that the drug had a direct influence in checking the attacks. In the present instance, this could hardly be due to the elimination of any material from the blood, since there was no uræmic element in the causation of the convulsions. Nor did the effect upon the pulse, as shown by the sphygmograph, appear to be sufficient to make the explanation probable that its mode of action was by causing relaxation of any arterial spasm. As an oxytocic, the pilocarpine appeared in this case to be absolutely without any effect.

No further convulsions occurred after delivery, and the patient recovered well.

INTRA-UTERINE MEDICATION.

By CLEMENT GODSON, M.D.,

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It is with a feeling of anxiety that I see, in the *BRITISH MEDICAL JOURNAL* of August 30th, a series of abstracts of papers which were read at the annual meeting in Cork, advocating the treatment of certain uterine complaints by means of medicaments applied to the cavity of the body of the womb. This *JOURNAL* has such an enormous circulation among all classes of the profession, that the mere heading will attract the notice of many who have but little time to do more than glance at the contents of the papers; and I fear that, having ascertained that carbolic acid, iodine, etc., are useful agents in the treatment of uterine discharges, many will fly to put their efficacy to the test, without having learnt to discriminate the class of cases applicable to them, or having attained the skill necessary to employ them. There is much in fashion. A century ago, every one was bled; now, venesection is hardly ever practised. We have passed from one extreme to the other. A few years since, in gynaecological practice, division of the cervix by the metrotope was constantly performed by some physicians; now, this operation is but rarely undertaken; indeed, we hear, at least in one quarter, that sewing up the gaping os uteri is all the rage. Lately, there has been a discussion on the use of the forceps and its alternatives in lingering labour, before the Obstetrical Society of London. Many eloquent discourses have been contributed, and the subject has been ably discussed by several of our eminent leaders in the school of midwifery. But, to sum up the whole, at what have we arrived? The general impression gained, is that the forceps is used far less frequently than it might be with advantage to both patient and practitioner. The result of this will be, unless I am much mistaken, that an authority has been granted for the frequent use of the instrument, and that we shall find the evil effects of this from its indiscriminate and unskilful employment. In the out-patient female department of St. Bartholomew's Hospital, where I see from fifty to seventy new patients per week, I have unusual opportunities of observation. After having made an examination, I am frequently led to inquire: Were you delivered with instruments in your confinement? And, in nine cases out of ten, the answer is in the affirmative. The reason why I put the question was that I found the cervix deeply fissured up to its junction with the vaginal wall, along which extended a cicatrix. This is a clinical fact, which testifies to the truth of the remark made by Dr. Henry Bennet in his speech, and objected to by Dr. Barnes in his reply, at the Obstetrical Society's discussion.

But, with respect to uterine medication, the results are likely to be much more serious; and I have already met with instances. If an application to the cavity of the body of the womb be required, there should be an amount of *endometritis* calling for it; but, in how many cases of discharges from the os uteri does the exudation come from above the canal of the cervix—the so-called internal os? I venture to say, in very few. The probe, covered with cotton-wool saturated with carbolic acid, is passed along the cervical canal up to the fundus uteri, and in many cases good results are obtained—not because the fundus uteri has been reached, but *because the application has been made to the canal of the cervix*; and, had a zinc-alum point been placed in this situation, and the uterine cavity have not been reached, the result would have been equally satisfactory, without the risk of danger possible to occur from probing the cavity of the womb. This brings me to the nature of the evil consequences.

One which I have met with is abortion. The possibility of existing pregnancy has not been thought of. The patient may have gone but a few days over her time for menstruation, and, not having been very regular previously, little heed is paid to this. Nevertheless, she may have conceived immediately after her last period, and, if even she have not quite reached her next menstrual epoch, she may yet be pregnant when the application is made. Another danger is that of inflammatory mischief in and around the uterus. It is well known how the simple passage of the ordinary uterine sound is liable to give rise to this. Surely, then, a

probe saturated with carbolic acid or other agent is equally if not more likely to produce such results.

The points, therefore, that I would urge upon my professional brethren are these. Before deciding to make applications to the cavity of the body of the womb, be satisfied that this part is affected by disease, and that it is not the cervical canal only that is involved. Without having determined this, it would be just as irrational to pass a medicated bougie into a man's bladder for every purulent discharge escaping from the meatus urinarius.

The papers to which I have referred, as published in the *JOURNAL*, fail to my mind to show sufficiently clearly the symptoms which give proof of the existence of endometritis. Then, the application should never be made to a sensitive uterus in which inflammation is likely to ensue, or pelvic inflammation or abscess may result; and a probe should never be passed into the uterus of a childbearing woman about the time of an impending menstrual period; indeed, it would be well to make a rule not to probe the cavity within a week of the catamenia, but to limit the time for intra-uterine medication to the fortnight subsequent to the cessation of the flow.

OÖPHORECTOMY PERFORMED SUCCESSFULLY FOR MENSTRUAL EPILEPSY.

By LAWSON TAIT, F.R.C.S. Ed.,

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THE case of E. E. has already been published in the *Obstetrical Journal* for May 1873, and in my book on *Diseases of Women*, as a typical case of ovarian atrophy arising from exanthematic oöphoritis: a disease to which I was the first to call attention many years ago, as occurring very frequently as a sequel of scarlet fever and small-pox.

Her history after May 1873 is, that the efforts to induce the return of the menstrual flow by means of galvanic pessaries were persevered in, after several relapses, till at last everybody concerned was wearied of them. The patient ceased her attendance at the hospital, and I heard of her only occasionally to the effect that her epilepsy was becoming worse and worse. One of my critics, in alluding to this case, broadly stated that I had mistaken a bad case of hysteria for one of epilepsy. I wish he had seen the poor woman as I saw her on February 5th, 1877, in an attack of epileptic mania, covered with bruises of all kinds. I urged her friends to commit her to an asylum; but to this I could not persuade them, as for at least one week in every month she was quite rational and comparatively free from fits. During the other three she had fits almost every day; and during the menstrual week, when a faint show generally appeared for one or two days, her fits were incessant and her delirium uninterrupted.

This state of matters lasted till August of this year, when her friends, completely worn out by her, seemed at last to agree that she should be placed in an asylum. Before doing that, however, I urged them to let me cut out the ovaries, in the hope that this might arrest the disease by removing what I believed to be the cause. To this they readily consented, and I performed the operation on August 11th. There was no particular difficulty about the operation, save that the patient was very fat. The ovaries when removed presented all the characters of the atrophy peculiar to inflammatory change of their true gland-structure. (*Diseases of Women*, p. 215.) Mr. Alban Doran has favoured me with a report upon the ovaries removed, which completely confirms the views of the pathology of this case which I have expressed in my former publication of it. "The elongated cells of the stroma are larger than in normal ovaries; and there are few vessels, the hypertrophy of the walls of those that remain, and the bundles of fibrous tissue, point to a cirrhotic

Ovaries showing naked eye appearances of atrophy resulting from exanthematic oöphoritis, removed from case of menstrual epilepsy.

change following the exanthematic oöphoritis." One of the ovaries is now in the Museum of the College of Surgeons.

The result of the case so far is very satisfactory, for the fits have entirely ceased. Three days after the operation, there came on the