SOUTHERN MEDICAL AND SURGICAL JOURNAL.

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"Je prends le bien où je le trouve."

VOL. III.—1847.—NEW SERIES.

Augusta, Ga.
JAMES McCAFFERTY,
PRINTER AND PUBLISHER.

1847.

Turning is the rectification of a mal-presentation of the foetus in utero, or its entire version by which some other presentation is substituted for one less favorable to delivery.

Systematic writers on Midwifery divide turning or version into three kinds, to wit:—1. Cephalic, 2. Pelvic, 3. Podalic.

By the term cephalic version is meant the grasping of the head of the foetus, and bringing it over the superior strait of the pelvis of the mother. This process of turning is attended with some danger to the mother, but it is, perhaps, the most safe to the child. It was the mode principally practiced by the ancients, from the belief, that a majority of children were born head foremost, and that consequently it was the most natural. They, therefore, pursued this exclusive practice, except in cases where the foetus proved to be dead, previous to the time of Ambrose Paré, Guillemeau and others, who demonstrated its fallacy.

Pelvic Version consists in bringing the pelvis of the child to the superior strait, and delivering the foetus as in a common breech case. This mode of version, like that already described, is not exempt from danger to the mother and child, but the child most frequently suffers.

Podalic Version is effected by grasping the knees, or one or both of the feet of the foetus, and making an entire version of the child, and delivering the woman by means of traction upon the child. This, like the other versions, is dangerous to mother and child, but most dangerous to the child. In a majority of cases in which turning is
necessary, the podalic version is to be preferred. It has the advantage of giving the entire control of the case to the practitioner, thereby enabling him to terminate it earlier, by being able to act, in many instances, independently of the uterine pains or contractions.

The examination into the situation of his patient should be the early duty of the practitioner of Midwifery, and although he may have had years of experience in his profession, too much reliance is not to be placed on external signs manifested at the time of parturition. He should, therefore, as early as convenient, after his arrival, make a vaginal examination, not only to ascertain the progress of labour, but in first cases of delivery, to ascertain the capacity of the pelvis and condition of the parts generally.

By this, or a subsequent examination, he may find the head, breech, knees, back, abdomen, breast, neck, shoulder, arm, or hand presenting.

Before attempting to rectify a mal-presentation of the head, breech, feet, or other parts, it is necessary to wait until a partial or complete dilatation of the mouth of the uterus takes place, or until it becomes soft and dilatable, together with the soft parts, and to act before the rupturing of the membranes.

Dr. Churchill says we are "not to interfere rashly on the one hand, nor to delay too long on the other: of the two errors, it is hardly too much to say, that excessive delay is the more serious." After ascertaining the presentation, and waiting as before indicated, we proceed to make such version as the case requires.

In transverse presentations the head having been ascertained to be the most dependent part, the pelvis of the mother of sufficient size, or slightly contracted antero-posteriorly, the head of the child of the ordinary dimensions, or if there should be a slight obliquity, or mal-presentation of the head, or should the neck and shoulder present, and there are no untoward symptoms present indicating immediate delivery, the cephalic version should be preferred.

We can not, however, terminate labour by this species of turning. After our manipulation it would progress as a natural case, if we did not use the forceps.

Cephalic version is not to be relied on in cases in which prompt delivery is necessary.

In those cases in which the pelvis of the child is most dependent, or near to the superior strait, with but little or no distortion of the pelvis of the mother, neither an abnormal enlargement of the foetal
cranium, nor complete ossification of its bones—or where, in short, the symptoms present do not indicate immediate delivery, the pelvic version is to be preferred.

Podalic Version should be preferred generally to all other modes of turning, and should be performed, if possible, in cases of mal-presentation of the superior extremities, or trunk of the foetus, placenta-prævia, flooding, exhaustion, convulsions, prolapsed funis, rupture of the uterus, or in any case requiring speedy delivery.

There must be, however, a just proportion between the mother and the child, or a capacity of pelvis sufficient for the child to pass. Many reasons might be assigned for giving this mode of version the preference, and I cannot do better than quote from Dr. Churchill on this subject. The Dr. says, that "the peculiar advantages of version by the feet are:

1. That it gives to the operator the entire control over the whole process of the labour, so that he can regulate its duration, either acting with, or independently of the pains.
2. That though inferior in its results to labour with the head presentation, it is about equal to any other and superior to some.
3. That in some cases it is the only chance of saving the child's life, or avoiding evisceration.
4. That in certain cases it affords a probability of saving the mother's life, when other means are hopeless.

On the other hand, continues Dr. C., its disadvantages are not to be overlooked; for—

1. From the distance the hand has to traverse, and the difficulty of seizing the feet and of turning the child in utero, there must ever be a fearful risk of injury to the mother.
2. The mortality amongst the infants thus brought into the world is very great: about one to three."

Podalic version may probably be divided into four stages or periods:
1. The introduction of the hand into the uterus.
2. The searching for the feet of the child.
3. The grasping and bringing down the feet.
4. The delivery of the woman.

Before the practitioner of Midwifery decides upon performing this, or any of the other modes of version, it is indispensably necessary for him to weigh well the case, for a mistake in diagnosis might not only prove dangerous to the parturient female and her offspring, but even fatal to both.
It would be well for him to attend to the following general rules, before he attempts to perform any of the modes of version, to wit:

1. If the case be difficult, let him call in a professional friend to consult.

2. Having determined upon performing the operation of version, he should inform his patient what he is about to do and encourage her as much as possible.

3. Next let him ascertain what position the child occupies in utero, if he can:—this knowledge may save time and prevent pain and inconvenience,—it will also enable him to make the selection of which hand he should use.

4. The selection of the hand will depend upon the position of the child, "if the occiput," says Dr. Churchill, "is to the left, whether posteriorly or in front the left hand is to be employed; when to the right, either in front or posteriorly, the right hand must be selected.

5. If not previously done, the bladder should be evacuated with the catheter, and the rectum by saline injections, and the system otherwise prepared as circumstances may require.

6. The practitioner should divest himself of his coat, without show or parade.

The above rules having been attended to, so far as they are applicable to any given case, the practitioner may then proceed to the operation.

He will select such position for the patient as shall best comport with her ease and comfort, compatible with his own duties,—one which will allow him, at the same time, the greatest freedom of action. The most common position for the woman is on her back, with her nates upon the side or edge of the bed or matrass, and the extremities supported by two assistants upon two chairs. Other positions have also been recommended, as the side, and hands, and knees. The operator should lubricate well, with lard, fresh butter, or oil, the dorsal surface of the fingers, hand and forearm, and place himself in front, or some other position convenient to the patient, and gently insinuate his fingers and hand edgewise through the labia majora and other soft parts into the vagina. After having reached the vagina, which is done during the absence of pain, the thumb and fingers are to be brought in apposition, in the form of a cone, and gently and slowly passed through the mouth into the cavity of the uterus. The operator should introduce the hand first in the direction of the inferior, and then of the superior strait.
Having thus entered the uterine cavity, we may proceed to rectify any mal-presentation of the head of the child that properly and most appropriately belongs to cephalic version, or we may, by pushing forward, bring down the breech, or we may search for and seize the knees or feet, make the podalic version by bringing down these parts, and deliver the patient as speedily as prudence and propriety may dictate.

If uterine contractions should come on whilst our hand is in the cavity, the hand must be extended, and permitted to remain perfectly quiescent until they have subsided, or we run the risk of rupturing the uterus, and rendering the case more complicated and more dangerous. Our efforts at turning, therefore, must be exerted in the absence of pain, and cease upon its return. During our manipulations within the cavity of the uterus our unoccupied hand should be placed upon the abdomen to assist in the turning.

The practitioner of Midwifery should ever be vigilant in the discharge of his various duties, and when at the bed-side of his patient, watch and mark well every symptom which may present itself. In this way, he may be enabled at an early period of labour to detect any case which may require any of the modes of version proposed, and those in which neither are practicable.

The version cases may be divided into three classes or kinds, to wit: 1. Easy, 2. Difficult, 3. Impracticable.

In the first instance, a slight inclination of the head of the child from its natural direction, the membranes whole or recently ruptured can be easily rectified. The breech or feet may, in a capacious or well-formed pelvis, and where there is no deformity of the child, be easily seized and brought down just after the rupturing of the membranes. If the waters have been evacuated for several hours, and by the downward contraction of the uterus the child is partially wedged into the pelvis, the case becomes one of difficulty.

In cases of distortion of the pelvis, lessening the antero-posterior diameter to two inches or under; a mal-formation in the inferior strait; the waters having been evacuated for many hours; the uterus firmly contracted down on the child, which is tightly wedged into the pelvis; a shoulder, arm, hand, foot, or some other part presenting; an enlarged head completely ossified, or filled with fluid, neither a cephalic, pelvic, or podalic version may be practicable.

Fortunately indeed is it for the parturient female, that version of any kind is seldom necessary or proper. In ninety-nine out of one
hundred cases in which it becomes necessary to perform it, the case has been previously in the hands of some ignorant empiric or meddlesome old woman, and the unfortunate female is not seen by the scientific physician until the powers of nature are nearly, or quite exhausted, and she almost in articulo mortis.

It should be a pleasing reflection to the educated, the high-minded, and the honorable members of the profession, that the veil of ignorance is being withdrawn, that science is beginning to be appreciated, that superstition flies before it, and that in a few more years this charlatanism will cease—then the practice of Midwifery will be confined to those qualified to discharge the various duties incumbent on them, with honor to themselves and benefit to their patients.

**ARTICLE XII.**

A Case of Pregnancy and Parturition during the existence of Cancer of the Uterus. By Joseph A. Eve, M. D., Professor of Obstetrics, &c., &c., in the Medical College of Georgia.

Carcinoma of the uterus was formerly supposed to be incompatible with pregnancy; but the possibility of this complication with this disease in all its stages is acknowledged, and its influence in hastening its progress admitted, by all or nearly all authors who have recently written on the diseases of females. A record of cases, or an allusion to this unfortunate complication, will be found in the works of Clarke, Davis, Ashwell, Churchill, Ramsbotham, Waller, Ferguson, Duparcque, Colombat, Boivin & Duges, Velpeau, Siebold, and many others. But it is, in an excellent practical treatise on Organic Diseases of the Womb, by Mr. Lever, of London, that we find the most satisfactory account of pregnancy in connection with cancer, and the most extensive reference to cases.

Pregnancy and cancer have each a prejudicial influence over the other—the former hastening the progress and fatal termination of the latter; and the latter in a considerable number, I believe in a large majority of cases, causing either an abortion or the death of the fetus when delivery occurs at the full term. The fetus sometimes perishes in utero, its farther development being prevented, and abortion the necessary consequence; in other instances the death of the fetus is the result of impediment to delivery, from the schirrous enlargement of the mouth or neck of the uterus.
Of one hundred and twenty cases of malignant disease of the uterus, referred to by Mr. Lever, abortion occurred in forty per cent.; in twenty-seven of delivery, fifteen children were born dead, ten living and in two the result was not known, or we may say fifteen out of twenty-five were lost.

The object of the present communication is to give a brief history of a remarkable case of pregnancy and parturition in connexion with cancer of the uterus.

July 28th, 1845. I was called in haste, eleven or twelve miles in the country, to visit Mrs. ———, who I was informed had been some time in violent labour. There was considerable time lost in consequence of my absence from town. On my first examination I found the head very low in the pelvis, the mouth of the womb extinguished, except a small portion, which had a tumid, hard, rough, unnatural feel. This labour was far more difficult, painful, and protracted than her two preceding labours, in which I had attended her. The child was expelled about a half hour after my arrival. I remarked a smell very similar to that of cancer of the womb, but did not at the time suppose it possible that it could be identical with it, for she was apparently in most excellent health, remarkably robust and stout, weighing not less than two hundred and fifty pounds, and being about twenty-eight years old, and furthermore, as the child to which she gave birth was large and healthy.

Two or three months previous to her confinement, I was consulted by her family physician in reference to a sanguine discharge to which she had been subject for some time, and which I feared might depend on placenta previa, but which I have no doubt now was consequent on carcinoma. I have since learned, upon enquiry, that as early as January, she complained of severe pains in the region of the uterus, and that in the very commencement of gestation she experienced unusual sensations that caused her for a long time to doubt whether she was pregnant.

After her confinement Mrs. ——— had an offensive discharge from the vagina. On expressing the opinion, when consulted in reference to it, that she was laboring under organic disease of the uterus, I was requested to visit her, October 5th, with a professional friend, and make an examination with the speculum.

The touch discovered an extensive schirrous enlargement of the neck of the uterus. We could not determine satisfactorily the extent of the ulceration by the speculum, because, before we could
make a proper inspection, we were compelled to remove the speculum, for she became so excessively alarmed and agitated that we feared an hysterical convulsion would have been induced.

As she was young and remarkably robust, we considered this was a case in which every possible effort should be made, although even under such favorable circumstances we had scarcely the slightest shadow of hope—favorable, I mean, in reference to her age, constitution and general health, but quite the contrary when viewed with respect to her recent gestation.

We put her on the internal use of proto-iodide of mercury, and chloride of soda as a vaginal injection, with an occasional resort to the sulphate of morphine, whenever pain might call it into requisition; she was however at this time, and for a considerable time after, comparatively free from suffering. We proposed to apply some cautery, at another visit, when she might be sufficiently composed to bear its application, either the nitrate of silver or nitrate of mercury.

I was requested to visit her again, the 21st of the same month, sixteen days after my first visit. She had not yet lost her embonpoint, but the cancerous ulceration had made most frightful and destructive progress, having involved not only the posterior lip, but the posterior part of the cervix and body. It was now too late to think of any thing beyond palliative measures. We advised a lotion of the nitrate of silver, with the view of correcting the fetor and improving the condition of the ulcers, perhaps in some degree checking their course. After this she became subject to most alarming and exhausting haemorrhages at each menstrual period. She now began to lose flesh and strength rapidly, and to suffer severe lancinating pains.

I visited her again the 6th of November. The disorganization was still more rapid, far exceeding anything I had ever before witnessed. We endeavored to support her strength by tonics, to alleviate her sufferings by opiates, to restrain the haemorrhages by styptics and astringent lotions, and to correct the horrible fetor by the chloride of soda.

After the destruction of the posterior lip, posterior portion of the neck and body of the uterus, the ulceration extended through the vagina and rectum, allowing the faeces to pass from the latter through the former, and must have involved even the sacral plexus of nerves from the excruciating paroxysmal pains she suffered in that region.
I never saw her after the 23d December, but was informed by my friend that she continued to linger in the most painful and deplorable condition until the 25th of June, when death kindly released her from sufferings indescribably severe, almost beyond endurance.

It is impossible, from any thing we could learn of the history of this case, to determine how long the schirrus may have preceded the commencement of gestation: it is probable not very long, from the excellence of her general health and the fact that she did not complain of pain or any unusual sensation in the pelvis, until about the time she became pregnant.

This case is remarkable, from having occurred in so young, healthy and robust a subject, from the fact that the process of gestation was conducted most perfectly, notwithstanding the presence of schirrus certainly, and I think we may safely say cancerous ulceration, from the discharge and the characteristic fætor, parturition only being rendered somewhat more tedious and difficult. But if it is remarkable for the absence of any obvious effect of the cancer on the gestation, it is still more so for the very marked influence of the latter over the former. After delivery, the progress of the disease was extremely rapid, although in the early age, health and vigor of the patient, it might have been expected to have run a slower and longer course.

Mr. Lever considers twenty months to be the usual or average duration of uterine cancer. Dr. Ashwell concurs with him, if he refers, as he doubtless does, to the stage of ulceration. I would suppose, from my own comparatively limited observation, that the ulcerative stage generally lasts at least twenty months. In this case, there intervened only eleven months between her confinement and her death, although she possessed uncommon vigour of constitution and appeared to resist death much longer than any person could have supposed, considering the ravages of the disease and the intensity of her sufferings. I cannot speak positively with respect to the commencement of ulceration: I would infer, from the hæmorrhages during gestation, and the foetid discharge during labour, that it existed previous to her confinement; but it certainly had not progressed far, even at my first visit, more than two months afterwards; it was so superficial that it was not evident to the touch, and, as I have remarked, in consequence of her extreme agitation and excitement, the examination by the speculum was not satisfactory. It is singular that ulceration had made comparatively so little progress, between
the time of her confinement and my first visit, and so much between my first and second visit. It is probable if I could have made a satisfactory examination at my first visit, a larger ulcerated surface would have been discovered; but after making all due allowance, I am confident, it was very limited compared with the progress made at my second visit.

If I had had an opportunity of examining this patient, during gestation, at the commencement of labour, and a month or six weeks after delivery, these details would have been more satisfactory; but I have related them as particularly as I could under the circumstances.

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ARTICLE XIII.

Gun-shot Wound—carrying away a portion of the right Clavicle, and passing through the summit of the Lung and Scapula: patient recovered. By L. B. Beal, M. D., of Richmond county, Ga.

On the 18th of April, 1846, R. D——, a youth of fourteen years, while on a hunting expedition, was shot by the accidental discharge of a comrade’s gun, charged with eleven buck-shot, and others of a smaller size. I was immediately called to him in great urgency, as the wound he received was supposed to be mortal; being distant three miles I reached him in about an hour. As he was in the woods when the accident occurred, his friends were removing him home when I arrived. I observed an oozing of blood from the wounds through the temporary dressing which had been applied, and which I was unwilling to disturb for fear of hemorrhage. Arrived at his father’s house, I proceeded to the examination of the injury sustained. The shot had entered through the skin, platysma myoides and cellular tissue, then the clavicle of the right side, a little nearer the acromion than its sternal extremity, passing obliquely backwards and downwards, coming out by making four openings in the skin covering the scapula, one of these being above and the other three below the spine of this bone. The opening of entry was an inch or more in diameter, cutting the clavicle completely into two fragments, which were more than an inch apart. In probing this wound, it commenced to bleed, and apprehending from this circumstance and the situation of the injury, that the subclavian artery or some of its branches might
require the ligature, I deemed it prudent to desist and ask for assistance and consultation. Dr. Paul F. Eve, Professor of Surgery, was sent for, and while waiting his arrival, cold astringents were applied to restrain the hemorrhage. But to my astonishment he now vomited a half pint of florid frothy blood, by hawking and coughing. I instantly tied up his arm and bled to 20₃, and gave opium grs. ii., combined with sugar of lead grs. x. By these means, the hemoptysis was arrested.

When Dr. Eve arrived we went into a more thorough examination of the parts injured, and he removed, as well as I recollect, four fragments of bone, (clavicle,) and no shot were discovered. As the hemorrhage, both by the mouth and the wound had ceased, mild cold poultices to the wounds, cooling drinks, perfect quietude, &c., were strictly enjoined. I was to remain with the patient, and Dr. Eve was to return on the third day, Augusta being distant fifteen miles. The day after the accident, he took a dose of Epsom salts, and on the next day, his pulse was 110, 20 less than it was after the accident. There was not much inflammation or discharge from the wounds.

We again proposed to continue the same mode of treatment, emollient poultices and chloride of soda injections to the opening made where the shot had entered as a mass, moderate diet and careful watching of the patient. Lime water—this with olive oil and charcoal poultices were also employed during the treatment. The sloughing process advanced regularly for six weeks, when after the removal of some speculate of bone from the opening of entry, it finally healed up. The space between the ends of the clavicle is completely filled up, and no deformity of the shoulder-joint can be detected. One of the openings on the back, where the shot came out, suppurated. I opened it and extracted a flattened buck-shot, pieces of clothing, and a piece of paste-board, used for wadding the gun.

The patient is now in perfect health.

Remarks by Paul F. Eve, M. D.—The restoration of this patient from so critical a wound, is mainly due to his own admirable fortitude, and the assiduous attention of his intelligent physician, and father. That the clavicle was cut in two, I know, since a portion of its whole circumference was removed. And that the lung was wounded, is also proven by the free and copious discharge of blood by the mouth. This young man was directly behind his companion, and within a few feet of him when the gun was fired. He was also lower down a hill, which will account for the direction of the wound.
Amputation of the Fore-arm for injury sustained by machinery in motion—death. By Paul F. Eve, M. D., Professor of Surgery in the Medical College of Georgia.

Subscribing the aphorism of a German physician set forth in this Periodical last year—viz., that a Journal was needed by the profession; which would communicate only unsuccessful and unfavorable cases, I have had it in contemplation for some time to make my confessions on this subject. And as by the article on the Statistics of amputations, published in the August No., my success was made to appear to the best advantage, there is propriety in commencing my acknowledgments on this very point. Fortunately, however, my failures thus far have here been but few.

By reference to the paper alluded to, "Remarks on the Statistics of amputations," page 465, of the last volume of this Journal, it will be seen that up to that period I had amputated 51 times. This includes all the varieties of this operation. Since then I have removed 1 big toe, 1 leg, (making 15 consecutive successful amputations of the thigh and leg, including 1 partial of the foot,) and 1 of the fore-arm—total, 54 cases, of which 53 were successful, and 1 death. It is the details of this fatal case that are about to be submitted.

Stepney, a black boy, aged 13, and belonging to Dr. T., a highly respectable and intelligent physician of South Carolina, was brought to my Infirmary on the evening of the 15th January, by the owner, in his carriage. He had that morning been injured by the machinery of a cotton-gin, propelled by horse power. The right fore-arm was drawn into the wheel, and the momentum expended upon it and the hand. Its radial or external edge was extensively lacerated, the tendon of the long supinator was detached, and the radio-carpal articulation opened, making a compound dislocation at the wrist-joint. The integuments on the dorsum of the hand were also torn up from the metacarpo-phalangeal articulation of the fore-finger around to the pisiforme bone. The Doctor had dressed the wounds soon after the accident, and found it necessary to apply fourteen sutures. This account of the injury was only confirmed by an examination after the amputation, which revealed also a comminuted fracture of three bones of the carpal row—viz., the trapezium, magnum and unciforme.

As the wounds had been dressed with a view to union by adhesion, they were not disturbed until Monday the 18th, the fourth day since
the accident. The night previous, the patient had complained greatly, and had now considerable fever. Upon removing the dressing and all the sutures, no union had occurred, but a dirty muddy discharge flowed out, tinted yellowish about the joint by the sinovial fluid. Chloride of soda, compresses, a splint and light bandages were applied.

January 19th. Decided upon the propriety of amputation, and wrote the next day for his master to return and see him. From the great anxiety to save the limb, naturally enough to his owner, and from unavoidable circumstances, the consultation was not definite and decisive until the evening of the 21st. Amputation was then yielded to, chiefly upon the apprehension of tetanus, entertained by Drs. Dugas and Ford, but on my own part, from the nature and character of the wounds and the effect they had exerted upon the patient's system, independent of any accidental circumstance that might arise.

At 10, A. M., the 22d, exactly a week after the injury, the double flap amputation was performed before the class in the Medical College. The bones were divided about two inches below the elbow joint, 8 to 10 arteries were ligated, and after waiting an hour, the stump was dressed as usual. There was considerable tumefaction at the part amputated.

23d. The patient is doing pretty well. A call up the Rail-road prevented my seeing him until the morning of the 25th. Contrary to instructions, Stepney got up and walked into the garden on the 24th, the third day after the operation, and repeated the same before I saw him on the 25th. The weather during this whole time was very inclement. He had had some fever attended with nausea, and had vomited a live worm, ascaris lumbricoides. Took a dose of oil and turpentine, which acted well.

25th, fourth day, dressed the stump; found the bones well covered and soft parts united over them, but no union of the integuments.

26th. Has fever; gave 10 grs. of calomel in two doses, followed by magnesia and rhubarb. Bowels well operated on.

27th. Dressed the stump, which looks badly. The edges are everted and much tumefied, though the bones are still perfectly covered. The ligatures (animal) are all dissolved. Applied chloride of soda and a flax-seed poultice.

28th. No improvement. The patient has little or no appetite.

29th. He is thought to be better this morning, and there appears
to be some little improvement in the stump. At 9. P. M. was suddenly called to Stepney. He had drank his tea and eaten a piece of bread, but soon became sick and vomited, complaining of pain in the epigastric region. He died in a few minutes after my reaching him.

Post-mortem eleven hours after death. Stomach and bowels empty, five or six live worms in the latter and one in the former. Stump, its edges everted, soft parts tumesced, bones completely covered by adhesion of deep seated muscles over them, with some infiltration of serum in the cellular tissue, but no suppuration. Arm quite natural.

No perforation of the intestines, &c., having been discovered, the immediate cause of sudden death in this case, is somewhat obscure. My opinion is, he died from the exhaustion of the general system, produced by the two weeks constant irritation of the wounds and the amputation, operating upon a constitution rather feeble originally. He had the appearance of a lad of 10 years, but was, as stated, 18.

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PART II.—REVIEWS AND EXTRACTS.


In view of the importance with which late chemical and physiological researches have invested the disorders of the urinary secretion, it has occurred to us that a succinct account of the more prominent circumstances involved in their diagnosis would prove acceptable to our readers. It is convenient for the physician, whose attention must necessarily be directed almost simultaneously to the different departments of practical medicine, to have at hand a synopsis of facts appertaining to this, and other branches of his art, by means of which he can occasionally refresh his memory, and to which he can refer when cases occur requiring their application. It is to subserve these ends that we take the trouble of preparing the following brief summary of the chief circumstances to be borne in mind in interrogating the urine for pathological changes. The claims of urinary disorders, as constituting in themselves a class of interesting affections, but, still more, as furnishing important manifestations, or symptoms of diseases located elsewhere, or affecting the system at large, have assumed too important a character to admit of their being overlooked or neglected by practitioners who aim, we will not say to keep pace with, but to follow in the track of pathological progress. The time must soon arrive, when, to omit examination of the urine in the ma-
jority of diseases, will be as disrepretable as to despise the stethoscope in affections of the lungs and heart. Prudence, therefore, as well as other considerations of a higher and more disinterested character, dictate to every practitioner the necessity of acquiring knowledge of urinary changes, and familiarity with the methods of distinguishing them, sufficient for ordinary practical purposes. This is by no means an intricate and difficult task. Doubtless a false impression on this point repels many from directing their attention to the subject. It is a current belief that to test the various alterations which the urine undergoes, requires minute acquaintance with the details of chemistry, and no small skill in analytical manipulations. This is an entirely erroneous idea. Very little attention and practice will enable the practitioner to determine all the more important facts involved in diagnosis; and the time and trouble which the necessary examinations will demand are but trifling obstacles.

In the following brief synopsis we shall include the rules and methods of analysis which are required to furnish, in most cases, all the information to be desired by the practitioner. The authorities consulted are Prout, Robert Willis, Christison, Bird and Simon. With this general acknowledgment we need not refer to them for the particular facts taken from them severally. The more important disorders of the urine, nosologically arranged as such, are as follows:

1. Aquaeus Urine, Hydruria, Diabetes insipidus, Diuresis.
2. Superabundance of Urea, Azoturia.
3. Undue diminution of Urea; Anazoturia.
4. Excess of Lithic Acid and the Lithates; Lithuria, Red Gravel.
5. Excess of the Phosphates, White Gravel.
7. Diabetes Mellitus or Melituria.
8. Albuminaria, or Bright's Disease.

We will take up these several classes of changes in the foregoing order, and state briefly the means by which they are severally to be distinguished.

A. Increase of the Aqueous portion of the Urine.—This is hardly to be considered a disease. It occurs transiently after free indulgence in alcoholic or other beverages (urina potus,) during mental excitement or anxiety, in some persons from intellectual activity, in hysteria, from a peculiar idiosyncrasy in which at the same time a constant craving for drinks is experienced. The chief advantage of recognizing it as a pathological condition is, that it may be distinguished from other affections of a much graver character, which are attended with an increased secretion of urine.

When the quantity of urine is increased, without an increase of the solid constituents, the specific gravity should be correspondingly low. The specific gravity is most readily determined by a hydrometer made for the purpose, called the urinometer or gravimeter. The quantity of urine passed in 24 hours is to be ascertained, and com-
pared with the average standard, which is from thirty to forty ounces. If the sp. grav. be lessened in proportion to the increase of the quantity, it is presumable that the excess is in the aqueous portion.

To obtain the exact relation of the solid ingredients, collectively, to the whole quantity of urine, the following method is to be pursued: A given quantity is to be carefully evaporated, and the solid residue, after being completely desiccated, accurately weighed. Then, by the arithmetic rule of proportion, we are able to arrive at the precise amount of ingredients in the whole quantity of urine. In order to spare this trouble, the ratio of solid and fluid matter to a given quantity of the whole fluid (1000 grs.) has been calculated for given numbers expressive of the specific gravity, and the results have been thrown into tables, so that having ascertained the specific gravity by the urinometer, on reference to the tables, we can in a moment determine the whole amount of solids contained in the quantity passed in 24 hours, with sufficient accuracy for most practical purposes.—[For the table, see R. Willis, on Urinary Diseases; Bird, on Urinary Deposits; Bell and Stokes' Practice.]

Diminution of the aqueous portion of the urine is to be determined conversely in the same manner. This, like the former, is seldom, if ever, a disease. It is present in febrile and inflammatory affections; and, within the limits of health, may be occasioned by increased transudation from the cutaneous surface, and various other circumstances. The specific gravity of healthy urine, it is to be recollected, is about 1,020.

B. Superabundance of Urea.—The density of the urine is increased in this disorder, provided there be not at the same time an excess of the aqueous portion. It frequently co-exists with diuresis, forming a species of Diabetes insipidus. Hence it is important to ascertain the whole quantity of urine passed in 24 hours in order to determine the amount of absolute increase of the urea. The relative excess of urea may be ascertained with sufficient accuracy for ordinary practical purposes in the following manner: A small quantity of urine is to be poured into a watch glass, and half an equal quantity of nitric acid added, so that the latter will fall to the bottom of the glass; the glass is then to be allowed to float on cold water. If only the normal proportion of urea be present, no striking effect will be produced. If the urea exceed considerably the normal proportion, crystals of the nitrate of urea are shortly observable at the bottom of the glass; or the mixture may become more or less solidified. The degree of excess is to be estimated, in part, by the time occupied in the formation of crystals. This may vary from a few moments to several hours. Healthy urine does not yield crystals in this mode except it be concentrated by evaporation. To ascertain precisely the quantity of urea in a given quantity of urine, a more intricate, but not difficult process, is required. For this, Simon's Animal Chemistry may be consulted.

Urine holding an excess of urea is generally straw-colored or pale.
It may be brown like porter. It speedily gives off a strong ammoniacal odour, owing to the decomposition of the urea.

This form of disorder is found associated with emaciation and debility, which are otherwise unaccountable. Examination of the urine will therefore frequently throw light on cases which were before obscure.

C. Diminution of Urea.—If the urea be diminished, the specific gravity will be correspondingly low, unless diuresis accompany it, which is not unusual. It is therefore, as in the former instance, important to take into consideration the whole quantity of urine passed in the 24 hours; so as to estimate the absolute as well as relative deficiency. The urine, under these circumstances, acquires on standing a putrid, sour odour compared to cabbage-water. The usual ammonical smell is deficient or absent, owing to the smaller quantity of urea to be converted by decomposition into ammonia.

The pathological relations and general symptoms of this form of disorder are but little known. It is doubtless connected with some fault in the processes of assimilation, (primary or secondary) by which the urea is formed.

The disorders relating both to the excess and deficiency of urea are of less frequent occurrence, and practical importance than those which are to follow.

D. Excess of Lithic Acid and Lithates.—It is still a question among chemical observers in what form or forms Lithic acid exists in the urine. The majority, however, adopt the opinion of Dr. Prout in opposition to that of Berzelius. Dr. Prout thinks that it does not exist in a free state, but in combination mostly with ammonia, forming the lithate of ammonia. It may exist in combination with soda. Lithic acid and the lithates (ammonia and soda) when present abnormally in the urine, are presented in the form of a sedimentary deposit. Lithic acid is much more rarely observed in an isolated sedimentary form, but it is occasionally presented. It is always in crystals, sometimes large enough to be discerned with the naked eye, but generally requiring the microscope. Their peculiar characters under the microscope are described and figured in the work of Golding Bird. In this synopsis we must omit microscopical appearances of these and other deposits, as they would occupy too much space. The reader is referred for facts relating to this very interesting and valuable department of examination of the urine to the work just referred to. Lithic acid crystals assume different colors between a crimson red and fawn color. They may be set free and studied with the microscope in healthy urine by adding nitric acid. The addition of nitric acid sometimes occasions a copious deposit, which, without care, may be confounded with albumen. The presence of lithic acid crystals does not necessarily denote an excess of this urinary principle; for if any acid be superabundant, (muriatic, sulphuric, lactic, &c.) it may combine with the ammonia already in combination with the lithic, and set the latter free. To determine in doubtful cases whether it be
absolutely in excess, the whole urine passed in 24 hours must be collected and measured: a definite quantity must then be tested quantitatively for the lithic acid which it contains. By the rule of proportion, the whole amount contained in the whole quantity is readily ascertained. If this exceed considerably the average healthy quantity, which is a fraction over 8 grs. in the 24 hours, it is in excess. For the details of the quantitative analysis, which is not difficult, see work of Bird, or Simon’s Animal Chemistry.

The most common form in which it is in excess is in combination with ammonia or soda,—constituting what is usually called the Lithates. These form a non-crystallized, amorphous, or pulverulent sediment. The sediments of the lithate of ammonia have different colors—red, pink, and sometimes, but rarely, nearly white. The red sediment is familiar as the lateritious or brick-dust deposit. The test of these is sufficiently simple. Urine holding the suspected deposit in a test-tube or common vial is to be held over a spirit lamp or near the fire. If on becoming warm the sediment dissolve and the urine be rendered transparent, it consists of the lithates. If, on the other hand, it is unaffected, or the urine be rendered turbid, the disorder is of a different character. The deposit of the lithates occurs transiently from indigestion, or a common cold. It characterizes the termination of fevers and inflammations, and sometimes continues through the course of fevers. It occurs in a marked degree in gout and rheumatism, and in some forms of dyspepsia. In general terms it denotes mal-assimilation, either primary or secondary, or both, but the specific aberrations upon which it depends are yet to be determined. The lithic acid crystals constitute the concretions called red gravel. They occur in the kidney, and passing into the bladder may constitute a nucleus for stone. The lithic acid diathesis, therefore, with reference to this possible result should be known and remedied.

E. Excess of Phosphates.—The saline constituents of the urine are of several kinds, but the phosphates predominate, and for most practical purposes, it is sufficient to include them under this generic term. The more important of the earthy salts are phosphate of ammonia and magnesia, called frequently the triple phosphate; the phosphate of lime; and the carbonate of lime. They are nearly insoluble, unless an acid be present. The ammonio—phosphate of soda is another triple salt which is soluble, and therefore not so easily determined to be in excess. The phosphates in excess (with exception of the salt last mentioned) manifest themselves by a white sediment, which may from appearance alone be mistaken for the lithates, mucus, pus, or albumen. It is to be tested first by heat. Heat applied in the same way as when testing for the lithates, produces no change, or if any, it increases the deposit. Nitric acid is then to be added. (a few drops will suffice.) If the sediment consists of the phosphates, it will be found to dissolve, and render the urine clear. Urine holding the phosphates in excess is usually pale frequently resembling whey, and sometimes milky in appearance.
In all other disorders of the urine it has an acid reaction upon litmus. In this disorder the acid reaction is faint, or it may be neutral, or it may be decidedly alkaliescent. Alkaliescent urine necessarily throws down phosphatic deposits, because the phosphates are insoluble if no acid be present. A white deposit occurring in urine presenting an alkaline reaction may therefore be known to consist of the phosphates. To test the aciety of the urine the practitioner should be provided with blue and red test paper.

This disorder is connected with some bad forms of dyspepsia. It generally denotes great loss of constitutional vigor, and the breaking up of the constitution. It is therefore an unfavorable sign. There are, however, striking exceptions to this remark. The phosphatic sediments are amorphous, with the exception of phosphate of ammonia and magnesia. This is presented in minute crystals, which frequently collect on the surface of the urine forming an irridescent scum. Crystals of this salt forming in the kidney constitute what is called white-gravel. Calculi with these crystals for nuclei are very rare. They generally proceed from crystals of lithic acid as nuclei, but the latter frequently increase in size from phosphatic accretion.

F. Presence of Oxalic Acid.—The foregoing disorders have related to principles which exist in the urine in a state of health; but oxalic acid is not present in healthy urine. Its existence in even so small proportion is therefore a mark of disease. It is a rare disorder; but since the investigations of Golding Bird it has been found not to be so extremely intrequent as has been heretofore supposed. It does not usually form a deposit, and its presence is to be determined by the microscope. Its pathological relations are obscure. The oxalite of lime constitutes the rare form of calculus called mulberry calculus.

G. Presence of Sugar in the Urine. Diabetes Mellitus.—Sugar does not exist in healthy urine. Until lately it was supposed not to exist in the blood even of diabetic patients. Its presence under the latter circumstance is, however, now well ascertained. Diabetes may be suspected when the quantity is greatly increased, and when it has a high specific gravity. The density of diabetic urine is seldom under 1.025, and may be as high as, 1.050. It is usually of a pale color, and froths on agitation more than healthy urine.

There are numerous tests for sugar in the urine, but the two following will suffice for all practical purposes:

1st test. A few drops of the suspected urine are to be placed on a porcelain dish, and carefully evaporated. When dried add a few drops of dilute sulphuric acid, (one part of acid to six or eight of water) and heat gently for a few moments. If the urine contain sugar, the spot soon turns black, owing to the carbon of the sugar; otherwise it assumes an orange color. This is an easy and very delicate test.

2d test. Put two teaspoonfuls of yeast into a vial, and pour upon it three or four ounces of the suspected urine. Place the mixture in a warm place. If sugar be present fermentation will soon take place.
If sugar be not present it will remain unaffected. A good way to illustrate the significance of this test is to take three vials each containing the same quantity of yeast. Add to one vial the suspected urine; to another, water holding in solution a few grains of sugar; and to the third, urine not supposed to be diabetic. Place them all together in a warm place. The difference will show the value of the test. An acquaintance with these simple methods of determining the presence of sugar renders tasting quite an unnecessary sacrifice of inclination. To taste of a patient's urine is therefore to be regarded as an evidence of an unusual want of fastidiousness, or a confession of ignorance.

II. Presence of Albumen. Bright's Disease.—Albumen is not a principle of healthy urine. Its presence is therefore a sign of disorder. It is occasionally noticed in connection with a variety of diseases; when it is considerable in quantity, and persistent, however, it is a pretty certain criterion of granular degeneration of the kidneys, or Bright's disease. Under these circumstances it coexists with anarsaca and other dropical effusions; and may be associated with numerous other affections. The tests of its presence are heat and nitric acid. If a quantity of urine in a test tube or common vial be heated to near the boiling point, the albumen, if present, is coagulated and precipitated. A suspicion may possibly exist that the deposit thrown down in this way consists of the phosphates. To settle this point a little nitric acid should be added, which, if the phosphates are deposited, will cause them to dissolve; otherwise the deposit will remain. Nitric acid added at first will, also, coagulate and throw down the albumen. This, from appearances alone, may be confounded with deposit of lithic acid, which sometimes occurs on the addition of nitric acid. To obviate this mistake the urine should also be tested by heat; or the white deposit examined with the microscope, which, if it consists of lithic acid, will demonstrate its crystalized form. For all practical purposes it suffices to estimate the relative quantity of albumen by noting how high the deposit extends up the vial or test-tube, after being permitted to stand for several hours.

I. Mucus, Pus and Blood in the Urine.—The presence of blood, if in considerable quantity, is easily enough detected by the eye alone. If diffused through the urine in small quantity it is more difficult to be ascertained. The color of the urine is blood red. A white rag dipped in it is colored red. In very doubtful cases the microscope must be resorted to, when the appearance of the blood disks will settle the question.

It is sometimes useful to distinguish pus from mucus. Mucus generally falls to the bottom of the vessel, and when the urine has been gently poured away, remains with greater or less tenacity. If the urine be agitated with the mucus, the latter does not commingle, but appears in the form of long shreds or jagged portions. Pus, on the other hand, is capable of being readily mixed with the urine on
agitation; it does not form a viscid tenacious mass, and the supernatant urine cannot so readily be poured away from it. These characters will suffice whenever either exists in any considerable quantities. The microscope, in cases of a doubtful character, furnishes a ready test, the appearance of the pus globule being sufficiently characteristic.

The foregoing synopsis, it it believed contains the necessary rules and methods of testing urine, in so far as is requisite for the general practitioner to be acquainted with the subject. As we have said, our object in presenting them in this form is, that it may serve to refresh the memory, and for convenience of reference. If it should be made to appear that the subject is not a difficult one, but, on the contrary, only requires a little attention to be understood sufficiently for all practical purposes, the little trouble which this brief summary has cost us may answer another good end—viz., it may convince our readers that there is no good apology for neglecting to avail themselves of the knowledge to be derived from examinations of the urine.

Remarks on Foreign Bodies found in the Sub-lingual region, and regarded as Salivary Calculi. By Dr. Stanski.—(Translated from the Archives Générales for October, 1846.)

The object of the article referred to in the above caption is to establish the fact that foreign bodies which occur in the neighborhood of the sub-lingual glands have been hitherto erroneously regarded as salivary calculi. The author proceeds to give the symptoms usually attributed to salivary concretions.

"The disease usually manifests itself slowly and insidiously, by a tumefaction more or less hard of the sub-maxillary gland, or rather of its surrounding tissue, beneath the angle of the lower jaw. This swelling is attended with pain more or less acute, which is increased by pressure, by the movements of the tongue, and by deglutition, and which sometimes may simulate angina. The patients have sometimes experienced a sense of numbness in the lower jaw and in the auricular and temporal regions of the affected side. These symptoms cease and reappear sometimes for months and even years. In a case seen by the writer, the patient, aged 36 years, had suffered since the 10th year of his age. In the case related by Sabatier, the patient was suddenly seized with pain during an effort of the voice whilst fencing.

"These temporary tumefactions are evidently produced by the irritation of the foreign body, and terminate in small abscesses beneath the tongue, which open and give issue to pus. But when, from any cause, these bodies are shocked, or become moveable, they irritate
the soft parts, and by approaching the buccal cavity, provoke an eliminatory inflammation and suppuration. It is then that the swelling and pain, and consequently the impediment to the movements of the tongue and of deglutition, become intense; the saliva becomes thick and viscid, the mouth unpleasant, the sublingual gland and the mucous membrane covering it swollen and edematous. On pressing these parts, a tumor more or less voluminous is found beneath the tongue; within the soft parts is felt a body of stoney hardness, and if the inflammation has existed for some time, pus may be forced from an opening near the frenum of the tongue. Finally these symptoms cease only when the foreign body has been eliminated by the efforts of nature or removed by the surgeon.

"Before estimating the value of these symptoms, it should be observed that the presence of a calculus in the salivary passages must occasion their obstruction, their dilatation from accumulated saliva; in short the disease termed Ranula. In order to show the difference between the symptoms above related and those of Ranula, let us see what these are.

"Ranula appears in the form of a flattened, globular or oblong tumor, soft, compressible, slightly transparent, situated beneath the anterior portion of the tongue, near its frenum. It is at first small and indolent and impedes but slightly the motion of the tongue; but in time it grows, the impediment increases, and articulation becomes difficult. In a few months the tumor sometimes fills the buccal cavity, presses back and hides the tongue, and if not timely relieved may be attended with serious consequences.

"It must be seen that the symptoms of Ranula are essentially different from those of concretions. Ranula is unattended with the intense pain which accompanies these; its tumor is soft, indolent, transparent, and situated under the tongue, instead of beneath the angle of the jaw. Motion of the tongue is impeded by the volume of the sub-lingual tumor and not by the pain it occasions, as in concretions. It is difficult to admit the formation of such large calculi within canals almost capillary, without obstruction to the flow of the saliva and consequently the production of Ranula.

"Now in none of the subjoined cases were the patients affected with Ranula; and although J. L. Petit affirms having seen small calculi in one or two old and violent cases of Ranula, those concretions were sandy and friable and formed by the stagnation and thickening of the saliva; in most of the cases recorded, there is no mention made of calculi.

"The tumefaction of the region of or even of the sub-maxillary gland itself, is no evidence of the presence of calculi in the salivary gland, for a foreign body in the neighborhood might, by irritating the surrounding tissues, occasion the same state of things, as is seen in other parts of the body. We cannot admit the explanation offered by Sanéquier, who says that the tumefaction is produced by the saliva, which not being able to escape, flows back to the gland, for, it might
be asked, why does this tumefaction not occur in Ranula, in which the saliva is certainly retained in the duct of Wharton and ought to flow back towards the gland? The intense pain experienced under the tongue and the consequent impediment to the motions of the tongue and especially of deglutition, would rather indicate the presence of these concretions between the muscles that concur in these functions, than in the excretory duct of the salivary gland—moreover those intense pains, felt only very late and when the foreign body is about to be eliminated, do not exist in Ranula, even when very large. The reason is that these pains are not occasioned by an accumulation of saliva in the duct, but by an inflammatory action in the soft parts preparatory to the elimination of the calculi.

"Those authors who have related cases in detail observe that pus flowed from these sublingual tumors, not by the duct of Wharton, but by an opening near it; nor do they allege that saliva flowed from them. In the case seen by the writer, the pus issued from an orifice near the frenum, a little in front of the orifice of the duct; no saliva flowed from the orifice of suppuration, as would have happened if the duct had been occupied by a foreign body."

Dr. Stanski now furnishes the analyses of saliva made by Berzelius and Mitscherlich, to show that its constituents are not adapted to the formation of calculi. He then presents a series of cases illustrative of his position. We translate the one observed by himself, our limits not allowing us to lay them all before the reader, and this being deemed sufficient to convey his views.

"Joseph . . . a servant, aged 36 years, of a good constitution, lean and nervous, was subject from childhood to a swelling beneath the angle of the lower jaw; this swelling had continued some time, was tender on pressure, and occasioned during mastication and deglutition a sharp pain along the same side of the throat. These symptoms were always attributed to a tumefaction of the lymphatic glands; emollient applications would be made, and the disease would disappear to return again some time after. With these symptoms the patient would generally experience an uneasy sensation in the temple and cheek of the right side, and a numbness which he referred to the lower jaw of that side. On the 12th of July, 1846, being at the Hotel Lambert, the patient consulted me for a pain beneath the angle of the lower jaw, in the glands, which he stated were swollen. Upon examining him, I found neither swelling, redness, nor induration sufficient to account for the intensity of the pain he suffered. I therefore determined to look into his mouth for the cause, and accordingly, on elevating the tongue I found in the region of the sublingual gland a considerable induration and tumefaction; yet no pain was produced upon pressing it, nor had the patient even suspected its existence; he merely stated that his saliva was viscid and thick. Not being able to determine the nature of the disease, I
prescribed poultices and frictions with iodated ointment, intending to see the patient again, which I did a few days after. He then told me that he had suffered considerably beneath the tongue the two preceding nights, that deglutition was very painful, his saliva very thick, and the temple and right side of his face felt tender and benumbed. On examination I found a tumefaction and redness occupying the position of the sublingual gland, which upon pressure was quite painful and yielded pus from an opening on the side of the orifice of the duct of Wharton. I found in it also a body of stoney hardness. The patient suffered very much and incessantly begged to be relieved. Having become convinced that a foreign body, probably a salivary calculus, was the cause of all the symptoms, and that the patient could only be relieved by an operation, I made a longitudinal incision of two centimetres on the inner side of the sublingual gland and as near as possible to the tongue, and with dissecting forceps I removed a body, irregularly globular, hard, whitish, rough on most of its surface, and concave and smooth on one side. The patient having been fatigued, I made no further exploration on that day, but on the following, upon probing the wound, I found at its bottom a hard body, the extraction of which I made with some difficulty, as it was attached to the soft parts.

"During the last extraction, the wound filled with saliva and the patient was immediately relieved after the operation. This body was fifteen millimetres in length, was whitish, less rough than the former; from its shape it could be readily recognized as one of the small molar teeth.

"Had I not removed the second body, having evidently the form of a tooth, I would have examined with less attention the first, which had an irregular form, (its rough surface being of a brownish yellow,) and have mistaken it for a salivary calculus. But I had already, before extracting the second, observed as above stated, that the first presented on one side a concave and smooth surface, resembling the crown, whilst the opposite side presented a point resembling the root of a large molar tooth which had not yet passed out of the alveola. The extraction of the second tooth completely confirmed me in the opinion. I should add that these teeth touched each other by their crown, which seemed to be moulded on each other, that the patient has all his teeth in a good state, and that after the extraction I could without pain introduce into the wound a probe to the depth of ten or eleven centimetres, carrying it horizontally towards the pharynx. It may be remembered that I have said that the wound filled with saliva during the operation. This phenomenon, in another case, might have been regarded as a proof that the foreign body was lodged in the salivary duct, had not the true nature of the body been recognized. As to the abundant and sudden secretion of the saliva, this may be explained by the irritation of the glands incident to the operation, and perhaps also by the temporary stagnation in the duct, consequent upon compression, for as soon as the foreign body was
removed, the saliva flowed from the orifice of the duct and filled the
wound which was then the most dependant point.

"The reader must have observed the remarkable fact, that of the
two extracted teeth, the first was incrusted with an earthy substance,
whilst the other was but slightly so. I think that this may be ex-
plained by the prolonged sojourn of this tooth in the midst of pus,
whereas such was not the case with the second. This case proves
clearly that these foreign bodies may be covered with calcareous
concretions without being at all contained in a salivary passage."

The author concludes his interesting paper as follows:—

"Our object has been thus far to show that the foreign bodies re-
moved spontaneously, or by art, from beneath the tongue, and which
were regarded as salivary calculi, were not located within the salivary
apparatus. From the case we have seen, and from the fact that it
resembles in most respects those recorded by others, we believe that
they were teeth more or less developed, whose surface being either
corroded, worn smooth, or covered with incrustations, prevented their
recognition. Let us see how these dental productions may occur in
the soft parts of the mouth. Their presence under the tongue may
be explained in two ways: they might be fetal remains with which
the individual was born, as has been observed in other parts of the
body. This view is especially applicable to those cases in which the
origin of the disease may be traced back to early childhood and in
which several of such teeth have been removed, and more particular-
ly if other fetal remains existed. Meckel cites Dr. Schill, who saw
in the course of three months three teeth developed under the tongue
of a man 50 years of age. They were contained in a cyst.

"Another and a more plausible explanation is this: it is well
known that there are individuals in whom teeth are formed beneath
those ordinarily permanent, so as to constitute a third series; these
most usually fail to be developed, and remain in the alveolæ. Now
if these teeth do not force out those above them, they become as for-
eign bodies, and make their way through the tables of the maxillary
bone, and even between the muscles, where they may remain encyst-
ed, and finally be eliminated as in the cases we have related. Max-
illary bones have been seen containing such supernumerary molars,
and others in which the walls were worn away or perforated by such
teeth; the museum of the Faculty contains an inferior maxillary of
this kind. As the sub-maxillary gland is on a line with the large
molars, and as these are the teeth most subject to this peculiarity, it
is not surprising that the tooth having passed out of the alveola,
should irritate the gland and muscles, producing tumefaction of the
former and pain during deglutition.

"When consulted for this affection, the physician should examine
carefully the sub-maxillary region, and determine whether the tumef-
action be scrofulous or whether it depends upon the presence of a
foreign body. He should never omit to extend his researches be-
Effects of Mercury on the Young Subject.

[April,

neath the tongue, for the foreign body might already be near the fraenum and still occasion tumefaction of the sub-maxillary glands. If the foreign body has advanced so far as to be covered only by a thin stratum of soft parts, he may either await its spontaneous elimination, which is however always very painful, or extract it by making an antero-posterior longitudinal incision as near the tongue as possible, so as to avoid injuring the salivary ducts.

On the Effects of Mercury on the Young Subject. By John B. Beck, M. D., Prof. of Materia Medica and Medical Jurisprudence in the College of Physicians and Surgeons, of New York. (From the Annalist.)

In some previous papers,* I endeavored to point out the peculiarities attending the operation of Opium and Emetics, on the infant subject, as distinguished from the effects of these agents on the adult. I now propose to make some remarks on another article of even still greater importance, and that is Mercury. That Mercury is an agent of immense power, either for good or evil, upon the human constitution, cannot be questioned. While in many cases it is the means of saving life, in not a few it unquestionably destroys it. If this be so, it becomes a question of the deepest practical interest, to determine whether its action is modified in any way by the age of the patient, and particularly so, when it is recollected that it is given by too many physicians, even more freely, and may I not add indiscriminately, to the young subject than to the adult.

The first and most striking peculiarity attending the action of mercury is that in young subjects, it does not produce salivation so readily as it does in adults. Indeed under a certain age, it appears to be exceedingly difficult to excite salivation at all in them. On this point, besides our own experience, we have abundance of testimony. Dr. Clarke says, "under various circumstances he has prescribed mercury, in very large quantities, and in a great number of cases; and he never produced salivation, except in three instances, in any child under three years of age." † Dr. Warren, of Boston, observes, "that he has never known an infant to be salivated, notwithstanding he has given in some cases, large quantities with this view," ‡ Mr. Colles, of Dublin, says, "no man in the present day requires to be told that mercury never does produce pyralism, or swelling and ulceration of gums in infants." § Drs. Evanson and Maunsell speak still

† Commentaries on some of the most important Diseases of Children. By John Clarke, M. D., p. 182.
more strongly. They say, "mercury does not seem capable of salivating an infant. We have never seen it do so, nor are we aware of any such case being on record." "We have never succeeded in salivating a child under three years of age."*

The same general fact seems to be applicable to the external use of mercury. Dr. Percival, of Manchester, remarks, that he "repeatedly observed that very large quantities of the Unguentum Ceruleum may be used in infancy and childhood, without affecting the gums, notwithstanding the predisposition to a flux of saliva, at a period of life incident to dentition."†

That salivation does not take place so readily in the infant as in the adult, would seem then to be well established. That it never can or does take place, as might be inferred from some of the preceding quotations, is by no means, however, true; and the statement, if implicitly relied on, is calculated to be the cause of much mischief. That very young subjects do sometimes become salivated, is unquestionable. One case, and only one, however, has occurred in my experience, in which a child of two years of age was salivated, and that by a very moderate quantity of calomel, viz., five grains, given in three portions, at intervals, within the space of about twelve hours. In about two days after, the gums became inflamed, the tongue swelled, several ulcers appeared in the month, and the flow of saliva was free; after continuing about three days in the same state, it gradually yielded, and disappeared without any further inconvenience. In this case every thing seemed favorable to the development of mercurial action. The child had been laboring under hooping cough for several weeks, and was a good deal reduced. It vomited freely with every paroxysm of coughing, and this no doubt aided in bringing on salivation, in a constitution peculiarly sensitive and evidently scrofulous. Nor is this a solitary case. Dr. Clarke, already quoted, admits that in three cases salivation was produced in children under three years of age, and similar cases have been observed by others. Dr. Blackall relates the case of a child, two years of age, who was salivated in consequence of taking two grains of calomel for several successive nights. The child was a poor scrofulous subject, and it sunk under the effects of the mercury.

This, then, is a remarkable peculiarity in the action of this agent upon the infant subject, and the observation of it has doubtless led to the belief, too prevalent among some physicians, that it may be given to them to almost any extent with perfect impunity; an error, which, if not in its immediate, yet certainly in its remote effects, has been the prolific source of more mischief, probably, than any of us are aware of.

Although mercury so seldom salivates infants, yet, notwithstanding this, it cannot be doubted that it affects the system profoundly, and even more so proportionally than it does the adult. That it should do

so appears perfectly natural, when we reflect upon the mode of its operation on the human system. On this subject, I am aware that a great difference of opinion exists. By some, mercury is looked upon as a stimulant; while others view it as a sedative. A familiar acquaintance with its effects, however, will show, I think, that it may be the one or the other, according to circumstances—according to the dose in which it is given—the length of time it is continued, and more especially, the condition of the system at the time of using it. A single large dose of calomel will cause nausea and relaxation, and sometimes unpleasant prostration, while if it be given in smaller doses and repeated frequently, it will occasion irritation of the intestines, and general disturbance of the vascular and nervous systems. In the former case acting as a profound sedative, and in the latter as a stimulant, or rather irritant. That calomel given in large doses operates as a sedative, seems to be proved, not merely by the nausea and prostration which it frequently produces, but by other considerations. In dysentery, for example, in the adult, a dose of twenty grains of calomel will sometimes allay pain and irritation, with as much certainty as a dose of opium. For the purpose of testing the effects of calomel, some interesting experiments were made by Mr. Annesley, which would seem still further to show, that in large doses the action of this agent upon the mucous membrane of the stomach and intestines, is that of a sedative. He took three healthy dogs, and gave to one 3 j. of calomel, to a second, 5 iij., to a third, 3 iij. After this they were tied up in a room.

"The dog which took 3 j. did not appear to feel any kind of sickness, till six or seven hours afterwards, when he vomited a little. He was lively the whole time, and ate his food well; had been purged two or three times; dejections of a black grey color.

The dog which took 3 j. was likewise lively, and ate his food well, vomited two or three times, and was purged more than the other; he passed tape worms and the dejections were black.

The dog which took 3 iij. was heavy, and apparently uncomfortable the whole day, and did not vomit at all; he was purged, and passed a very long tape worm; dejections also black."

Twenty-four hours after they had taken the calomel, the dogs were all hung, and five minutes after they were dead, they were examined, and the vascularity of the stomach was found to be in the inverse ratio of the calomel they had taken; i.e. in the dog which had taken 3 iij, the vascularity was the least, and so on. For the purpose of comparing this with the condition of the stomach of a dog which had taken no calomel at all, an examination of another dog was made; and here the stomach was found to be more vascular than in any of the others. From these experiments, Mr. Annesley drew the conclusion, that "the natural and healthy state of the stomach and intestinal canal is that of high vascularity, and that the operation of calomel in large doses, is directly the reverse of inflammatory."178

*Transactions of the Med. and Physical Society of Calcutta. vol. 1, p. 211.
The foregoing considerations would seem to show that calomel in full doses is a local sedative, and in its general effects, is debilitating to the system at large. Hence its great utility and value as a remedy in many inflammatory diseases.

When, on the other hand, it is given in small and repeated doses, it acts not unfrequent as a local, as well as a general irritant, producing immoderate action of the bowels, and general irritation of the nervous and vascular systems. Now these, we know, are the effects observed continually in the adult, and it is but reasonable to suppose that all of them must, as a matter of course, be aggravated in the more delicate and sensitive system of the infant.

What shows incontestibly that the action of mercury is actually more energetic on the infant than the adult, is the fact, that when salivation does take place in the former, as it sometimes does, its effects are most disastrous. Sloughing of the gums and cheeks, general prostration and death are by no means uncommon occurrences. On this subject, Dr. Blackall justly remarks, "a general opinion prevails, that the constitutions of young subjects resist mercury. Its entrance into the system they certainly do resist, more than we could expect; but they are greatly overcome by salivations, and the possible occurrence of such accidents may well set us constantly on our guard."* Dr. Ryan, too, says, "Ptyalism of infants is often followed by sloughing of the gums and cheeks; and this I have known to occur after the use of it in Hydrocephalus."†

Besides being more energetic in its action on the infant, mercury is also more uncertain. This must necessarily be the case, and for the same reasons that every other active agent is so. In the adult we know that mercury varies in its effects, according to the condition of the system, and the peculiarities of the patient's constitution. Thus some persons are salivated by the smallest quantity of this metal, while others resist the influence even of the largest quantities. In some, febrile action; in others, diarrhoea and exhaustion take place even from moderate doses. Hence it is, that every prudent physician, if unacquainted with the previous history of his patient, makes it a special subject of inquiry to ascertain whether he has ever taken mercury previously, and how it affects him. Now, in the young infant, of course, as we cannot so well have the benefit of this information, more uncertainty must necessarily attend its operation.

These, then, are the peculiarities attending the operation of mercury on young subjects, viz: that they are salivated with great difficulty, and that notwithstanding this, the effects of it are frequently more energetic and uncertain, than they are in the adult. And it is upon these as the basis, that I propose to make a few remarks, bearing upon the practical application of it in young subjects.

1. If salivation occurs so rarely in children under a certain age,

then it is evident that it can never be made a criterion by which to judge of its influence on their systems. To attempt, therefore, to produce this effect, as we do in adults, is manifestly improper. In cases where it is desirable to get the system under the full influence of the remedy, other modes must be resorted to for the purpose of judging to what extent the use of the article should be carried. Now this is by no means easy. Even in adults, where we have the benefit of salivation as a test, all practical physicians are aware how difficult it is frequently, to decide when it is proper to stop the use of the remedy. How much more so must the difficulty be increased in the young infant, where we are left without this guide. The only modes of judging, of course, are the character of the evacuations from the bowels, and the general impression made upon the disease for which it is administered. Both these are evidently, however, uncertain. It is to be feared, therefore, that for the want of a more certain guide than we at present possess, the use of this remedy is, in many cases, unnecessarily protracted to the great detriment of the little patient. From all this the conclusion is obvious, that in the use of this article in the young subject much greater caution is necessary than in the adult.

2. The fact that mercury may prostrate and destroy a young child, even though it does not cause salivation, it is to be feared is not sufficiently appreciated, at least by some. We have known calomel given without weight or measure, to a young child, and the reason assigned to justify it was, that it could do no harm, because it would not salivate. Now it appears to me that no opinion can be more unfounded, and no practice more mischievous. Although a single dose of calomel, even though large, may be well borne by children of ordinary strength of constitution, yet even this is not entirely safe in all cases. And when these doses are frequently repeated, particularly in delicate habits, the most serious consequences may result.

3. The use of mercury in young subjects as an alternative, should in all cases be conducted with great caution. There is no practice more common than that of continuing the use of this agent in small doses, for a considerable time, and certainly none which is more liable to abuse. Under the idea that the dose is so small and from no salivation appearing, we are apt to infer that even if the medicine is not doing any good, it is certainly not doing any harm. Any improvement too, which occurs during the use of the article, is sure to be attributed to the silent operation of it on the system. Now although this is not unfrequently the case, yet it is not invariably so; and every unobserving physician must have been aware of cases, in which, in this way, the article has been unnecessarily and injuriously continued. In bowel complaints, under the idea of altering the secretions, it has frequently, no doubt, helped to keep up the very intestinal irritation which it was given to correct. In other cases it has developed the latent tendency to other diseases, such as Scrofula, Phthisis Pulmonalis, etc. In adults we know this to be very often
the case. How much more likely is all this to happen in the young infant.

4. In the use of mercury in young children, great care should be exercised in ascertaining, as far as possible, their constitutional peculiarities. This, of course, is not in all cases easily to be done. A good deal, however, may be learned from an acquaintance with the tendencies of the parents. Wherever the parents show indications of scrofula, or where there is an hereditary predisposition to consumption, great caution ought to be exercised in the use of mercury in their offspring.

5. Mercury should be administered with great caution, in cases where a child has been sick for a considerable length of time, and when the strength of the child has been very much reduced. In this state of constitutional depression, a single cathartic dose of calomel sometimes proves fatal. We think that we have seen more than one case, in which a child has been irretrievably prostrated under these circumstances, under the false impression that calomel is an innocent purgative to a child.

6. The too common practice of giving calomel as an ordinary purge, on all occasions, is certainly unjustifiable. From the facility with which it may be given, it is unquestionably resorted to in a great number of cases, where it is certainly unnecessary, and in a great number where it positively does harm. The misfortune is, that its use is not limited to an occasional dose, but it is too often given in every slight indisposition of the child. Now, in this way, there can be no question that the use of it has laid the foundation for the ruin of the constitutions of thousands. It ought to be a rule laid down and rigidly followed, that in very young children, mercury ought never to be used as a cathartic, unless there is a special reason for resorting to it. In a great majority of cases, milder cathartics are decidedly to be preferred.

In concluding these observations, I trust it may not be supposed, that my intention has been to undervalue the importance of mercury as a remedy in the diseases of children. On the contrary, no one appreciates it more highly than myself. In many cases nothing can supply its place, and its judicious use has been, and is, the instrument of saving multitudes of lives. Notwithstanding, however, the many cautions to the contrary, it is to be feared that the use of it is still too general and indiscriminate. Indeed, the amount of it which is taken by the human race in one way or other, is incalculable. What is given by regular physicians, is perhaps the smallest quantity. If the public really knew how much of this article is swallowed unknown to themselves, in the shape of bilious pills, worm lozenges, and the white powders of the Homoeopaths, they would be amazed at their credulity in deserting their old medical advisers, because they have the boldness to give them an occasional dose, and the honesty to tell them so.
Insensibility to pain by the vapour of Sulphuric Ether. [April,

sium. It consists of sublimed sulphur half an ounce, carbonate of potassa two drachms, lard two ounces; one half of this quantity is to be used daily.

_Zinci Preparata._—The ointment of the oxide is useful in many eruptions; in some more benefit is derived from the lotion at the same preparation. The chloride of zinc is used as an escharotic in various strengths; it is made into a paste. (For mode of forming and using this paste, see abstract, Vol. I. p. 67.)

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Insensibility to pain from the inhalation of the vapour of pure Sulphuric Ether.

It will be recollected by our readers that we early directed a letter to Boston, asking information on the subject of a new narcotising gas said to be discovered in that city. The reply was any thing but satisfactory; and allusions have since been made to a controversy between Drs. Jackson and Morton, and the secret attempted to be kept by a patent obtained by the latter from our government. We have been watching the matter with considerable interest, and by recent arrivals from Europe, we find the production of insensibility to surgical operations by the inhalation of pure Sulphuric Ether, has been received there with acclamation by the profession. In London, Paris, Edinburgh, Dublin, in fact, every where, both medical and commercial papers are filled with commendations on the subject.

Below we give details which will no doubt prove interesting to our subscribers. After reading Dr. Jackson's communication, sent by himself, we have performed some experiments, in which we are still engaged, and their result may be given under the head of Medical Intelligence, which please see.

The first article is a copy of a paper addressed to the American Academy of Arts and Sciences.

**Mr. President:**—In reply to numerous inquiries which have been addressed to me from scientific gentlemen in various parts of the country, I beg leave to submit to the Academy, the following communication.

Although it will be impossible for me to condense all I may have to say upon the subject, within the limits of this paper, I shall endeavor to state those points, that are most interesting.

I have long been impressed with the importance of Medical Chemistry, and being both a Chemist and Physician, it is natural that I should seek among the resources of the Laboratory, the means of alleviating suffering. I was early impressed with the remarks of Davy
concerning the remedial agency of gaseous matters, and felt disappointed to find so few practical results growing out of the Medico-Chirurgical experiments. It seemed to me quite strange that no adequate researches had been made on the inhalation of vapors of such volatile and peculiar matters as the Ethers, and thus I was induced to institute the experiments which led to my discovery.

We are aware that Ether ranks in the Pharmacutic books and Dispensatories, as a diffusible stimulant, and that its fumes or vapor produce intoxication of short duration; but it was unknown, until my experiments were performed, that it rendered the body insensible to pain, and threw the mind into a pleasant reverie or dream, so as to disregard the tortures of the knife and cautery. So far from recommending its inhalation, all the authorities strenuously advised against breathing it, as "fraught with danger." Perhaps there may be danger in the prolonged inhalation of the ordinary Ethers of Pharmacy, which are liable to be impure. We know that commercial Ethers may contain Sulphurous Acid Gas, Acetic, Formic, and Aldehydeic Acids, the three latter being produced by absorption of Oxygen from the air.

The presence of a considerable proportion of alcohol in these Ethers causes them to produce mere intoxication followed by headache and prostration of nervous energy.

Although others may have experienced these effects, still the higher stage, viz: perfect insensibility and unconsciousness of pain was never reached, and the thin veil which concealed this discovery from the world had not been raised until my experiments were instituted.

A short description of the best processes of preparing Ether to produce the effects which I proposed to attain will not be irrelevant.

The basis of all the Ethers is a hypothetic radical, called Ethule, which is represented by the formula, \( C^4 H^5 \) and symbol Ae. Pure Sulphuric Ether is regarded as an oxide of Ethule, and is represented by the formula \( C^4 H^5 O \), its symbol is, therefore, Ae O. It is prepared by decomposing highly rectified Alcohol by means of Sulphuric Acid, or Oil of Vitriol. Five parts of Alcohol of 90 per cent. are mixed with 9 parts of Oil of Vitriol in a vessel of copper or iron, placed in cold water, so as to cool the mixture. The action of Sulphuric Acid on Alcohol is catalytic, bisulphate of Oxide of Ethule is formed, which by elevation of the temperature and brisk ebullition is decomposed, and the oxide of Ethule passes over in vapor; the Sulphuric Acid remaining with a portion of undecomposed Alcohol, the water which passes over in vapor no longer uniting with the Ether. Alcohol is repeatedly added to the Sulphuric Acid, which would decompose an indefinite quantity of it, were it not diluted by the water introduced; 10 per cent. of which is conveyed to it by common Alcohol.

The distilled liquid is next to be treated with an alcoholic solution of potash to neutralize the acids, and to render it slightly alkaline. It should then be redistilled in a water bath, and the operation is to
be arrested as soon as the Ether has attained a specific gravity of 0.72 at 80° F. The specific gravity may be still farther reduced by allowing it to stand for some days over dry chloride of Calcium and then re-distilling it in contact with that hygrometric substance. Its boiling point is at 96° F. It has a penetrating aromatic odour and is highly inflammable. It should not change the color of blue litmus paper.

The pure vapor of Ether as thus produced, will not support respiration, and by excluding air from the lungs would produce complete asphyxia. Therefore, I inspired it in such a manner, that there was mixed with the vapor a sufficient quantity of common air, to enable the lungs to perform their usual functions, but slightly disturbed by the Etherial vapor; and I would caution all who may administer it in future, carefully to fulfil this important condition so essential to success. In cases where alarming symptoms of asphyxia may occur from the accidents of improper administration, or from impurities of the Ether employed, and in those persons of high nervous susceptibility, or of determination of blood to the brain and pulmonary diseases, (though in the latter cases it may have been improper to administer it,) I have prescribed the inhalation of pure Oxygen Gas, which, acting on the blood, immediately renders it arterial, and this gas should be kept in readiness to meet any such emergency. It may be preserved in a gasometer, and be drawn off in a large India rubber bag for use at any moment. The administration of the Ether with all the above-mentioned precautions, will produce the kind of insensibility required. Its production is immediate, of short duration, and the effect passes off in a very short time.

In my first successful experiment the conditions as stated above were fulfilled, though the mode of administration was of the simplest kind, it is true, but yet efficient. A folded cloth saturated with the highly rectified Ether was placed over the mouth, the air being drawn freely through it, and the inhalation was continued till I lost all power over myself and sank back in my chair in a state of peculiar sleep or reverie. I experienced at first a sense of coolness, then of exhilaration and warmth followed by loss of consciousness. But it was not until a subsequent trial that I became aware that this loss of consciousness was accompanied by insensibility to pain; and a severe bronchial irritation produced by the inspiration of a large quantity of Chlorine gas was for the moment relieved, and the peculiar distress occasioned by that gas was not felt, as long as I was under the influence of Ether, though as that passed off it returned. I had several times occasion to mention these facts to my friends, and it is now a year since I urgently advised Mr. J. Peabody, who was associated with me as a pupil in Chemistry, to inhale the Ether vapor as a means of preventing pain, which would arise from the extraction of two of his teeth. He consented to try the experiment, and was preparing some Ether for the purpose, but on consulting the works, in which the effects of Ether are mentioned, he found all the authorities arrayed in opposition to my views, and that they warned against its
inhalation, as I have before stated, and he therefore did not complete the experiment.

About the last of September, or early in October last, I communicated my discovery to Dr. W. T. G. Morton, an enterprising and skilful dentist of this city, whom I occasionally advised, and who called at my Laboratory to borrow an India rubber bag, which he said he intended to fill with atmospheric air, and to cause a refractory patient to breathe it, hoping to act on her imagination, and induce her to allow him to extract a tooth. I dissuaded him from this attempt, and explained to him that I had discovered a process by which real insensibility to pain might be produced. I showed him Sulphuric Ether, and described the method of administering it, and also its effects on the system, assuring him, that if my directions were carefully followed no danger would ensue. I advised him to try its effects on himself, in order that he might better understand its mode of operation. He followed my instructions and was successful in the first trials, in the extraction of teeth unattended with pain, the results proving exactly as I had predicted. I also furnished him with a large glass flask with a bent glass tube as an extempore inhaling apparatus. I then proposed to him the trial of the Ether in a surgical operation at the Massachusetts General Hospital, where it was administered by Dr. Morton, and it proved successful; but some persons who witnessed the first operation doubted the entire freedom from pain, since the patient said "he felt a scraping." I was therefore desirous of testing it in a capital operation, the severity of the shock being the best test with regard to the degree of insensibility. Dr. J. C. Warren politely consented to have the trial made, and its results proved entirely satisfactory, an amputation having been performed under the influence of Etherial vapor without giving any pain to the patient. Drs. J. C. Warren, Hayward, Townsend and J. M. Warren performed the first successful operations that are recorded. Since then the most eminent surgeons in Europe and others in this country have confirmed by numerous trials the reality of the discovery. Occasional failures were to be expected, but they mostly have arisen from imperfect modes of administration, though some may be attributed to idiosyncrasies. Medical, as well as surgical science will probably derive advantage from this new practice. It may be worthy of trial in Tetanus and other spasmodic diseases. Intermittent headache, I believe, already to have been relieved by it, and the chills of intermittent fever may possibly be broken. The relaxation of the muscles effected by free inhalation of Ether vapor may enable the surgeon to reduce dislocations, and dispense with the powerful force of pullies and other violent means of extension. Already it has found its way into the Royal Veterinary Colleges of Alfort in France, and Camden in England, where severe operations have been performed on horses, sheep, and dogs without the manifestation of any pain or struggles in these animals. Even division of nerves has been performed on a horse, to which the Ether had been administered, and although the animal was
in no way restrained, not a struggle was made, or any sign of pain perceived. This precludes the idea of the effect being due to the imagination.

How far this new practice may extend is yet unknown, but there cannot be any reason to believe that the limits of its applications have been conceived.

CHARLES T. JACKSON.

Another experiment with the inhalation of Ether was made in the Royal Infirmary yesterday, by Professor Miller, and proved eminently successful.

The patient was a middle-aged Irishman—a "navvy,"—who had sustained compound fracture of the leg nine weeks before. The fracture had not united, in consequence of the presence of a dead piece of bone, and it became necessary to remove this by a painful operation. The patient was seated on a table, and the inhalation was applied by means of a very beautiful yet simple apparatus, made by Squire, of London, and which, we understand, had been sent to Professor Miller by Mr. Liston—a very suitable gift, under present circumstances, from that eminent surgeon to his old pupil. At first little effect was produced, but after some minutes the patient fell backwards, as if in a swoon. The operator was then about to proceed; but the man immediately objected, saying that he was not asleep, and that he trusted nothing would be done till he was asleep. For full 20 minutes more the inhalation went on; the man confused and talkative, but wide awake, and occasionally expressing very emphatically his conviction that "it would not do." At length, however, while in this wakeful state, the operation was begun. Incisions were made on the shin, and flaps were dissected off so as to expose the bone beneath. A portion of this was sawn and clipped through, and then the dead bone was removed. Only during the clipping of the bone with strong straining pliers did any sign of feeling escape from the patient, who was busy inhaling all the while, and now and then protesting that "it wouldn't do." The operation occupied about 10 minutes, and, from the highly sensitive nature of the parts implicated, must have been attended with excruciating suffering under ordinary circumstances. After it was over, the professor said to the patient, "I suppose you won't let me operate to-day." "Certainly not," said the patient; "it won't do; I must be asleep. The thing hasn't succeeded with me, and I am sure it can't succeed with any one else, for I did everything I could to get asleep for my own sake, and I'd do anything to please you." You won't even let me make a cut into the leg?" "No; I must be asleep; we can try it another time." This plain proof of his utter unconsciousness of the operation having been performed was acknowledged by the spectators in a hearty round of applause. The patient then sat up, and seeing the wound, burst into an immoderate fit of laughter, saying, "No doubt there's blood, or something very like it; but I haven't felt a single thing done to my leg. That bales the globe;" and, on being asked
In the last No. of the Dublin Quarterly Journal of Medical Science, we find the following notice of Sulphuric Ether, by the Editor:—

The Employment of the Vapour of Sulphuric Ether, as a Means of rendering Surgical Operations painless.—Since the publication of our last number, a most important and valuable discovery has been made, in using the vapour of Sulphuric Ether for the purpose of rendering patients insensible to pain during surgical operations. All the professional journals, and the public press, have teemed with instances in which this great discovery has been tested and applied at most of the large hospitals in Great Britain and Ireland; and although the final conclusion to which the profession will come, as to the precise value of this discovery, the cases to which it is applicable, the constitutions over which it exerts its peculiar influence, the precise mode of administering it, and the exact amount of narcotism or intoxication which it is necessary to produce, cannot yet be stated, still we think the following facts and conclusions may be drawn from the experiments which have as yet been instituted.

1. The stupifying effects produced by the inhalation of the vapour of sulphuric ether appear to have been known to chemists for some years past, and to have been occasionally exhibited at chemical lectures. Its therapeutic agency in relieving pain was also proved more than twelve months ago. M. Ducros, at a meeting of the Académie des Sciences de France, on the 16th of March last, pre-
sented a memoir on the effects which sulphuric ether produces on man and some of the lower animals: his mode of applying it was by rubbing the palate, fauces, and interior of the mouth with the fluid, but, no doubt, the effects were produced by inhalation of the vapour. M. Ducros described with great accuracy the sporific and anodyne effects of the ether; drew attention to the advantages which might be derived from it in a therapeutic point of view, and pointed out to the Academy the best means of removing the narcotizing influence, which sometimes remains longer than is desirable. This antidote is opium and its preparations. (How administered.)

II. Doctor Morton, a dental surgeon at Boston, appears to have been the first to make use of this agent as a means of relieving pain during surgical operations, and he soon acquired great and just celebrity in that city, by extracting teeth without the patients, who had previously inhaled the ether, being conscious of the operation. In October last it was applied in the General Hospital, at Boston, with the happiest results; Dr. Morton administering the ether, and Dr. Warren performing the operation. Upon the 3d of November, Dr. H. J. Bigelow read an account of this discovery (which had by that time been tested by many experiments) before the American Academy of Arts and Sciences. This account, and several private letters, having communicated the facts to several persons in Great Britain, it was taken up very warmly in these countries, and the results are already before the public; several capital operations have been so performed by the surgeons of this city; and there has been a public exhibition of its effects at a meeting of the Surgical Society. This discovery has been claimed by R. H. Collier, M. D., but the most which his claim amounts to is that of having published, in 1843, an account of the unconsciousness which may be produced by the inhalation of ether; but this, as we already stated, was long since known: its application to surgical operations is undoubtedly due to the American dentist, who, with Dr. Jackson, has, we understand, taken out a patent for its discovery.

III. The mode of application consists in the patient's inspiring the vapour by the mouth, while the nostrils are closed and expiring into the surrounding atmosphere; or inhaling through the nose, and expiring through the mouth, as practised at some of the Parisian hospitals. To effect this, various ingenious contrivances have been invented, which have been described and figured by most of our contemporaries.

IV. On commencing to respire it, the patient generally coughs, and feels at first considerable difficulty in continuing the inhalation, but after half a minute or so becomes more reconciled to it. Immediately before narcotism or insensibility takes place, there is often some struggle, and the application has to be continued by force. Its effects are various, and are very likely influenced by the peculiarity of constitution in different individuals, in some, producing decided narcotism (as it has been termed) in two minutes from the commencement of the inhalation, and causing insensibility for about the
same period of time, from which state the person quietly awakes as if recovering from an ordinary faint, and leaving no other ill effects than slight giddiness and headache, which go off in a couple of hours. During this process the following phenomena occur:—At first the face becomes flushed, the vessels of the head swollen and turgid, and the pulse accelerated, as the narcotism proceeds, and immediately after the person becomes unconscious to every thing but sound, and insensible to pain; the pulse diminishes in frequency, intermits with irregular pauses, and becomes much slower than it was prior to the commencement of the inhalation; the action of the heart is at the same time laboured, and in some cases irregular; the voluntary muscles of the body relax as in sleep; the face then becomes pale and clammy, and the breathing more or less stertorous. At the commencement of the insensibility the eye-balls are spasmodically affected, and in some cases roll in a remarkable manner. As the insensibility proceeds the pupils are dilated and turned upwards.

What would a physiologist, or practical physician, pronounce such a train of symptoms to arise from? By what term could he designate them? Hysteria, syncope, intoxication, asphyxia, or apoplexy?

In other cases it requires to be inhaled for a quarter of an hour before producing its effects. Again, there are persons over whom it exerts no influence whatever.

In a few cases that we have heard of, both here and in Paris, it does not appear to have produced unconsciousness, or any of the effects just described, but it rendered the patient quite insensible to pain. This is the most useful effect we have yet heard of; and if it should be discovered by what means this result may be brought about, then, indeed, it will prove one of the greatest blessings conferred on suffering humanity.

Some persons describe their feelings while under its influence as of a most pleasing description, having had pleasant dreams during their state of insensibility. Others, again, say they were conscious of all that was going forward, though they felt no inconvenience from the operation to which they were submitted; almost all say that they were conscious of sound, though unable to distinguish conversation, &c.

In other instances, however, persons do not recover from their insensibility, in the quiet easy manner we have described; a violent struggle takes place, and even a slight convulsion occurs, and movements of the body, quite involuntary, continue for some minutes after. Again, although the effects may in some constitutions wear off within an hour or two, as already mentioned, in others they are much more violent and of far longer duration, consisting in great prostration of strength, irregular action of the heart, great restlessness and anxiety, headache, sickness of stomach, depression of spirits, and (as occurred in one case) even convulsions; in fact, all the phenomena which some constitutions evince from any great nervous
shock, and particularly from an over-dose of intoxicating fluid. It is stated that the blood drawn during the state of insensibility is darker than natural.

In a third class of persons a totally different but not less formidable exhibition of morbid symptoms occur, best described as the incoherent madness of inebriety; the eyes roll, the passions are aroused, and a state little short of frenzy ensues. What proportion the latter class of patients bear to the first remains yet to be decided; and by what test we can discover beforehand (except by experiment) what the probable effects of inhalation will be, has yet to be stated. But then it must be acknowledged that several other medicines produce in some individuals effects just as extraordinary.

Independent, however, of all idiosyncracies, the surgeon is daily required to perform painful and dangerous operations, not only when the suddenness of the shock recently received is such as to preclude the use of a remedy so overpowering, but also when the condition of the constitution has been, by protracted disease, reduced to a state that would render the exhibition of this substance, should it prove deleterious, highly hazardous.

V. Supposing the mildest case, in which the effects are total insensibility for two or even three minutes, with quiet, easy return of animation, what is the benefit, as far as we yet know, which this discovery has conferred on mankind, and what facilities does it afford the operative surgeon, and to what operations is it applicable?

In capital operations, such as the removal of limbs, lithotomy, and all such operations as can be performed within a minute or two by the great manual dexterity of the surgeon, and particularly tooth-drawing, &c., &c., it appears to be of the greatest value; it has been successfully employed in operations for strabismus, and may be useful in other operations (if they be worth the risk) on the eye-lids, &c., but in extraction of cataract,* or other ophthalmic operations where the globe of the eye is concerned, we should fear that it will be highly hazardous. In any operation which may occupy a greater length of time than the ordinary duration of insensibility, it is less applicable, for the action of recovery, and the involuntary struggle which ensues, might prove very hazardous at perhaps the most critical moment; and few have yet been hardy enough to renew the inhalation so as to prolong insensibility beyond a few minutes. Moreover, cases have been recorded, in which the patient, awaking during the operation, suffered as usual.

To the timid, however, and to those also who would not otherwise submit to any operation, it may prove of very great value.

Finding the subject discussed in the public prints, we lately published some remarks upon it in one of our morning papers. These were offered not for the purpose of decrying this valuable means of

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*A case of extraction has just been mentioned in the Lancet, in which the vapour was used effectually; yet this in no wise alters our opinion on this subject.*
relieving pain, and lessening the great nervous shock during severe operations,—in some of which, performed on a particular class of patients, and capable of being accomplished within a very short space of time, it is highly serviceable,—but in order, if possible, to prevent its indiscriminate use. It is possible that accidents may occur in the inhalation of ether, and when they do, the present rage for its application may receive a check. Its ultimate, perhaps per-
sistent, consequences on the constitution have not yet been tested, as also its value in relieving pain and suffering induced by disease. It may also be found highly useful in the reduction of dislocations.

We have here endeavored to present our readers with a brief sum-
mary of what really is known upon the subject at present.

On the Fallacies attending Physical Diagnosis in Diseases of the Chest. By Thomas Addison, M. D.—(Guy’s Hospital Rep.)

1. It is well known that many persons while under examination entirely fail to perform the respiratory act efficiently either from nervousness, or from mistaking the manner of accomplishing it. This may lead to an erroneous belief that the respiratory murmur is deficient, or even absent, while the lungs are perfectly healthy.

This source of fallacy is avoided by desiring the patient to cough, and to inspire deeply, so as to cough a second time. This done on both sides of the chest, the actual state of either lung may be ascer-
tained with tolerable precision.

2. Whatever lessens the freedom, mobility, or elasticity of the ribs, renders the sound on percussion more dull. Hence it is that in rickety persons, where deformity of the chest has taken place subse-
quent to birth, the signs furnished by percussion are often extremely unsatisfactory; and, indeed, under such circumstances, neither per-
cussion, nor in many instances auscultation, can be much relied upon.

3. Some persons with actual deformity have naturally such fixed-
ness of the ribs, that they at all times manifest very imperfect reson-
ance, as well as considerable feebleness of the respiratory murmur.

4. The rigidity of the cartilages of the ribs in advanced life has a similar effect; and, moreover, often tends to throw obscurity over hypertrophy of the heart by preventing the usual heaving of the ribs at each systole of the hypertrophied organ.

5. When exploring the chest in a case of recent disease, we may be misled by the permanent effect of an ancient pleurisy.

6. When, as usually happens, rickety deformity of the chest con-
sists in lateral flattening of the ribs, with projection of the sternum, the action of the heart is liable to beat with such violence, and over so diffused a space, as to lead to the unfounded apprehension of or-
ganic disease of the organ.

7. The dullness on percussion caused by pushing up of the dia-
phragm by an enlarged liver, or fluid in the peritoneum, is liable to be mistaken for dullness caused by fluid in the pleura.

8. Bronchitis is a frequent source of fallacy, it may greatly obscure pneumonia, phthisis, and pleurisy, as well as other chronic diseases of the organs.

9. When the bronchitic complication of phthisis is considerable we often fail to detect some or all of the physical signs of the latter such as dullness on percussion, tubercular respiration, and even bronchophony and pectoriloquy. This is more especially the case in the earlier stages.

10. Dullness of sound on percussion, tubular respiration, bronchophony, pectoriloquy, and gurgling, are not necessarily conclusive of phthisis. All these signs may result from changes induced by a former pleurisy, from pleuro-pneumonia, or whooping-cough, or even from recent pneumonia or pleurisy associated with considerable bronchitis.

11. When, in phthisis, the larynx is so involved as to impede the entrance of air and give rise to permanent sonorous râle in the tube, the reverberation of this râle through the entire chest is apt to lead to the erroneous suspicion of disease in the lungs.

12. Complete loss of voice from disease of the larynx almost completely nullifies the results of auscultation.

13. The existence of a cavity may be overlooked if the bronchial tubes leading into it are plugged with mucus.

In every case of suspected phthisis the patient should be made to breathe and cough with violence; this will dislodge mucosities and render the existence of a cavity perceptible.

14. A patient may have all the rational signs of incipient phthisis while auscultation does not reveal any change in the lungs.

Similar symptoms may arise from relaxed uvula, and in hysteria.

15. Dilated bronchial tubes surrounded by indurated pulmonary tissue, cannot be distinguished from phthisical lesion by auscultation alone, especially if situated in the apices of the lungs.

In such cases the diagnosis is chiefly formed by the history of the case.

16. Malignant disease of the lungs cannot be distinguished from other lesions by auscultation alone.

17. If acute pneumonia have proceeded to complete hepatization when we first examine the patient, the physical signs are frequently insufficient to distinguish it from tubercular consolidation or ancient pulmonic induration. This is especially the case if the apex of the lung be the seat of the induration.

18. Pneumonia may occur without cough, and so closely resemble simple continued fever that both the stethoscopist and the non-stethoscopist are apt to be deceived.

In such a case the stethoscopist has infinitely the advantage, and will rarely fail to detect pneumonia by the physical signs.

19. When the anterior and inferior portion of the left lung is con-
solidated by pneumonia, it may not be detected by percussion on account of the proximity of a flatulent stomach. Under similar circumstances a marked amphoric respiration is produced, with metallic tinkling, leading to the erroneous conclusion that pneumo-thorax is present.

The respiration acquires its amphoric character by reverberating through the solid parts to the inflated stomach or bowels.

20. It cannot be determined by physical examination whether pneumonia have or have not supervened upon tubercles, although the prognosis in the two cases would be very different.

21. I doubt whether physical examination can in any instance determine with certainty, the existence of simple tubercles in the lungs.

22. When serous effusion is very considerable, giving rise to unequivocal bronchophony, tubular respiration, and want of resonance and vocal vibration, physical examination has repeatedly led to a mistaken belief that these signs resulted from pneumonic or other consolidation of the lung.

23. When a patient presents himself with febrile affection of any kind, we may, on examination, detect dullness or percussion, tubular respiration, bronchophony, and a râle not distinguishable from the submucous crepititation commonly observed in pneumonic hepatization; and yet physical examination should not enable us to determine whether the chest affection be recent or of ancient date. When a portion of lung has been compressed by pleuritic effusion, and has been prevented from expanding again by adhesions, the physical signs may remain permanently, and be found to resemble precisely those which result from recent pleuro-pneumonia.

24. Experience leads me to the conclusion that pleuritic friction-sound cannot in all cases be distinguished from the rubbing produced between the inflamed peritoneal surfaces of the liver and diaphragm; neither can the croaking sounds produced in the bronchi be always distinguished from the pleuritic rub.

25. A simple pericarditis is rarely attended with pain, and as the other symptoms of that disease are equivocal, the physical signs are chiefly to be relied upon in forming a diagnosis. Nevertheless, when effusion has taken place to a certain amount the friction-sound commonly disappears, and as auscultation fails to recognize the disease.

26. Enormous accumulations of fluid in the pericardium cannot always be distinguished from effusion into the cavity of the pleura.

27. When the pericardial friction-sound is single, auscultation may fail to distinguish it from a valvular murmur, especially if it be situated over the region of the valves.

28. The double pericardial friction-sound may be confounded with the see-saw murmur of imperfect aortic valves, and vice versa.

This question may be almost decided by the characters of the pulse alone.

29. A sound closely resembling a murmur appears sometimes to
be produced by the stroke of the heart against a portion of lung interposed between it and the parietes of the chest. Under such circumstances auscultation may lead to the erroneous conclusion that the heart is diseased.

This sound is most commonly heard at some point at the edge of the left lung, and resembles the *bruit de rape*. It may occasionally be made to disappear by a deep sustained inspiration. The author thinks it may be identical with the sound described by Dr. Latham as present in phthisis.

30. Auscultation fails to distinguish an aortic murmur depending on organic change from one which results from other causes; neither can it decide whether what has been called a mitral murmur is organic or functional.

31. In certain diseases of the heart it is difficult or impossible to localise the murmurs with accuracy, however pronounced they may be.

32. Auscultation cannot distinguish the murmur of an aneurismal artery from the murmur produced by external pressure upon the vessel.

33. Physical examination does not enable us to distinguish congenital malformation from disease of the heart or large vessels.

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**Treatment of Urinary Diseases.** By JOHN ALDRIDGE, M. D. (Dublin Hospital Gazette.)

**Treatment of Diabetes Insipidus.**—This is the name given to a symptom of urinary disease, in which an excessively increased quantity of water is habitually secreted from the kidneys, without any alteration of the solid elements of the urine. The specific gravity of this liquid becomes consequently very much reduced. This symptom appears to depend on altered innervation, and it is best treated by the internal use of antispasmodics and mineral tonics, with the external employment of stimulating liniments to the spine.

**Treatment of Lithic Acid Deposits.**—These deposits are either crystalline or amorphous. When the urine for any length of time continues to deposit, after each emission, the rhombic prisms of lithic or uric acid, this circumstance is an evidence that the kidney is affected with gout: under such circumstances the immediate danger is the formation of a calculus; and to obviate this it is desirable to exhibit either bicarbonate of soda or potash, in doses of ten grains or a scruple dissolved in half a pint of water, three times a day, so as to render the urine neutral or alkaline: but, this effect being obtained, the practitioner ought to direct his efforts to subdue the gout which is the cause of the symptom. If the urine be albuminous or sanguinolent, and there is much pain in the loins, it shows the attack to be of an inflammatory character, and to require a treatment locally antiphlogistic; otherwise recourse may be had to colchicum, or whatever remedy the practitioner prefers in the treatment of podagra.
If the lithic acid deposit be amorphous, its precipitation may depend either upon an excessive secretion of the solid constituents of the urine, or upon a deficiency in the secretion of water. In the former case the specific gravity of the urine becomes normally increased in proportion to its quantity; and this symptom is usually dependent on rheumatism of the kidney. The treatment should, of course, be directed to the rheumatism, at the same time it is desirable to hold the excess of lithates in solution by means of alkalis. Iodide of potassium is a medicine that fulfils both indications, and, given in doses of five or ten grains, three times a day, will usually be found serviceable.

When the amorphous lithates become deposited from a deficiency of water, the quantity of urine will be ascertained, upon inquiry, to be less than usual. Sometimes, however, the patient is deceived as this point by the concentrated and stimulating secretion, demanding frequent evacuation: under all circumstances it is most desirable, for diagnosis, that the daily discharge of urine should be measured. Diminution of the watery part of the urine may be produced by irritation of the kidneys, either idiopathic or symptomatia; or it may be the result of a lesion of innervation; or it may be the consequence of a vicarious mattery secretion from some other organ. When the deposited lithates are of a brick-red colour, the scanty secretion of water which produces their subsidence is the effect of the first of these causes; in that case a fever, either essential or symptomatia, exists, and the remedies calculated to remove the fever are those fitted to increase the urinary secretion and diminish the lithic deposit. If the deposited lithates be pale or buff-coloured, the chances are that they are caused by a nervous diminution of the watery element, connected with that weakened action of the ganglionic nervous system to which the name of dyspepsia is given; if such be the case, the internal exhibition of a scruple of alum in half a pint of water three times a day will soon remove the tendency to lithic acid deposit. A pink colour of the sediment is usually found in connection with an imperfect discharge of the biliary functions.

Treatment of Phosphatic Deposits.—These deposits, when principally crystalline, generally depend upon the urine being deficient in acidity: in that case the treatment will be described under the head of alkaline urine. Sometimes, when the bladder has been long diseased, a copious deposit of amorphous phosphates subsides from the urine; it is always, under such circumstances, accompanied with pus; and the indications which are thus afforded for treatment I shall hereafter mention.

Treatment indicated by weakly Acid, Neutral, or Alkaline Urine.—If the urine be neutral or weakly acid, from a vice of secretion, it usually shows that the kidneys are inflamed. In acute nephritis the employment of local and general depletion, as well as the exhibition of emollients and contrastimulants, must be regulated by the severity of the disease and the state of the constitution, according to the
ordinary principles by which inflammations are combated. I am persuaded that I have seen much benefit from large (3) doses of hydriodate of potash in this disease. In chronic nephritis you will find great benefit from local depletion and counter-irritation, especially from the establishment of setons in the neighborhood of the affected glands. In the renal complication of typhus, large blisters to the loins, and the internal administration of wine, are usually indicated: small doses of oil of turpentine will, in these cases, often increase the quantity and restore the acidity of the urine.

Treatment of the Oxalate of Lime Deposits.—Although there can be little doubt that oxalic acid is generated in the urine by the putrefactive decomposition, and often occurs subsequent to secretion in a manner totally independent of disease, yet it is also certain that this decomposition frequently results from an essential vice of secretion. The morbid conditions which give rise to this change are not yet known; but one thing is well ascertained, that in every instance of the kind there is frequent desire to pass water, pain in passing it, and that the secretion is commonly loaded with epithelium. These phenomena proclaim the existence of irritation of the mucous membrane. Sometimes the crystals of oxalate of lime, like those of uric acid, cohere in the calyces and infundibula, forming calculi, which produce paroxysms of nephritic colic by their descent into the bladder. In such cases inflammation of the lining membrane may be mechanically produced; but it is doubtful whether the symptoms of mucous irritation which usually accompany the oxalate of lime deposit are due to the irritating contact of the sharp crystals. Whatever is the cause of the mucous irritation, it constitutes the lesion which, in oxalate of lime diathesis, you are especially called on to remove; and its successful treatment requires no little delicacy in the application of therapeutical agents. Unlike acute mucous irritation, depletion and emollients will act in this irritation injuriously, if employed in the first instance; you must have recourse to tonics immediately, such as the mineral acids, vegetable bitter astringents, &c.; and, having employed those means for some time, you will then find the greatest benefit from alkalis largely diluted. It will be often necessary to alternate these methods of treatment for a considerable period, but you will generally find that ultimate benefit will be derived from steady persistence in their use. The form of tonic mixture which I usually employ in these case is the following:

R. Infusi cascarillae . . . 3vj.
   Nitris potassae . . . 3j.
   Acidii nitrici dilutis . . . 5iss.
   Tincturae opii . . . 5j.

M. Sumat cochlearia quo ampla ter in die.

Treatment of Diabetes Mellitus.—I look on saccharine urine as depending on a modification of the epithelial secretion produced by an asthenic condition of the urinary conduits. If this be the case,
medicines calculated to exalt the tone of the secreting capillaries, are those best fitted to restore the natural function. Accordingly, experience tells us that the balsams, ammonia, strychnia, and other excitants, are the medicines found most beneficial when the respiratory secretion is suppressed; when, on the contrary, the functions of the skin continue unimpaired, much benefit is often derived from the internal use of chalybeates, alum, sulphate of zinc, or other metallic astringents. The whole system commonly shares either directly or consecutively in the debilitated condition which exists in the capillaries of the conduits, and it is, therefore, most desirable to employ every dietetic means calculated to increase the patient's strength. It is well, therefore, to give a moderate proportion of animal food, porter, &c., as much as is consistent with a proper exercise of the digestive functions; but from the exclusive animal regimen recommended by some. I have seen decidedly injurious results, but never any lasting benefit.

Treatment indicated by Purulent Deposits.—In my lecture on the pathology of urinary diseases, have been described the different sources of pus in the urine; and in my lecture on the diagnosis of urinary diseases, I have mentioned the methods of distinguishing these pathological causes from each other. We have seen that the urinary mucous membranes pour out pus when in a state of asthenic inflammation, and this circumstance sufficiently indicates the appropriate treatment. Tonics are the medicines chiefly to be relied on in these cases; decoction of the leaves of chimaphila corymbosa, diosma crenata, or arctystaphyllos, uva ursi, or the root of cissampelos pareira, combined with mineral acids, will usually be found serviceable; chalybeates are also often of efficacy in these cases.

Treatment of Hæmaturia.—The most efficacious treatment of essential hæmaturias consists in the exhibition of astringents, such as tannin, or styptics, such as oil of turpentine; the use of the latter is very apt, however, to convert the hæmaturia into a nephritis; but in this case the reaction of the urine with litmus paper affords a most accurate test for pointing out the critical time when you should stop the exhibition of the medicine and cup the loins.


During the past year, 105 cases of miasmatic fever came under my care. Of these, 83 were Intermittent, and 22 Remittent. Of the intermittent, 1 was quartan, 15 tertian, 62 quotidians, and 5 masked. Of the masked, one took the form of neuralgia, and four simulated hysteria.

The treatment chiefly employed was the sulphate of quinine, ad-
ministered in large doses, without regard to the stage of the disease. In one case—a quotidian—occurring in a youth aged 16, of sanguineous, excitable temperament, I administered 15 grains just as the cold stage was passing off. All the symptoms were ameliorated; the hot stage lasted but one hour, and the patient had no return of the disease.

In 25 cases, I gave 30 grains in five hours, during the height of the febrile stage. The pulse was lessened in force and frequency in every instance under this treatment, and the paroxysm cut short by the speedy appearance of perspiration. In only one of these cases was the remedy preceded by other treatment. The exception was the case of an exceedingly robust man, in whom there existed, even in his ordinary health, a strong tendency of blood to the head. I bled him to twenty ounces before administering the quinine. He returned to his work (that of a baker,) forty-eight hours afterwards, and had no return of the fever during the season. He told me that for several years past he had not escaped an attack of bilious fever in the autumn, and that he was usually kept in his bed by it for three weeks. Said that he had taken the quinine before, but not while the "fever was on."

In one case, the patient was partially comatose during the first paroxysm. This condition was relieved, in a measure, by a cathartic of calomel and aloes. Three hours before the second chill was expected, I administered 25 grains of quinine, and followed this by 15 grains more two hours afterwards. The patient missed the paroxysm and went to work the next day.

In 14 cases there was a recurrence of the disease. The recurrence in ten of these, however, could be positively traced to a second exposure to the causes of the affection.

The masked forms of the disease yielded readily to the quinine treatment. One of the cases which simulated hysteria was remarkably severe in its character, the patient being seized every afternoon with violent convulsions, accompanied by flushed face and considerable excitement of the circulation. She was treated at first by active purgation, and vesicants to the nucha, with only slight abatement in the intensity of the paroxysm. The regularity with which the attacks came, coupled with the fact that the patient resided in a part of the city where intermittent fever was prevailing, suggested the employment of quinine. She commenced early in the morning with five grains every hour, and took thirty grains. The paroxysm was much milder in the evening, and did not recur at all on the next day. She remained well for seven days, when she was again attacked as in the first instance, and again relieved by the same treatment. She subsequently had a third attack which was cured in the same manner. Her catamenia had been interrupted for six months previous to her sickness, and did not return until six weeks after the last attack.

I was not called to a single case of remittent fever at the beginning of the disease. In one case the patient had been ill eleven days
without any treatment whatever; she was much emaciated, and had suffered from diarrhoea for six days. I gave her a table-spoonful of the following mixture every hour:

R. Quinine Sulph. ... 5 ss.
Morph. Sulph. ... gr. ss.
Aqua ... f. 3ij. M.

In the course of five or six hours she perspired freely, fell into a quiet sleep, and in two days after was entirely free from disease. This was the sole treatment of the case, except the tinct. hydrochlorid. ferri, which was given for ten days after convalescence was established.

The other cases were managed after the same manner—the large doses of quinine being preceded by a simple cathartic of jalap and bitartrate of potassa in those cases only where there was great torpor of the bowels.

Not one of the 105 cases died, and all together did not take a drachm of calomel, or other preparation of mercury.

I observed unpleasant symptoms in only three cases, where they seemed to be at all dependent upon the large doses of quinine.

1. A delicate, nervous female, aged 36, was ordered 5 grains every hour, for a second attack of quotidiem intermittent. When she had taken 20 grains, she became suddenly nauseated and vomited up three mouthfuls of scarlet blood. This occurred in the morning, and the chill was expected late in the afternoon. The medicine was suspended immediately, and she missed the paroxysm, and recovered without any other untoward symptom. She was treated with quinine for the first attack and also for a third, without any such effect being produced. The hæmatemesis was not vicarious of the menstrual discharge, as the catamenia had not been interrupted.

2. In this case the quinine vomited the patient like full doses of tartar emetic. She took twenty grains in five grain doses in solution, combined with sp. eth. nit. There was no gastric derangement prior to the exhibition of the medicine.

3. In the third case the patient, a female aged 40, who had but recently recovered from a very severe attack of lichen agrius, was rendered deaf, or nearly so, for ten days, by taking forty grains of quinine in eight hours. The intermittent, a tertian, was permanently cured.

I was never deterred from giving the quinine by the existence of diarrhoea, irritability of the stomach, or headache, provided the case was urgent, and it was absolutely necessary to put an immediate stop to the paroxysm. In cases of great torpor of the bowels, if there was time to spare, I preferred to begin the treatment by purging freely, because the quinine is not readily absorbed if there is much constipation. Usually, however, the safer practice is to put an end to the paroxysms first, and afterwards attend to the local affections.

I have found great benefit from combining the sulphate of morphia with quinine, especially in those cases complicated with diarrhoea.
and irritable stomach. I also gave in many cases where the skin was very dry and the thirst urgent, the sp. æth. nit. combined with a solution of quinine, with great benefit.

My experience in the treatment of miasmatic fever in 1846, leads me to the following conclusions:

1. In a large majority of cases, no matter of what type the fever is, the "preparatory treatment," so called, is worse than useless, causing a loss of time which is often fatal to the patient.

2. A large dose of quinine, (15 or 20 grains,) administered at once, produces a more certain and permanent curative impression upon the system, than small doses (1 or 2 grains) frequently repeated.

Quinine in large doses, when administered in the hot stage, so far from exciting the circulation, acts as a decided sedative upon it—the pulse in every instance lessening in force and frequency under its influence. The dogma, therefore, that "quinine in fever is poison," must be discarded.

4. In uncomplicated miasmatic fever, mercurials are not at all essential to a complete and permanent cure. They may sometimes be given with advantage in cases where cathartics are indicated at the onset of the disease.


It will readily be allowed that our information on the therapeutics of the eye, is still in its infancy, and consequently that there is wide scope for investigation under this head. My attention was forcibly arrested by an article quoted from a Dublin Journal, which appeared in the June number of the British American Journal of Medical and Physical Science, headed "Prussic acid in ophthalmic diseases."

Opacities of the Cornea and their removal, have engaged my attention for a considerable period; and I have for some time kept a record of such cases, with the results, as have been treated by myself. Dr. Jacob's name must ever secure respectful attention with deference to any of his promulgated opinions; yet, if we always deferred to authority, where would be the boasted progress of the nineteenth century. Ought we blindly to bow to authority, and not seek to extend the bounds of knowledge?

Before proceeding further, I would beg to state that I highly appreciate the honour and opportunity I enjoyed of acquiring the ophthalmic art under Dr. Jacob's tuition, and that I now feel grateful to him for the instruction imparted; and although the statements which follow directly impugn his assertion, I appeal only to facts, at the same time sensible that without his previous advances this point
could not have been attained, viz.: the curability of opacities of the cornea.

Dr. Jacob, after alluding to the cases of opacity of the cornea, stated by Dr. Bigger to have been cured by prussic acid vapour, concludes by saying, "That the cures might be only apparent, and might perhaps with more justice be referred to the natural salutary processes of the animal economy, which in the course of time succeed to the formation of those opacities, whether it be the mere subsidence of inflammatory action, or the agency of the absorbents; but for my part, the conviction on my mind, for many years, has been, (and nothing that I have heard lately tends to shake it,) that however dense these opacities become, even were they as white as paper, they will be obliterated in time, unless the product of destructive ulceration in the cornea consequent on wounds or ulcers; unless in fact, they are actual cicatrices."

Cold comfort this to give to a poor fellow blind of both eyes from nebulae or leucoma, that if he will only have patience, nature will cure him before he dies, or perhaps not; for, says Dr. Jacob, surgery can do nothing for him.

Now, from considerable experience, I assert that a majority of cases of opacity of the cornea are curable or susceptible of great amelioration, and even in many of those opacities caused by cicatrices, their extent may be diminished, and vision restored to a greater or less extent.

If a case of blindness from opacity of the cornea presents itself to me, of many months or years standing, and that under treatment the opacities are removed, and sight restored in from four to six weeks, have I not a right to conclude that the treatment operated the cure, if not, then no fact in therapeutics is sure: a fortiori, if many such cases present themselves with similar results, the inference must be irresistible.

I propose to give two cases severally of albugo, leucoma, and nebula, their treatment and results. During thirteen months, forty-eight cases of opacity of the cornea have been treated at the Montreal Eye and Ear Institution, of which twenty-three were nebulous. Of these, eighteen were cured and five relieved: of eighteen with albugo—twelve were cured and six relieved; of seven with leucoma—six were relieved, and one abandoned as incurable. In selecting the following cases, I wish it to be understood that, if desirable, I could furnish many more.

Case 1. Albugo.—Mary Harrigan, w.t. 30, wife of a labourer, April 2, 1846, had had sore eyes for three years; for a year had merely distinguished the light, and the outline of large dark objects, and had not been able to go alone through the streets. She had an albugo on the right eye and three on the left, completely obstructing vision. Perfectly cured in six weeks. Treatment—fumigations with hydrocyanic acid every day for ten minutes; after the lapse of another ten minutes, put one drop of a solution of nitrato of silver, gr.
x. a ʒi. into the eyes. For first fortnight took a wine glass full of the following mixture every morning—

R Infusi Gentiane, ʒviii.

Sulphatis Magnesim, ʒi.

Acid Sulph. Arom., ʒss. m.

Case 2. Albigo.—Feb. 8, 1846.—Ann O’Berne, æt. 26, a servant, had been gradually losing the sight of the left eye for some time, but had lost it completely for the last eight months. Dr. ———, to whom she had applied, told her nothing could be done. On examination, I found an albigo completely obstructing the pupil of the left eye, in fact, occupying the whole cornea. Cured in two months. Treatment as in preceding case.

Case 3. Leucoma.—Dec. 26, 1846.—John Gillaland, æt. 23, a ploughman, had leucoma of both eyes, completely occupying the left cornea, and preventing all ingress of light. The lower third of the right cornea was imperfectly clear, allowing of sufficient light to pass to enable him to guide himself through the street. Sufficiently cured in three months to guide the plough, a very small spot only remaining on the right cornea, and that not over the axis of vision; a small round spot over the axis of vision on the left cornea was removed. Treatment—daily fumigation of the eyes with hydrocyanic acid, and the subsequent application of Janin’s ophthalmic ointment, and every ten days the application of the solid nitrate of silver to the cornea. Internally took gentian and salts.

Case 4. Feb. 11, 1846.—David Wark, æt. 14, some time previously had received a severe blow on the left eye with a stick, which had ruptured the cornea horizontally, and in healing had left a cicatrix about three lines broad across the eye; to the outer side of the cornea the iris had prolapsed and become attached to the cicatrix. He saw only the upper and under part of each object. Dismissed in six weeks with the cicatrix reduced to a mere line, and, by his description, the vision as good as in the right. Treatment—daily fumigations with vapour of hydrocyanic acid, and a small portion of the following ointment put into the eyes each day—


→ Hyd. nit.

→ Ceteae ʒi. m.

Case 5. Nebula.—June 11, 1846.—Robert Hughes, æt. 55, a veteran, was led to the Institution by his wife; the right eye was destroyed, and vision in the left was completely prevented by nebula, both the result of inflammation. He had just arrived from New York, where he had been under the surgical treatment of the most eminent practitioners in that city, and hitherto the case had only gone on from bad to worse. After two months’ daily attendance, he was discharged with very fair vision, sufficient to enable him to transact his ordinary business. Before returning to Wales, his native country, he left a certificate with me (as a voluntary effusion of gratitude), stating the benefit he had received under my care.
The treatment consisted in daily fumigations with hydrocyanic acid,—a drop of 10 grain solution of nitrate of silver, and after insulating him, drawing electric sparks from the eye and surrounding orbit.

Case 6. Nebula.—S. M., æt. 13, called on me, May 2, 1846, complaining of dimness of vision of right eye, which had existed since he had had the measles in infancy. Had been treated unsuccessfully in New York by several oculists. The whole cornea was obscured by nebula; was perfectly cured in six weeks. Treatment—daily fumigations with hydrocyanic acid, and application of 10 grain solution of nitrate of silver. During the treatment, he took a considerable amount of the ioduretted solution of the iodide of potassium.

Note.—Janin's ophthalmic ointment is made as follows:


BIBLIOGRAPHICAL NOTICES.


Prof. Royle stands deservedly high in the medical profession, and the foregoing work is not calculated in the least to detract from his reputation. He states that he was induced to undertake the work from the conviction that "the student of Materia Medica required something systematic to study, which brought up to the present time, should be sufficiently full for information, and yet as short and condensed as was compatible with the avoidance of being superficial." The author has successfully performed the task imposed upon himself, and has produced a full manual, containing notices of many new articles, which will prove of great utility particularly to the medical student. It contains numerous well executed illustrations which add much to its interest and value. Prof. Carson, the American editor, has added such matter in connexion with the Pharmacopoeia and indigenous Materia Medica of the United States as adapts the work to the wants of the American student and practitioner.
Life and Trial of Dr. Abner Baker, Jr. (a monomaniac.) who was executed October 3d, 1845, for the alleged murder of his brother-in-law, Daniel Bates, including letters, &c. By C. W. Crozier. Trial and Evidence by A. R. McKee. Louisville, Ky.: Prentice & Weissinger, 1846. pp. 152.

We have perused the above pamphlet with considerable interest, and we fully concur with the medical gentlemen to whom all the testimony was submitted, in the opinion that mental derangement was as conclusively proven in this as in any case upon record, and that the execution of Dr. Baker, under all the circumstances, was a judicial murder. What motive could have influenced the Governor of Kentucky to withhold a pardon from this unfortunate man, when the testimony, and the opinions of so many eminent physicians and jurists, pronounced him to be insane, we cannot conceive.

PART III.—MONTHLY PERISCOPE.

Action of Sulphate of Quinine on the Spleen.—Dr. Pagis, interne of the hospitals of Paris, having undertaken a series of experiments for the purpose of ascertaining the application of sulphate of quinine on the spleen, publishes in the "Gazette des Hopitaux," the results of his researches.

On a middle-sized dog the spleen was uncovered by two incisions perpendicular to each other. The transverse diameter of the viscus measured twenty centimetres, and the longitudinal six. The jugular vein was opened, and twenty-three grammes of alcoolat of quinine were injected; instantaneously the spleen diminished in every direction, its surface became rough and wrinkled, and its diameters were reduced to 14 cent. by 5.

On another animal the experiments were repeated, with a view of comparing the results of several injections: with water they were negative, with alcohol the spleen was very slightly corrugated, but with the solution of quinine the viscus contracted instantaneously in the most evident manner.—[Medical Times.—Med. News.

Deglutition excited by dashing Cold Water on the Face.—The following suggestion by Mr. Simpson, of Stamford, founded upon the invaluable principles of the excito-motory system, is worthy of more general application in cases in which the power of voluntary deglutition is lost. The suggestion is well illustrated in the subjoined case.

A poor man, who had attempted suicide, was sinking from the effects of loss of blood; his pulse was imperceptible, and the action of the heart could scarcely be felt. It being desirable to administer
stimulants, his mouth was filled with spirits and water, but the patient was unconscious, and therefore did not swallow. Cold water was dashed upon his face, for the purpose of making him swallow by exciting reflex action, when the contents of the mouth were instantly gulped down.—London Lancet.

On the Formation of Fat in the Animal Body.—The following fact, related by M. Köss, is valuable, when taken in conjunction with the recent discussions which have been held in relation to the formation of fat in the animal economy. A workman was killed on a railroad, just after partaking of a full meal, consisting entirely of bread and grapes. His body was subsequently examined. The process of chymification was found in full activity, and at those portions of the small intestines which the chyme had reached, the mucous membrane was found dotted with white points, which, on closer examination, were seen to depend on the presence of drops of oil in the epithelial cells surrounding the extremities of the villi. Here is an example of the abundant formation of fat from substances which, at the most, could contain but a very small quantity of fatty elements, being composed almost entirely of gluten, starch and sugar.—[Lond. Med. Gaz., from Encyclop. des Sc. Med.

Phthisis—Cod-liver Oil in.—The efficacy of the oil of the cod's liver in phthisis pulmonalis has recently been attested by several observers. Dr. Thompson, who is one of the physicians of the Hospital for Consumption and Diseases of the Chest, at Brompton, states that he has derived more benefit from it than any other medicine which he has tried. He has exhibited it in thirty-seven cases with the following results. In three cases it was found necessary to discontinue it, in consequence of the nausea which it occasioned; in twelve there was no perceptible effect; in ten the increase of strength, plumpness, and energy were remarkable. When benefit was derived it was generally to be observed within a fortnight.

Dr. Toogood, of Bridgewater, and M. Delstanche, have likewise spoken of its value.

Dr. Huss, of Stockholm, speaks favourably of moxas below the clavicles in the treatment of phthisis.—[Ranking's Abst.

Treatment of Pruritus Ani et Vulvae.—M. Cazenave treats the above obstinate symptom by one or other of the following lotions:

1. Subcarbonate of potass, Distilled water, 3ij-3iv.
2. Sulphuret of potass, Distilled water, 3xvij.
3. Cyanide of potassium, Distilled water, grs. ix.

[Ranking's Abstract.]
Treatm ent of Ascarides.—M. Schultz employs enemata of infusion of quassia with great success for the expulsion of ascarides—the strength employed is 5j to an ounce.—Gaz. des Hôp.

Ferri Cyanuretum in the treatment of Ascarides of the Rectum.—A correspondent, who does not wish his name given, he not now being engaged in the practice of medicine, writes to us to invite the attention of the medical profession "to the use of the Ferri Cyanuretum, or Prussian Blue of commerce, in the treatment of ascarides in the rectum."

"From present observations," he writes, "I am disposed to believe that upon a fair trial it will be found more effective in the treatment of the inveterate cases of the disease, than all other remedies.

"Commence with five grains of the Prussiate rubbed up in two ounces of rain water or mucilage of gum arabic, (the pure water is preferable, except in cases where much irritation of the mucous membrane exists;) throw this into the rectum, and retain it until the next regular defecation.

"Repeat this daily, gradually increasing the quantity of the Prussiate until perfect and permanent relief is afforded. I believe the greatest relief will be experienced after using it once or twice."

[American Journ. of Med. Science.]

Hysteria.—The following conclusions respecting the pathology and treatment of hysteria appear in a memoir offered by M. Gene- drin (Archives Gén., Sept. 1846,) to the Académie de Médicine:

1st. Hysteria is not universally characterized by convulsive paroxysms: it is a continuous malady, the symptoms of which are always to be recognized during the interval between the paroxysms, as well as in the fit.

2d. In all cases of hysteria, without exception, a general or partial anaesthesia exists. In the slighter degrees, the anaesthesia occupies only particular parts of the integuments; in the more aggravated forms the whole integument is implicated, as are also such portions of the mucous membranes as are amenable to examination.

3d. There is no accordance between the degree of anaesthesia and the severity of the hysterical paroxysm.

4th. The greater number of patients experience over a limited part of the body a degree of hyperaesthesia which is in many cases the immediate cause of the fit.

5th. Paralysis is a frequent hysterical symptom, and may be prolonged for an indefinite time. 'This paralysis is the source of many serious errors in diagnosis.

6th. It is a mistake to consider the sensation of a ball in the throat as a constant accompaniment of hysteria.

7th. All the marvels related of late days as the production of animal magnetism are witnessed in spontaneous hysteria: so the insensibility which will allow a painful operation to be performed may be seen in hysteria.
8th. Of all medicinal agents there are none which is so efficacious as opium in large doses.—[Ranking's Abstract.

Tincture of Cantharides in Bright's Disease.—This medicine, in the dose of from fifteen to twenty drops, "par pot de tisane," combined with the use of decoction of bark and chalybeates, is the remedy which has given the best results in the treatment of albuminous nephritis—(Bright's Disease.) Many cases have already been cured by this treatment.—[Month. Journ. Med. Science.

Employment of Bismuth in Diarrhoea.—M. Rayer speaks in praise of the trisnitrate of bismuth when used in the diarrhoea to which phthisical patients are so liable, and in that which occurs during the progress of typhus. This remedy has for many years been employed, and often with great advantage, in the simple form of diarrhoea which affects young children.—[Gaz. de Hôpitaux, from London Medical Gaz. South. Journ. Med. and Parm.

Bed Sores.—To prevent these, Str. B. C. Brodie recommends a lotion composed of two grains of bichloride of lime to an ounce of proof spirit, the parts to be washed two or three times a day, beginning at an early period; it acts by generating a thicker cuticle, and may be employed in other cases where a patient suffers from pressure.

[Ranking's Abstract.

Treatment of Epistaxis by Insufflations of Alum.—When hemorrhage from the nasal cavities assumes a dangerous aspect, recourse is generally had to plugging, a measure both inconvenient and painful. M. Lecluyse has successfully employed means far more simple, and at the same time, according to his own account, more certain—namely, the insufflation, by means of a quill, of equal parts of powdered gum arabic and alum. In one case this succeeded after three repetitions; other means, and plugging among them, having entirely failed.—[Gaz. des Hôpitaux.

Application of Ether Vapour to the practice of Midwifery.—Professor Simpson has employed ether vapour in the practice of midwifery, and is the first, we believe, who has made the application of this agent. The case was perfectly successful, as the following extract will show:

"A few days ago Professor Simpson stated to his class that he had practised with entire success the inhalation of sulphuric ether in a case of the most difficult form of labour, and where otherwise the sufferings of the patient would undoubtedly have been extreme. The mother was lame and deformed. At a former accouchment, the labour lasted three or four days, and, from the necessarily protracted use of instruments, the patient's agonies were very great. On the present occasion, Dr. Simpson had previously determined to avoid, if
possible, the use of all instruments, and to attempt to extract the infant by the feet. He expected to be aided in this by the use of the ether inhalation. Accordingly, when labour had set in for a few hours, the patient was put under the influence of ether, and in a few minutes the child was turned and extricated, while the mother was altogether unconscious of the operation, and that, too, although the delivery was rendered excessively difficult, by the degree of compression to which the child's head required to be subjected. On afterwards awakening, or passing from her 'etheralised' condition to the state of common consciousness, one of the first circumstances of which the patient became aware, was the noise attendant on preparing a bath to resuscitate the infant. A remarkable circumstance pointed out in the case by Dr. Simpson was, that whilst breathing the ether, the labour pains or throes continued, and yet the mother (to speak paradoxically) felt no pains. We hear she is rapidly recovering. This is, we believe, the first instance in which this new and extraordinary agent has been employed in the practice of midwifery."


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**MEDICAL INTELLIGENCE.**

**Inhalation of Sulphuric Ether in Surgical Operations.**—In devoting a considerable portion of this No. of our Journal to this subject, we feel that we are doing our readers essential service. Having now satisfied ourselves by actual experiment, that very painful operations can be performed while the patient is made insensible and unconscious by the inhalation of pure Sulphuric Ether, we entertain the opinion that a new era is about to dawn upon Surgery, produced by this important discovery. While we have been sceptical and are still so, with respect to the effects of Mesmerism in the alleviation of pain and disease, and hope ever to continue the uncompromising opponents to all species of quackery and patented remedial agents, we are free to admit our convictions concerning the value of this new mode of preparing patients for surgical operations. It is true, that in its first introduction to the profession, it was attempted to be veiled in mysticism and a patent obtained by a dentist in Boston, to whom the subject was presented by Dr. Jackson, its discoverer; but now all secrecy is removed, and no one entertains a doubt as to the identity of the so-called Letheon, with pure Sulphuric Ether. The only questions now agitating the profession are its best mode of preparation; and secondly, is there any danger in its general administration?

We have given Dr. Jackson's mode of preparing the ether he first employed, and which he recommends, and are happy to be able to add the views of two distinguished Professors of Chemistry found below, in answer to interrogatories propounded to them. That which we have used in our experiments was washed in cold water, to remove the sulphuric acid and alcohol contained in the ether of the shops.

To the second question—the danger of its general application to surgical operations, our limited experience will not warrant a reply. It may be years before it can be fully and satisfactorily answered. Direct experiment can alone
decide this question. This much, however, can be said: up to the present time no very unfavorable effects have been produced in any case—certainly none has proved fatal from the ether. Its extended application to relieve or extinguish pain in Surgery and Midwifery may be judged of, by consulting what has been published already in this No.

Our mode of preparation is water 3 iii., ether 3 iii. to iv., liquid potash 5 i., well agitated in an eight ounce vial. Administration, two to four drachms poured on a handkerchief, and inhaled from two to four minutes.

Reply of John Le Conte, M. D., Professor of Natural Philosophy and Chemistry, in Franklin College, University of Georgia.

ATHENS, March 16th, 1847.

In reply to the questions propounded in your letter of the 13th instant, in relation to Sulphric Ether, I must premise, that chemists are not quite agreed concerning the precise changes and reactions which take place during the process of etherification. You are aware, that ether may be prepared by the abstraction from alcohol of one half of its elemental water. Thus, if potassium be placed in contact with absolute alcohol, hydrogen gas is evolved, and a compound of ether and potash crystallizes,—C₄H₅O.—H. O., and K. giving C₄H₅O.—K. O. and free H. (Kane.) But it is by the action of sulphuric acid upon alcohol, that ether is, for practical purposes, always obtained. It was formerly thought, as first suggested by MM. Fourcroy and Vauquelin, that the sole principle concerned in the formation of ether was the attraction of sulphuric acid for water, by which the alcohol was directly converted into ether. But, from more accurate researches, it is now obvious, that the process is of a far more complicated nature. That the sole or efficient cause of the conversion of alcohol into ether is not the mere abstraction of the water, by the affinity of the sulphuric acid for that liquid, is proved by various circumstances, of which the following are some:—

1. Water may be abstracted from alcohol by alkalis and chloride of calcium, yet nothing like ether is the result.

2. Water passes over, during the whole process, along with the ether, with which the acid ought to combine in preference to dehydrating the alcohol.

3. Ether is not produced by the action of anhydrous sulphuric acid on alcohol.


Recent discoveries in organic chemistry have induced Berzelius to regard ether as the oxide of a compound inflammable body called ethule or ethyle; and this opinion has been ably advocated by Liebig. On this supposition, ethule consists of four eq. of carbon and five eq. of hydrogen, C₄H₅, so that the formula of ether is C₄H₅O. Alcohol is regarded as the hydrate of the oxide of ethule. This will be rendered obvious by throwing the formulae together:—

Hydrate of the oxide of ethule; alcohol, C₄H₅O, H O
Oxide of ethale; ether, C₄H₅O
Ethule; a hypothetical compound, C₄H₅
On the ethyle hypothesis, the following is an explanation of the changes attending the formation of ether. When sulphuric acid acts on alcohol, the water of both is disengaged, and the sulphuric acid and ether unite to form Sulphate of Ether.—\( C^4 H^5 O^–|Aq. \) and \( S O^3^–|Aq. \), giving \( C^4 H^5 O^–|SO^3^|2Aq. \) The ether obtained by distilling a mixture of oil of vitriol and alcohol results, therefore, not from the water being seized on by the former, but from a decomposition of its compound with sulphuric acid, the sulphate of ether. If absolute alcohol and strong oil of vitriol be employed in the preparation of ether, it is found that the distilled product consists of ether and water, forming two distinct layers in virtue of their different specific gravities, but in quantity identical with those which constitute alcohol; 100 parts of the mixed liquids consisting of 19.5 water and 79.5 ether. The oil of vitriol remains in the retort in its original state of concentration, and hence might be applied to etherify an infinite quantity of absolute alcohol, introduced in a continuous stream. (Kane.) To explain this very remarkable result, Mitscherlich advanced that the action of the sulphuric acid on the alcohol is merely catalytic; that it splits it, as it were, into ether and water, and these pieces not being able to re-unite, come over in vapor, merely mixed with each other. This idea is, however, quite inadmissible, as the whole quantity of ether is proved to be united with the sulphuric acid in the first place, and to distil over only after the decomposition of the compound that had been so formed. The observations of Liebig and Rose have removed the difficulty, which this simultaneous evolution of water and ether presented to the adoption of the theory, which supposes the ether to be expelled from its combination with the sulphuric acid by the water. In fact, it is only at a particular temperature that the ether and water come over in atomic proportions. The production of ether depends, therefore, upon the facts, that when alcohol and oil of vitriol are mixed, sulphate of ether is formed and water is set free; but on the application of heat, this action is inverted, and the ether is expelled from the acid, with which the water recombines. If the distillation be conducted so that the mixture boils, the dilute sulphuric acid concentrates itself, at the same time, by giving off an atom of water, which condenses mixed with the ether, but had its origin in a perfectly independent action. (Kane, Graham, Turner, Fownes, Brande, etc.)

The ether-producing temperature is circumscribed within narrow limits. Below 260° no ether is produced; from 260° to 310°, ether passes over; and lastly, when, by the addition of a large quantity of oil of vitriol, the boiling point of the mixture is made to rise to 320° and above, olefant gas makes its appearance.

The ether formed by the ordinary process is rendered impure by admixture with alcohol and water, and generally sulphurous acid. To separate these impurities, the ether should be agitated with a strong solution of potassa, which neutralizes the acid, while the water unites with the alcohol. It is then distilled by a very gentle heat,
and may be rendered still stronger by distillation from chloride of
calcium. Ether is miscible with alcohol in every proportion, but is
very sparingly soluble in water; 10 volumes of water dissolving one
of ether, while 36 volumes of ether dissolve only 1 of water. When
agitated with water, the greater part separates on standing, a small
quantity being retained, which imparts an ethereal odor to the water.
The ether so washed is very free from alcohol, which combines by
preference with the water; but some water still remains dissolved in
the ether, which must be removed by adding some fresh burned lime,
and distilling a second time.

The specific gravity of pure ether has been variously estimated.
According to Lovitz it is 0.700, or 0.632; according to Dumas and
Boullay its sp. gr. at 63° is 0.713; according to Gay Lussac’s observa-
tions its density is 0.715 at 65°, and 0.724 at 54°. The ether of
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pheric air seems to have a considerable influence on its action on
the animal economy. If the air be too strongly impregnated with
ether stupefaction ensues.

Answer of Professor A. Means, M.D., of Emory College and the Medical
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Oxford, Ga., March 16th, 1847.

1st then: “Is there any Alcohol in Ether?”
There is. Almost all the ether found in the shops has some alco-
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agitation with twice its bulk of water. Let it stand a little—the
alcohol will combine with the water—then pour off the ether which
will have imbibed a little water. To get it free from this, add a little
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It contains, before rectification, sulphurous acid; but the ether of
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Here, perhaps, I may remark, that when ether coagulates the serum
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I know of no means by which this can be entirely effected, nor
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present, will speedily supervene. Indeed, from some cases on record, I should think care and close observation necessary to prevent (in some instances) too great depression of the pulse, and too deep and obstinate stupefaction.

You will allow me to remark, also, that when ether has been kept for some time, and especially if frequently opened, it absorbs oxygen from the atmosphere and forms some acetic acid. This may be known by its turning litmus paper red on contact.

Ether, too, if pure, will not discolor water when mixed with it; old ether will frequently turn it to a feeble milky white hue.

**Gun Cotton.**—We have received the following mode for preparing the Gun Cotton, from Dr. E. H. Oakman, of Columbia County, Ga.

Take a portion of cotton, as freq as possible from trash and other impurities, immerse it for thirty minutes in equal portions of nitric and sulph. acids, of the ordinary strength as sold by the apothecary; then, wash the cotton in water until no acid test remains, and allow it to remain a minute or two in a solution of nitrate of potash (20 grs. to an ounce of water.) Express; dry it carefully before a fire; and it is ready for use.