

preparation, but I would not advise it to be taken just after a full meal; and the dress of the patient ought not to be very tight. It is well to warn the patient that a ringing noise and general sense of pulsation may be experienced, and that he should not make the fitting of the mouth-piece difficult by attempting to talk. When teeth are to be removed, a gag should be put between the jaws, so that there may be no loss of time in getting the mouth open. Whilst fitting the mouth-piece, the patient should breathe air only, and the gas should not be turned on till the patient breathes steadily. As long as he breathes calmly the supplemental bag should be empty; but when he begins to *pausé*, the stop-cock should be opened. The gas received into this bag is so readily yielded during inspiration, that there is not any air sucked in under the face piece. When the breathing has become so calm as scarcely to raise the expiring valve, the supplemental bag should be compressed every fifth or sixth respiration and allowed to refill with fresh gas; by this means the gas will be sufficiently free from carbonic acid to allow its elimination from the lungs. Mr. Coleman has invented an ingenious apparatus for absorbing the carbonic acid of the expired gas by means of hydrate of lime. I have had no reason to think that any harm results from the small amount of carbonic acid breathed in using my apparatus; but Mr. Coleman has certainly obviated one great objection to the use of a simple bag, in and out of which the patient is made to breathe without any exit for the respired gas. After inhaling twenty or thirty seconds, the patient begins to assume a livid appearance, this must not be taken as a sign of *anæsthesia*. I have often breathed the gas before a looking glass, and observed a decided lividity in my lips, whilst my sense of touch was perfect. In about fifty seconds the expression of the patient suddenly alters, his eye becomes unsteady and his hands slightly convulsed; I usually continue the inhalation ten or fifteen seconds after this, unless the respiration become very slow or stops, or unless the pulse become very quick or unsteady. The sudden dilatation of the pupil is another sign which should cause us to remove the gas. If general muscular rigidity have not come on during the inhalation, it often does so when the operation begins, and then the breathing may cease for ten or fifteen seconds. This should excite no alarm, if the pulse can be distinctly felt; the free inspiration which will follow will quickly restore a florid colour to the lips if the heart act efficiently; and, as has been stated, the inhalation should be immediately discontinued if the pulse threaten to stop. The state of complete insensibility does not usually remain more than half a minute after the removal of the mouth-piece, provided the patient breathe regularly; but there is a period after this when, although there is a sensation of something being done, it is not felt as pain. I had a tooth extracted a few weeks ago after inhaling the gas. I had no knowledge of the first application of the forceps, but before the tooth was extracted I felt that it was wriggled about, yet with no more sensation of pain than as if I had held the tooth with my fingers. Just before recovery, men and women alike often manifest hysterical symptoms. The will for a short time seems very weak, but I have never seen a prolonged fit of hysteria, as I have after chloroform; these symptoms always disappear in two or three minutes. Since the middle of last April I have recorded the cases in which I have given the gas, and they amount to 384. In all these cases there has been produced an amount of lividity, which in other circumstances I should have thought dangerous to life; in the majority, convulsive twitchings of the hands have occurred, in a few, dilatation of the pupil. In several, the pulse has become quick and weak, but never imperceptible at the wrist, and the recovery has been, in all cases, rapid and complete, so that the patient required no assistance in walking away. I am aware of only three cases of sickness where vomiting occurred within a few hours of taking the gas, and it was even then attributable to other causes.

My cases have been chiefly those of teeth extraction; two patients have had as many as seven teeth painlessly removed in the sleep of one inhalation; but, when more than three teeth have required extraction, I have generally noticed signs of returning consciousness, and allowed the patient to awake and rinse his mouth before repeating the inhalation; this is sometimes important, on account of the accumulation of blood in the pharynx which would cause a difficulty to the passage of air, should any necessity arise for artificial respiration. Patients seldom shew any reluctance to begin inhaling a second time. A patient of Mr. Rogers had ten teeth removed in one day and, a few days afterwards sixteen more were removed painlessly in three inhalations. The lady laughed hysterically every time on awaking, but only for a minute or two. I have applied the gas for several cases of iridectomy; in some of these the convulsive movement of the eye-ball delayed the operation, but it was completed without pain. I have also used it in operating for strabismus, and for wrenching an ankylosed knee. It is well suited for reducing dislocations, for removing the toe-nail, and opening fistulæ, boils, and abscesses of all kinds. Two of my patients were subjects of epilepsy, but the gas did not affect them worse than others.

Whether nitrous oxide will ultimately displace chloroform and similar bodies, in operations which may last ten minutes, and leave much smarting, is improbable. The rapidity of recovery and absence of unpleasant consequences contrast favourably with chloroform; but when it is important to keep a patient quiet for as long as ten or fifteen minutes, chloroform is the best agent with which I am acquainted. I have never had a fatal accident from the administration of chloroform or of any other *anæsthetic*; and I think, if the air contain no more than 4 per cent of chloroform vapour, that a subject who had been allowed to inhale this till his breathing ceased would be restored by artificial respiration. In my experiments with nitrous oxide on dogs, cats, and rabbits, I have always found that respiration stopped before the circulation, and that, if the gas were removed when the animal was apparently dying, and at its last gasp, or if air were admitted by artificial respiration, it always recovered. If dangerous symptoms should arise from the inhalation of nitrous oxide gas being continued too long, artificial respiration would be the proper remedy. The chest and abdomen should be forcibly compressed six or eight times, at intervals of a second, whilst the patient is sitting or lying; if this produce a florid colour in the face, it will suffice, if not, the patient should be placed horizontally, and Silvester's method resorted to. It is to be regretted that the mode of making pure nitrous oxide on a small scale is difficult. Mr. Fox, the dentist, who has obligingly supplied me with gas, has exhibited to the members of the Association the apparatus which he uses. The gas is sold in a condensed form, by Mr. Barth, of Duke Street, Bloomsbury.

ILLUSTRATIONS OF THE VALUE OF THE MICROSCOPE IN THE TREATMENT OF THE STERILE CONDITION.*

By J. MARION SIMS, M.D., Paris.

To illustrate the necessity of the microscope in this department of surgery, I shall append a few cases, drawn up as succinctly as possible.

No 1 had consulted two of the most eminent physicians in England and remained under the care of one of them for many weeks. She said that during the time the neck of the uterus was repeatedly cauterised. She got impatient and went to another physician who told her that the caustic treatment that she had submitted to was worse than useless; and that a surgical operation was the only thing to be done. She consented to it and he incised the cervix bilaterally. She did not conceive, and two years afterwards came to Paris to see me. I found the uterus normal in all its relations, the os tincæ and cervical canal sufficiently patulous. I explained to both husband and wife the importance of examining the cervical mucus four or five hours after coition. They returned the next day; the cervical mucus contained spermatozoa; therefore there was no necessity for any further surgical operation. But the spermatozoa were all dead; therefore there was a necessity for a treatment to rectify the vitiated cervical secretion. She remained in Paris a few weeks under my care, was cured and became a mother in nine months after her dismissal. Now, if the first physician had used the microscope, as I direct, he would probably have found that the semen never entered the cervix at all; and, if the second one had done the same thing, he would certainly have found that the mucus of the cervix poisoned the spermatozoa.

No. 2, a lady, in the highest ranks of life, was sterile. The cervix uteri was incised bilaterally. She had pelvic cellulitis afterwards. Two years after this I saw her, she was still childless. The microscope showed that the cervical mucus, examined four hours after coition, killed all the spermatozoa. While this condition exists conception is impossible.

No. 3, sterile, was treated for sterility in America for a long time (two or three years). She came to Europe; had the cervix cut open, and was sent away with the promise of offspring. I saw her some time afterwards. The microscope proved that the husband was sterile. Therefore, the previous treatment in America and the operation in Europe were useless. I could relate several other cases like the above. But, as I have often made the same mistake before I fully understood the value of the microscope, I compassionately forbear.

No. 4, married four years; sterile. She had dreadful dysmenorrhœa, followed by discharge of a bloody brownish mucus of an offensive odour. The uterus was anteflexed; anterior wall hypertrophied; os uteri small. I was in doubt, at first, whether to recommend an incision of the cervix or not. The husband was a distinguished physician. I told him that an operation would be necessary if the semen did not enter the canal of

* Concluded from page 466 of last number.

the cervix; but if it did enter, the case might be cured without cutting. The doctor and his wife came to see me the next day, some five or six hours after sexual intercourse. A drop of mucus from the cervix contained spermatozoa in great abundance. Here, the whole question of diagnosis and treatment was settled at once, and in the only way possible, by the microscope. For this one examination proved all that was essential to know; viz., 1. That the semen was perfect: 2. That it entered the cervical canal, and therefore there was no surgical operation necessary: 3. That the cervical mucus poisoned the spermatozoa, and hence a treatment directed to the utero-cervical canal was indicated. After the next menstruation (a month's treatment) the cervical mucus was considerably improved, for it contained large numbers of active spermatozoa. At the end of two months I found living spermatozoa in the cervical mucus, thirty-six hours after coition. All treatment was now suspended, and after the next menstruation conception took place.

No. 5.—Married five or six years without offspring. The uterus was small and retroverted by a fibroid about the size of a walnut on its anterior surface, just at the junction of the cervix and body. The os was very small, so small that one of the most distinguished of our accoucheurs advised incision of the cervix to admit the passage of the semen, although he was not in the habit of performing the operation, and, as a general rule was opposed to it. In former years, I would have given the same advice without the slightest hesitation. But now I said, No. Let us first see if the cervix admits the semen. If so, the operation is hardly necessary. If not, it is. I saw the wife the next day. A drop of cervical mucus under the microscope determined the question against the operation at once; for the mucus was full of spermatozoa, but they were all dead. During the treatment of this case I have seen the mucus in the lower segment of the cervix full of living spermatozoa, while that taken from the os internum was full of dead and dying ones. Nothing but the microscope could have revealed the truth in such a case as the above.

No. 6, married eight years, sterile, had been treated by several distinguished physicians for the sterile state, and had been to Ems and other watering-places, all for no result. At last she came to Paris to see my friend Sir Joseph Olliffe, and he called me in consultation. I found a long, conical, indurated cervix, with a small os—just such a case as I would have pronounced sterile by necessity, and just such as I have over and over again operated upon without further thought. But now I wished to be sure, before recommending an operation. After explaining the necessity for it, I requested this lady to come and see me four or five hours after coition. She returned the next day. I could find no spermatozoa in either vaginal or cervical mucus. I requested her to come again. I saw her two days afterwards—no sign of spermatozoa. I then told her that perhaps the seminal fluid all passed away in the act of rising and dressing. She thought it did. After further explanations, she readily agreed to send for me some morning, to verify the state of affairs. She was a very sensible woman, and fully understood the reasons given. A day or two afterwards, I saw her in bed about thirty minutes after sexual intercourse. The vagina was full of semen; and I removed about a drachm of it, and went home immediately for the microscopic examination. But, unfortunately, there were no spermatozoa. Not very long ago (seven or eight years), I had the idea that sterility was essentially a female infirmity; that men were never sterile, except when impotent; and that any man legally competent for the married state was physically so for procreation. But the microscope unsettles and settles all such vague notions. It is natural to suppose that a strong vigorous man is more fitted for procreation than a weak or puny-looking one. Some of the greatest lights of the profession have held such views as this. It was only two or three years before the death of the lamented Trousseau, that he said to me, in speaking of a case we had under consultation, "If our patient only had a man for a husband, all would be right." I subsequently found out that the husband's passions were strong; that his semen was perfect; that it entered the cervix in great abundance; and that the spermatozoa were there poisoned by a vitiated mucus. I mention this to show that we must not judge from appearances, when it is so easy to settle the question by the microscope.

No. 7, married nine years, sterile, had consulted several distinguished physicians, one in Germany, who told her that it was useless to try any further treatment, as she was now well enough, and it was the fault of her husband that she did not conceive. I explained to her that there was nothing easier than to determine that question at a single visit. She came the next day. I removed some vaginal mucus; also a mass of cervical, as large as a pea, that was just hanging from the os; also some from within the canal. The vaginal mucus contained spermatozoa, but, of course, they were all dead. The mass of cervical mucus that hung out of the os contained spermatozoa in abundance, all dead. The mucus from the interior of the cervix was wholly devoid of spermatozoa.

Here the microscope settled the whole question. There was no longer any guesswork. 1. It was not the fault of the husband that there had been no conception. 2. The seminal fluid did not enter the canal of the cervix. 3. The spermatozoa were killed by the cervical mucus, where the two came in contact. As the shortest and best method of treatment, I incised the cervix. After the subsequent menstruation, semen was found to enter the canal of the cervix. After the next period, they were found there in abundance, and all living. In three months thereafter, she conceived. In another three months, she miscarried, in consequence of a fall. Six months after this, she conceived again; and a year ago she became a mother.

No. 8. We often fail to cure curable cases because the treatment is sometimes so tedious that both patient and doctor get mutually tired, and both are glad to quit. Madame —, aged 34, had one child eight years ago; subsequently had chronic cervical inflammation; was cauterised too much. The cervix became indurated, and the os contracted. She wanted more offspring. I was in doubt about cutting open the cervix. A microscopic examination proved that the semen could not enter the cervix. Accordingly, I incised the os. After this, the semen entered the canal of the cervix, but its mucus killed all the spermatozoa. The mucus was not as clear and limpid as it should be, and it had white milky specks in it, looking as if it had been mixed with a little of the vaginal secretion. The lining membrane of the cervix was too red and rather granular. This was cauterised even up to the cavity of the uterus; and various other local, as well as general remedies, were adopted and carried out from time to time for twelve months. The character of the cervical secretion gradually improved, and at times showed some living spermatozoa, and again all were dead. This patient did not despair notwithstanding a fruitless treatment for so long a time.

A sponge-tent had revealed long ago a small flattened cystic tumour in the canal of the cervix situated on its posterior face, just at the os internum. I had repeatedly suggested the propriety of extirpating it. After all other means had been exhausted for restoring the cervical secretion to a normal state, the operation was agreed to. In June 1867, nearly two years after we began the treatment, a sponge-tent was introduced; the canal of the cervix was fully dilated, and a cystic tumour about the size of the end of the little finger was extirpated. Three months afterwards, the cervical mucus was greatly improved; and on March 1st last, after a treatment of more than two years and a half, I examined the secretions fifteen hours after sexual intercourse, and I had the satisfaction of saying, "At last, madam, I find the cervical mucus perfect; it is full of spermatozoa, and all very active. We can now hope for conception." Conception dated from that period, for she did not menstruate afterwards. But for the microscope, I would have dismissed the case as cured after the incision of the cervix uteri, and she would have remained in all probability sterile to the end.

Once I thought that the most common obstacle to conception was a contracted cervical canal, contracted at its outlet at the os internum, or throughout its entire length. But, if I were now asked, "What is the most frequent obstacle to conception?" I should unhesitatingly say, "An abnormal utero-cervical secretion that poisons or kills the spermatozoa." I can call to mind numbers of cases where, in former years, I incised the cervix, when the operation was satisfactorily done, and yet the sterility persisted. In some of these I have now not the least doubt that the husbands were sterile, and in others I have as little doubt that the cervical mucus was poisonous to the spermatozoa. If I had then possessed the exact knowledge of to-day, how much more satisfactory would it have been for me—how much better for my poor patients. I could go on for hours with cases to illustrate the principles already laid down. The foregoing are taken at random, and are sufficient for the purpose. I have not treated a single case of sterility as such in the last six years, without determining the three questions so essential to success that were stated at the outset of this paper, except the half-dozen cases already alluded to, and in these the microscope at last revealed the truth.

Before closing this paper, pray allow me, sir, to say a word personal to myself, which is, at the same time, in vindication of the honour and progress of our glorious profession. When my book on *Uterine Surgery* appeared in February 1866, it was noticed generally favourably by the medical press, and always honourably, with but one exception. The *Medical Times and Gazette*, one of the most excellent and influential journals of the day, conducted with great ability, and usually with liberality and decorum, condemned, in the strongest terms, my investigation of the seminal fluid, and said that "this dabbling in the vagina with speculum and syringe" was incompatible with decency and self-respect. Now, sir, for myself, I see no indelicacy or impropriety in taking mucus from the vagina and uterus for microscopic examination. It is no more indelicate, no more impure, than to investigate the character and properties of saliva, or bile, or urine, or feces. And where is the scientific physician now-a-days, who could or would dare to give

an opinion on any obscure and complicated disease without such investigation? To answer that question, sir, I beg leave to call to the witness-stand such men as Beale, Bence Jones, Hughes Bennett, Gull, George Harley, Sir William Jenner, George Johnson, Stokes, and the immortal names of Bright and Addison; and in my own country, the great names of Alonzo Clark, Austin Flint, Metcalfe, and a host of others. Sir, opposition and ridicule are ever ready, but never yet crushed out a great truth. With the simplicity of my nature, and with the honesty of my purpose, there can be no indecency, and no sacrifice of self-respect in making any necessary physical examination whatever, if it be done with a proper sense of delicacy, and with a dignified, earnest, and conscientious determination to arrive at the truth—a truth without which every step is in the dark, but with which all is as clear as the noon-day's sun.

REPORTS

OF

MEDICAL AND SURGICAL PRACTICE IN THE HOSPITALS OF GREAT BRITAIN.

ST. GEORGE'S HOSPITAL.

CASE OF HYDATID CYST OF THE LIVER RUPTURING THROUGH THE KIDNEY.

(Under the care of Dr. BARCLAY.)

HYDATID tumours of the liver not unfrequently rupture, and empty their contents, either externally or internally, into the pleural cavity, intestines, peritoneal cavity, or other part, as the case may be. Of the numerous cases now recorded, few, if any, are given where the cyst burst into, and the contents were discharged through, the urinary passages. Dr. Murchison, in his valuable *Lectures on Diseases of the Liver*, observes that, although hydatid tumours of the pelvis occasionally open into the urinary passages, he is not acquainted with any case where this has happened when the primary tumour has been in the liver. No doubt, however, in the following case, the notes of which were kindly supplied by Dr. Reginald Thompson, Surgical Registrar, the cyst ruptured in this way; for, although the fluid was not examined microscopically, still the appearance of pus in the urine, the result of inflammation, caused by the cyst in the efforts to empty its contents; and the sudden discharge of the fluid, with the subsidence of the tumour, leave no doubt as to the nature of the case. There is also every reason to believe that the tumour was hepatic. There was another feature of some interest in the case. Although a fine trocar and cannula were used—and this is a matter of considerable importance—still symptoms of peritonitis ensued, and that within half an hour after the operation. Probably, in removing the instrument, a small quantity of fluid had escaped into the peritoneum—an accident which is to be carefully guarded against by pressing the punctured part of the abdominal wall against the cyst while withdrawing the instrument.

A. L., aged 29, a plasterer, was admitted on October 16th. It appeared, from the history, that the patient was accustomed to subsist largely upon pork and sausages; indeed, he said he had "pretty well lived on pork". Two years ago, he remembered passing tapeworms. For the last five months he had suffered from a gradually increasing tumour, which began at the lower part and right side of the abdomen. It was accompanied with slight pain, but otherwise it gave no inconvenience.

On admission, he had a considerable swelling on the right side of the abdomen, or rather two or three globular elevations, the depressions between them being slightly evident. These were apparently connected with the liver, and did not extend much over to the left side. Distinct and tense fluctuation was perceptible, as if fluid fully distended the sacs. There was no derangement of breathing. A drachm of oleum terebinthine in castor-oil was administered; and next day some bits of tape-worm, measuring forty inches, were found in the motions. On the 23rd, at 2.30 P.M., an exploratory needle was introduced by Mr. Holmes; and a small quantity of purulent greenish fluid was drawn off, but no hooklets discovered. Half an hour afterwards, he was seized with pain in the belly, for which he was ordered a grain of opium every four hours. By the following day, the pain had spread over the whole abdomen; the tongue was coated; he felt sick; the skin was hot, temperature 101; the pulse 120; and respiration 50. Next day, however, the pain had somewhat subsided; but the pulse and temperature remained as before. On the 26th, the abdomen was very tympanitic; the pain had returned with equal severity; and he had passed a bad night.

Pulse 116, weaker; and temperature 100. He was now ordered a subcutaneous injection of morphia, one-third of a grain; and on the following day, when sickness supervened, turpentine fomentations. He had a favourable time after this, and greatly recovered. Fluid had by this time been discovered in the abdomen. He remained pretty well until December 26th, when solid caustic potash was applied to the swelling, followed by poultices, with the view of causing adhesion and of emptying the sac in this manner. This caused a good deal of pain; and a part of the skin, of the size of a shilling, sloughed. The measurement round the abdomen was 42½ inches. Three weeks after this, the caustic was a second time applied, and he had increased in size. On December 29th, pus was observed in the urine for the first time; and the measurement round the abdomen was found to have diminished. This continued; and next day a quantity of fluid, similar to that obtained from hydatid cysts, also passed off by the same channel. This was followed by a still greater diminution in his size, the circumference measuring now only 39 inches. He left the hospital in a few days afterwards, in good health, refusing to permit any active interference (the abdomen having much subsided), and experiencing no pain or inconvenience from the disease. He was still, however, passing large quantities of pus with the urine.

HYDATID OF THE LIVER: PUNCTURED: CURED.

(Under the care of Dr. PAGE.)

THE following case presents no symptom of unusual interest. Jaundice is certainly not a common accompaniment of hydatid of the liver; but in this patient it was slight and transient, and due, probably, to congestion or slight inflammation of the liver or of the bile-ducts, from the irritating presence of the hydatid cyst.

E. H., aged 27, while lifting a weight nine weeks previously to admission, strained himself. He felt as if he had lost his breath, was faint and sick, and suffered pain in the abdomen below the hepatic region. On admission (July 26th, 1866), the left lobe of the liver was found to be large, prominent, and round. The right lobe was also prominent. On pressing the left lobe, he experienced pain, running through to the right. His conjunctivæ were slightly icteroid; urine normal. There was a gradual increase in the size of the liver downwards from this time. He had suffered little pain, and had been but once sick since admission; when he began, on August 15th, to suffer great pain in the side, increased on drawing a long breath, and a sensation as if the ribs were being pushed out. This pain left considerably, however, in a few days; and on the 21st he was easier; but there was slight jaundice, and his urine contained a trace of albumen. During September, he improved in some respects; but fine crepitation appeared at the bases of both lungs, and he began to suffer from severe sweats. He improved, however, while taking cinchona mixture with three grains of iodide of potassium three times a day. On October 8th, galvanism was ordered, after which his liver was noted to be much smaller, softer, and nearly normal in size.

The patient eventually left the hospital, and went to Walton, although he was then in good general health. He returned on March 26th, 1867, with a small hydatid tumour of the liver, which he had observed making its appearance two months before, a little to the right of a line passing through the right nipple and immediately beneath the ribs. When readmitted, the tumour was oval, not very elastic. The liver was still enlarged. The tumour was punctured by Mr. Tatum, and five or six defunct hydatids escaped with the fluid. The patient went out well a week afterwards.

THE MOORFIELDS OPHTHALMIC HOSPITAL.

MR. HUTCHINSON'S LECTURES ON THE USE OF THE OPHTHALMOSCOPE.—LECTURE II.

WE make the following extracts from the clinical part of Mr. Hutchinson's second lecture. (Friday, Oct. 30th.)

Case illustrating the Results of the Syphilitic Form of Choroido-Retinitis.—Our next case is that of a woman, aged 43, two of whose children have attended here during the past year for interstitial keratitis, the result of inherited syphilis. One child has lost her nose by that form of erosive lupus or phagedænic ulceration which sometimes occurs in syphilis. Last week, Mrs. B. consulted me about her own eyes. I found that for many years she has been almost blind of the left. With the ophthalmoscope, it is seen to be a beautiful example of the changes consequent on choroiditis disseminata, or perhaps more correctly, on choroido-retinitis. In former courses of lectures, I have often insisted that this form of choroiditis is usually syphilitic; and our present case is one in proof. The patient states that she had inflammation of her eyes