

Seventh day, half-past ten A.M.: More pain in the leg and foot than previously; patches darker; another on the patella; pulse 96.

Popliteal space	91°	...	...	...	...	95°
Heel	...	...	90	...	...	95
Toes	...	...	95	...	...	90

Five P.M.: More easy; pulse 106; tongue moist.

Popliteal space	95°	...	...	...	...	97°
Heel	...	...	97	...	...	98
Toes	...	...	93	...	...	89

Eighth day, half-past ten A.M.: Was much easier than last night.

Popliteal space	93°	...	...	...	...	95°
Heel	...	...	88	...	...	96
Toes	...	...	92	...	...	85

From the ninth to the fifteenth day after the operation the record was carefully kept; there was constant sleeplessness and pain; the patient could take but little of the nourishment which was allowed, and the temperature of the heel and toes was the lowest for the former on the eleventh day, when it descended to 92; and for the latter on the thirteenth day, when it was only 86.

On the thirteenth day, while straining at stool, the patient felt some blood trickling down the thigh, and saw it oozing freely from the wound. Mr. Luxton, the house-surgeon, compressed the artery and exposed the wound to the air, when coagulation took place, and the hæmorrhage was arrested.

On the seventeenth day after the operation, the patient stated that he had been in great pain the whole night, and had not slept; the pulse was full and quick, the tongue moist, and the bowels not open; the wound was not dressed for fear of disturbing the clot. On the twentieth day, no sleep; the greatest pain is at the root of the toes and in the tumour; the latter is tender to the touch; bowels not opened for three days; pulse quick; appetite bad. The patient seems much weakened and exhausted with his sufferings and want of sleep; the wound made for tying the femoral artery has not been dressed since the bleeding first occurred.

On the twenty-first day the pain in the limb was very intense. On the twenty-third, the skin on the dorsum of the foot appeared of a brassy metallic hue, and the skin over the anterior sharp margin of the tibia very dark. There seemed to be a faint line of demarcation around the patella, and several livid vesications appeared on the leg. On the twenty-seventh day there was great heat and swelling in the tumour, and mortification invaded the whole leg; there had been a little bleeding from the wound in the thigh.

Mr. Fergusson, considering that there was now no longer any danger from secondary hæmorrhage, removed the thigh by the flap operation on the thirty-first day after the deligation of the femoral artery. The posterior flap was made long, and reached to the lower part of the popliteal space. Much blood was lost during the amputation, the stump seeming one mass of vessels. A portion of the femoral vein was dissected away; it was sufficiently large to admit Mr. Fergusson's finger; the artery was cut across, both ends secured, and a great portion of the sciatic nerve removed.

As the limb was in a very disorganized state, it was rather a difficult matter to obtain information as to the state of the vascular apparatus about the leg and foot. It was, however, clearly made out that the congeries of vessels which had fed the erectile tumour of the heel were derived from the posterior tibial artery, the anterior not having an evident connexion with it. The vessels of the calf of the leg were greatly enlarged, especially the veins. In the museum of King's College very accurate casts of both legs, before the deligation of the artery, are preserved; they form a very valuable illustration of the disease.

On the eighth day after the amputation, it was found that a small portion of the anterior flap had sloughed away; it corresponded to the portion of diseased skin over the patella. On March 13th, being about one month after the removal of the thigh, the bone was projecting in consequence of the sloughing of the anterior flap; it was therefore necessary that that portion of bone, which was partly necrosed, should be removed. Mr. Fergusson, whilst the patient was insensible from the effects of chloroform, re-opened the partially healed stump, and removed about one inch and a half of necrosed bone.

Mr. Fergusson stated that the stump would never have completely healed in the present condition, and that it would have been unwise to wait until the dead bone had been cast off by the efforts of nature. Nor did he (Mr. Fergusson) think himself open to blame for this protrusion of bone, for such a

result will often occur with the greatest care and the most skilful management. The flaps were brought together, and cicatrization has since advanced at a very rapid rate, the stump being now almost healed, and the patient in a favourable state.

[Other reports are unavoidably postponed until next week.]

ON THE USE OF THE SPECULUM IN CERTAIN CASES OF PRACTICAL MIDWIFERY.

By J. HENRY BENNET, M.D.,

LATE PHYSICIAN-ACCOCHEUR TO THE WESTERN GENERAL DISPENSARY.

To the Editor of THE LANCET.

SIR,—The perusal of the very interesting and valuable communication of Dr. J. Sheppard, (see THE LANCET for March 22,) on a Case of Agglutinated Os Uteri, complicating Labour, has induced me to address to you the following remarks:—

Dr. Sheppard, having determined on dividing the os uteri crucially,—the only rational course which he could adopt in such an extreme case,—appears to have had considerable difficulty in carrying out his intentions, owing to the cervix being situated high up in the pelvis, and to the undilated state of the soft parts. This difficulty, indeed, was so great, that he was obliged to renounce all idea of protecting the organs towards which the blade of the scalpel was directed with one or two fingers of the other hand, as he at first intended; and thus, as he candidly states, he ran the risk of injuring the vagina and the rectum, when dividing the uterine tissues posteriorly, or the vagina and urethra, when dividing them anteriorly. Now, what I have to suggest is, that in this and all similar operations, every risk of the kind would be avoided, and the operation much simplified, were a large-sized speculum used, and the region to be operated on clearly brought into view; the os uteri might then be divided as easily as the mouth or anus. This remark, indeed, appears to me to apply to nearly all operations that have to be performed on the *cervix uteri itself*, either in the gravid or non-gravid state. I hold it to be both unsurgical and cruel to the patient to complicate these, in reality, very simple operations, by searching in the vagina, often for a considerable length of time, with ligature-canulas and sharp-edged instruments, in order to reach an organ which a proper speculum would expose, without pain to the patient, in a few seconds. Actuated by these views, for many years I have all but invariably used the speculum to excise uterine polypi, or to pass a ligature over their neck, and find that I am thus able to accomplish the operation in nearly as few seconds as it usually takes minutes. I wish it, however, to be distinctly understood, that I do not in any respect mean to criticize Dr. Sheppard's operation, which was evidently performed with the greatest skill and precision, but merely to suggest an improved *modus operandi*.

When a speculum is used for such a purpose, it ought to be one that exposes as much as possible of the cervix uteri and of the surrounding tissues, and one that, at the same time, protects the vagina, which is often much relaxed. No instrument answers these two indications so well as the conical bivalve speculum made by Coxeter, which I always use when examining pregnant women. Although rather a large-sized instrument, it is always easy of introduction when the vagina is relaxed, the constrictor vaginæ and the vulva being likewise, in such cases, all but invariably relaxed.

Dr. Sheppard's case is in itself a very remarkable and instructive one. I am inclined, however, to think that the inflammatory disease which occasioned the thickening of the uterine tissues must have preceded conception, and that, by an exception to the general law, the induration greatly increased during the progress of pregnancy, instead of softening and melting, as generally occurs; causing at last complete occlusion of the os uteri.—Inflammatory induration of the cervix carried to an extreme degree being a very common condition in the non-gravid uterus, and not preventing impregnation in some females, it would be met with much more frequently at the time of parturition than is the case, were it not for the law which I have pointed out in my work on Uterine Inflammation (see page 195, second edition), by which morbid induration and hypertrophy gradually soften as pregnancy advances, and all but disappear towards its close. Although this law is very general in its application, occasional exceptions are met with, and I have had patients myself with whom the cervix was still hypertrophied and indurated, when labour came on at the proper time. I have mentioned (page 224), a female who was in labour thirty-six hours before the uterine

neck began to dilate, the cervix coming down to the vulva with each pain as large and as hard as the fist.

There are various other cases in the practice of midwifery in which the use of the speculum may be made, *occasionally*, to contribute to the welfare of the patient, by increasing and simplifying our means of treatment. Thus, in the late discussion on the Cæsarian section, at the Medico-Chirurgical Society, Dr. Robert Lee mentioned a case in which he wished to bring on premature labour, but was unable to do so for several months because he had lost the use of his index-finger, from a punctured wound, and was thus unable to guide the stiletted catheter. Now, had the speculum been resorted to, he need not have waited an hour on that account. Again, in plugging the vagina for uterine hæmorrhage, the operation is much more efficiently performed with the assistance of the speculum than without, as the mouth of the cervix, and the region immediately around, can be closely packed with small pieces of sponge and cotton, in such a manner as to oppose a most efficient obstacle to the hæmorrhage, without filling the vagina, so as to occasion discomfort to the patient, or to impede the action of the bladder or rectum.

I may also mention, that in those forms of abortion which are accompanied by protracted and severe flooding, I have generally found, on careful examination, the cervix to be diseased, inflamed and indurated. Not having had time to soften, its rigidity opposes the exit of the fœtus, and thus perpetuates the hæmorrhage. In these cases, it is not uncommon to find the rigid os half open, and grasping the ovum tightly, which it seems unable to expel, notwithstanding previous plugging, and the administration of ergot of rye. When this occurs, if a speculum be introduced carefully, and the blood wiped away, the thin speculum-forceps I use may often be passed into the rigid os, and the ovum easily extracted, when the hæmorrhage at once ceases.

In conclusion, I would recommend Dr. Sheppard not to trust to the apparent rapid recovery of his patient, but to ascertain instrumentally (if there should be any ground for suspicion as to her condition) whether the integrity of the cervix uteri has been completely restored by the unassisted efforts of nature. Although nature has great power to remedy lesions connected with parturition, as this instance abundantly testifies, she often falls short in such cases of *complete* restoration, and leaves some slight inflammatory lesion behind, which if recognised early is a mere trifle, but if left to itself, ultimately destroys health, and embitters existence. Once this important and hitherto unrecognised fact is generally admitted and acted upon by midwifery practitioners, we shall no longer see so many females gradually falling into *apparently* irremediable bad health after hard labours,—that is, labours requiring instrumental or manual interference. It will then be felt that no woman ought to be lost sight of by her accoucheur after such a labour, or even after a natural one, if very quick or very tedious, until the complete recovery of her general health, and her *complete* immunity from local uterine symptoms, eight or twelve weeks *after confinement*, have shown that nature really has set everything to rights, and thoroughly restored the integrity of the organs, so fearfully tried by the process of parturition.

I remain, Sir, very obediently yours,

HENRY BENNET, M.D.

Cambridge-square, March 30, 1851.

OBSERVATIONS ON CHLOROFORM AND ITS ADMINISTRATION.

By W. MARTIN COATES, M.R.C.S., & L.S.A.,
SURGEON TO THE SALISBURY INFIRMARY.

THAT chloroform is a poison of great energy nobody who has read the account of Mr. Thomas Wakley's interesting and valuable experiments, published in *THE LANCET* of January 1st, 1848, can for a moment doubt. That there have occurred poisonings by this agent, administered with a view to produce insensibility to the pain of surgical operations, is equally certain. The dread of such a fearful result has, I know, prevented many patients from taking advantage of the inestimable boon conferred by Dr. Simpson on mankind by his discovery, and some surgeons from employing it. I own that I never witnessed the suddenly suffused countenance, the foaming mouth, the injected conjunctivæ, the dilated pupil, the convulsive movements of the extremities, the stertorous breathing, and, at a subsequent stage, the pallid face, the slow, laboured respiration, and the very feeble pulse of the patient under the ordinary dose inhaled, without a dread of a suddenly

fatal result, and a conviction that chloroform, to be safely administered, must be inhaled in much smaller doses.

A few experiments performed on frogs by myself and my friend, Mr. Henry Smith, late of Torrington-square, the gentleman to whose intelligence and unwearied industry, Dr. Marshall Hall has, in several of his admirable publications, paid so high and just a tribute, confirmed me in my view, and pointed out from what quarter the danger was to be expected.

The first, second, and third experiments were first performed by Dr. Marshall Hall and Mr. Henry Smith.

First Experiment.—A frog was placed under an ordinary tumbler, to the inside of which was attached, by gum, a piece of lint, and three minims of chloroform were dropped on the lint. At first, the animal made efforts to escape, then gradually ceased to respire; the eyeballs receded, and its head fell on the plate. It was removed from the tumbler, and placed on its back, from which position it did not attempt to move. Its heart beat vigorously. The reflex functions were perfect, as evidenced by the retraction of the extremities on their being pinched. This animal, on being washed with cold water, quickly recovered, and now, on being placed on its back, turned on its belly, and leaped, showing that sensation and volition were restored.

Second Experiment.—A frog was placed by the same method under the influence of three minims of chloroform, and was allowed to remain a longer time. When taken out the heart beat feebly, and the reflex actions were barely excitable. This animal recovered after a much longer lapse of time.

Third Experiment.—A frog was placed under a tumbler, and five minims of chloroform were dropped on the lint. At the end of three minutes, when taken out its heart had ceased to beat, and the reflex functions were inexcitable. The animal was dead. From these experiments it is evident that the chloroform affected the different divisions of the nervous system, in the following order:—1st. The cerebral, producing insensibility and loss of volition. 2ndly. The true spinal, as shown by the cessation of respiratory effort, and the difficulty of exciting reflex action. Lastly. The ganglionic or organic, and, consequently, the cessation of the heart's action, and death.

It is of course known to the reader that, as regards chloroform, the frog has a great advantage over man in its property of breathing by its skin after visible respiration has ceased: whereas, in man, if respiration by the lungs cease for a minute, danger becomes imminent.

These experiments enabled me to follow the effects of chloroform in man. First, we have generally efforts to remove the instrument; secondly, loss of voluntary motion and sensation, after a short interval of cerebral excitement; thirdly, accelerated, and then, slow stertorous breathing and deficient reflex actions in the extremities; lastly, an accelerated and frequently increased volume of the pulse at first, succeeded by a fearful depression, if chloroform be repeated in the ordinary doses of one or two drachms, indicating that the last and therefore most important stronghold of life is invaded—viz., the ganglionic or organic portion of the nervous system.

Fourth Experiment.—A small frog was placed under a claret-glass, and one minim of chloroform was administered as before. The animal slowly lost voluntary power and sensation. I placed it on its back, and dropped on the lint one minim of chloroform every quarter of an hour. It continued to lie on its back, visible respiration having ceased, but the heart's action continued vigorous for an hour. On removing it from the vapour, it recovered sensation and volition immediately.

Of course the degree to which the frog is affected depends entirely on the strength of the chloroform. These experiments, and reflection, led me to try much smaller doses of chloroform in my patients, and the results have been most satisfactory to myself, and, I believe, to all who have witnessed them.

My attention has been directed, for several months, to ascertain, if possible, the minimum quantity of chloroform capable of producing complete insensibility to pain, by which I hoped to diminish the danger, by limiting its operation to the cerebral portion of the nervous system, and thus to avoid the unpleasant after-effects, which I can, from experience, testify are very hard to bear—I mean, the headache, the distressing nausea and vomiting, and the abnormal sensibility. If I have succeeded, I shall have only done for chloroform what has been already done for every powerful remedy in frequent use. It may perhaps be said that the proportion of deaths, compared with the numbers who have inhaled chloroform, is very small. This I grant; but to those few who have succumbed, it would have been of vital importance had the minimum efficient dose been previously ascertained. Had