In 1877 a modification of the bismuth solution, which had been proposed by J. Loewe in 1871,* was brought under my notice by Dr. Emerson Reynolds, to whom I am indebted for the opportunity of carrying out many of the experiments in the laboratory of Trinity College. Loewe's formula is as follows:—Subnitrate of bismuth, 15 grammes, dissolve in glycerin (care should be taken that the glycerin is pure, and free from sugar, dextrin, or other body of reducing power) 30 grammes, and solution of sodium hydrate (specific gravity 1.34) 60—70 c.c., dilute with water, 150—16 c.c. Heat to 100° Cent. (212° Fahr.)

Should any reduction occur upon adding the subnitrate of bismuth to the liquid, digest at 100° Cent.; let stand and decant.

The test solution is best employed by adding a little of it to the urine, and then boiling. Should the solution be boiled first, it becomes liable to be reduced by substances other than sugar; e.g., urine rich in indigenous bodies.

If sugar be present the liquid first turns brownish, then the white precipitate of hydrate of bismuth becomes grey, and rapidly deepens in tint, until the reduction precipitate is perfectly black. The object of my paper is to invite attention to this test; and, from the experiments which have been made with it as occasion offered, I have come to the conclusion that the test is a good one, convenient to use, and adapted to the requirements of every-day practice.

One of the fallacies to which the bismuth test is liable, is the possible formation of a black precipitate of sulphide of bismuth in presence of sulphuretted organic compounds, such as mucus and albumen. But the following observations show that this does not necessarily happen. Some urine, albuminous to two-thirds, was tested with both the copper and the bismuth solutions. When boiled with the copper solution it assumed a deep brown colour, and with the bismuth solution a light brown, without yielding a trace of precipitate. Another specimen of albuminous urine, containing a little blood, turned light yellow with the bismuth solution (owing to the caustic soda in it), and when boiled for some time developed some iridescence on the interior of the test tube, but not a trace of black or even grey precipitate. When boiled for some moments with a solution of egg-albumen, the bismuth solution affords a greyish precipitate, while a sample of alkaline muco-purulent urine suffered no change upon boiling with the bismuth solution. Neither did a specimen of carboluric urine which exhibited in a marked degree the smoky brown colour from carboluric acid absorption.

With the view of testing the reliability of the bismuth reagent, I have experimented on a number of specimens of normal and pathological urines, and as yet the only case in which I have met with a result at all doubtful was one of enteric fever. The urine, which was loaded with lithates, was cleared by a gentle heat, and then boiled with the bismuth solution. After a few moments of ebullition, the precipitate assumed a decided steel grey tint. Unfortunately, the urine was not tested after removal of the lithates. No evidence of sugar was obtained with the copper test.

In regard to delicacy of action, the results of some qualitative comparisons between the copper and the bismuth tests lead me to believe that the bismuth test will not suffer by the comparison. Take for example the following.

(a) Ten c.c. of diabetic urine, rich in glucose, kindly sent to me by Dr. Finny, was diluted with water up to 100 c.c. The liquid gave copious precipitates with both the bismuth and the copper tests.

(b) Ten c.c. of this diluted urine, further diluted up to 100 c.c., still furnished abundant evidence of sugar with either test.

(c) Again diluted to c.c. of urine (b) up to 100 c.c. Upon testing it the next day with the bismuth solution a grey precipitate was obtained, and a slight lustrous film on the interior of the tube; with the copper solution, a trace of red precipitate on the sides of the tube. The bismuth solution is not adapted for quantitative estimation of sugar.

To sum up, it may be safely said that, whenever the bismuth solution gives with a liquid a black precipitate, after boiling for a few seconds, the presence of sugar is certainly indicated, care having been taken to exclude sulphide of bismuth. But no positive conclusion as to the presence of sugar should be drawn from the production of a grey or light-coloured precipitate, or of a scanty mirror-like deposit on the test-tube. In other words, while the bismuth test will not fail to detect the smallest quantities of sugar of any consequence for diagnostic purposes, the fact, that the solution requires to be maintained at the boiling temperature

for some little time before complete reduction takes place, suggests caution in allowing for the reducing influence of organic compounds other than sugar. In all cases of doubt it would be advisable, before adding the bismuth solution, to filter the urine (in order to get rid of mucus, lithates, etc.), and to remove albumen.

The special advantage of Loewe's solution over the copper test is its greater stability. The solution with which all the experiments were made was prepared in October 1877, was kept in a white glass bottle, and freely exposed to diffused daylight, and in July 1879, was clear and bright, ready for use, and did not appear to have undergone any material change.

AN IMPROVED METHOD OF AMPUTATING THE PENIS.

By S. J. MCGANN, L.R.C.P.ED.,
Surgeon-Major Indian Medical Department.

IN cases in which it is necessary to amputate near the scrotum, Professor Humphry, in vol. v of Holmes's *System of Surgery*, describes his operation as follows. "I have, after making a straight cut through the penis in the ordinary manner, carried an incision through the raphe of the scrotum into the perinæum, exposing the corpus spongiosum. I then dissected that body from the corpus cavernosum as far as the crura penis, turned it down into the perinæum, and left it hanging out there half an inch beyond the level of the skin. The cut edges of the scrotum were united by a few points of suture in front of the urethral orifice. The patient recovered quickly, and experienced no difficulty in passing water through the perineal aperture."

Some time since, I had occasion to remove a cancerous penis, in which the disease extended up to the pubis, and followed the above directions in the performance of the operation. The results were quite satisfactory as far as the operation itself was concerned, and the patient left the hospital with the parts perfectly cicatrised, and with no difficulty in passing water through the opening in the perinæum. It appeared to me, however, that complete division of the scrotum was an unnecessarily severe procedure; and a great drawback was the length of time it took for the divided parts to unite, as, from the mobility of the testicles and contractility of the scrotal structures, sutures rapidly cut through, and strappings were less effective than elsewhere in keeping the parts in apposition, and permitting of union by granulation.

It occurred to me that if, instead of completely dividing the scrotum at the raphe, a bridge of skin were left (and the larger the bridge the better), it would obviate in a great measure this difficulty; and that this was not only practicable, but easier of performance than the other, I demonstrated to myself on the dead subject, and I carried it out as described in the following case.

Buswa, Hindu, aged 51, was admitted to hospital on November 13th, 1880, with cancer of the penis of, he stated, two years' standing. The man's general health appeared fairly good. The general outline of the organ was lost, and it was represented by a sessile pear-shaped fungating mass; and the inguinal glands on each side, especially those on the right, were enlarged and prominent. The man complained of great pain, which was much increased on passing urine, and begged for the removal of the mass.

On the 14th, he was placed on the table in the lithotomy position, and, chloroform having been given, an assistant, holding the scrotum in both hands, drew it forwards, keeping the raphe of the scrotum and perinæum in the same line. An incision of about two and a half or three inches in length was made in the median line, with its centre over the bulb; the corpus spongiosum having been completely exposed, the scrotum was allowed to drop and was drawn slightly backwards, and the penis was removed by a single sweep of the knife close under the pubis. An indurated portion of the scrotum at the right side was also removed. The scrotum having been again drawn forwards as before, the cut surface of the corpus cavernosum presented itself through the posterior incision; the bleeding vessels were then tied with fine silk, and the corpus spongiosum dissected from the corpus cavernosum, and turned down into the perinæum. All bleeding having ceased, the margins of the front incision were brought together by means of sutures and strapping, and the incision behind was also treated in like manner, and, finally, the corpus spongiosum was slit with a scissors to the extent of half an inch on its lower or posterior aspect, and the margins secured to the perineal skin on either side by two points of suture. This latter is better practice than leaving it simply protruding and undivided, as, in the latter case, when it retracts, as it always does, the introduction of a catheter into the bladder, should such be necessary, is more difficult. The subpubic wound gave abundant room for the examination of the inguinal glands, but, having found it impracticable to com-

* Fresenius' *Zeitschr. für Analyt. Chem.*, Band x, 1871, p. 452. Löwe merely suggests the solution, as a qualitative test, in a short communication, and he gives no details of its applications. He had previously proposed a solution of sodio-cupric glyceride in lieu of a copper solution for the testing and estimation of sugar; but of this I have no experience (*Zeitschr. für Anal. Chem.*, Band ix, 1870, pp. 20, 224; *Jahresh. für Chem.*, 1870, p. 1036).

pletely enucleate or remove them, I left them. The patient recovered from the operation without a single bad symptom, and left hospital on the sixteenth day with the wounds healed, and an opening in the perinæum through which he passed urine without any difficulty.

CLINICAL MEMORANDA.

ON THE PERIOD OF INCUBATION IN SCARLET FEVER.

THE following extracts from ward-journals speak for themselves.

CASE I.—Mary H., aged 9, was admitted into the Belvidere Fever Hospital, Glasgow, on July 2nd, 1879. Phemie G. (who was a patient here) returned to the convent on Saturday, June 21st. She had been up and going about for three weeks before leaving the hospital. On the night of her return to the convent, the little girl H. slept with her. Up to that time, H. had been quite well. She continued well on Sunday; but on Monday night, when going to bed, she took a shivering, and afterwards headache; and the headache became worse. She also vomited, and her throat was sore. All these symptoms—shivering, sore-head, vomiting, sore-throat—attacked her that night. The rash came out this (Wednesday) morning; it was then observed for the first time. Phemie G. made the statement that her skin never came off, except like flour; it never peeled off. There can be no doubt that the present patient, Mary H., got the fever from Phemie G. The period of incubation in this case was forty-eight hours. The patient died on July 5th, 1879.

CASE II.—Bella M., aged 18, was admitted on September 12th, 1879 (Friday). There was scarlet fever in the family with which the patient was residing (she was in service). On Wednesday night, she felt out of sorts. On Thursday morning, she was very ill; felt sick, and ready for bed. She had bad headache and pain in the stomach. The throat began to feel sore on the previous afternoon. The rash was seen on the 12th for the first time. It should be noted, that the patient went to Mrs. G.'s on Monday night, about 6 P.M.; and she felt out of sorts on Wednesday evening, giving a period of incubation in the case of forty-eight hours or so.

JAMES W. ALLAN, M.B., Belvidere Fever Hospital, Glasgow.

SCARLATINA IN A PUERPERAL FEMALE: SHORT PERIOD OF INCUBATION: DEATH.

M. B., a primipara, aged 30, commenced with symptoms of labour at 6 P.M. on Tuesday, September 28th. In my unfortunate absence, a midwife was summoned at 12 P.M., and the child was born at two the following morning. The labour was natural, and perfectly easy. The midwife had been occupied during the preceding week in nursing a child suffering from scarlatina maligna, and, at the time of attending the case, was complaining of a severe sore-throat, which I had no difficulty in diagnosing to be scarlatina when I saw it next morning.

The patient had a severe rigor on Wednesday evening, and was constantly sick during the night. I was called in on Thursday morning (little more than twenty-four hours from the completion of labour), and found the poor woman covered with the characteristic rash of scarlatina, and with a scarlatinal throat. The pulse was 160, and the temperature in the axilla 105.2°. She complained of nearly total blindness, though, excepting that the eyes were suffused, there was nothing abnormal in their external appearance. The evacuations were passed unconsciously in bed. The uterine discharge was most foetid and unpleasant.

I prescribed the sulphocarbolate of sodium in twenty-grain doses, vaginal injections of permanganate of potash, and gave first a draught containing thirty grains of sulphate of quinine, and afterwards (on its rejection) a rectal injection of forty grains of the same drug with half a drachm of tincture of opium. I also ordered frequent liquid nourishment, champagne, and ice. I also (not venturing to employ the cold bath) had the body sponged with tepid water four times a day. I was unsuccessful in reducing the temperature below 104.8°, although I repeated the quinine injection several times during that day and the next two. My patient died on Sunday morning (October 3rd) at half-past one o'clock, the eruption being well "out" up to the time of death.

I was unable to discover any possible origin of infection beyond the midwife in question. There was no tenderness on pressure over the uterine region.

The case appears to me interesting on the following accounts. First, the short incubation, only twenty-four hours. Thomas, in Ziemssen's *Cyclopadia*, gives very few cases of such short time. Second, the viru-

lence of the attack, which suggests the question whether the poison was not conveyed through the vaginal mucous membrane, and (as in the case of typhoid conveyed through the alimentary canal mucous membrane, see Parkes' *Hygiene*) was therefore of shorter incubation, and of more intense severity. Third, the rapid affection of the retina, and consequent blindness.

WILLIAM SYKES, M.R.C.S., L.R.C.P., Mexborough.

THERAPEUTIC MEMORANDA.

THE HYPODERMIC INJECTION OF ERGOTINE AS A COUGH SEDATIVE.

ERGOTINE, injected hypodermically, in doses of from one to three grains, is a remedy of notable power in allaying coughs of various lung conditions, and in diminishing sputum. Unlike some potent drugs, that occasion general distress out of proportion to possible good results, ergotine is not followed by any constitutional disturbance. However injected, there is local irritation; if into the subdermal connective tissue, suppuration may take place; it should be thrown deeply into a muscle, as the deltoid. In a small proportion of cases, it entirely fails. Sedative effect persists for a day or two; is likely to control a cough that has defied even the most cunningly devised linctus.

In the severe harassing cough of advanced phthisis, not unfrequently exciting sudden fatal hæmoptysis, ergotine is indicated as a prophylactic.

The internal administration of the liquid extract of ergot, in moderate or tolerably large doses, does not seem to have the same effect.

JAMES ALLAN, New Wandsworth.

A READY METHOD FOR HOT FOMENTATIONS.

A PATIENT lately informed me of a method, adopted in her family for many years, to prepare flannels for hot fomentations; and, as the plan is novel to me, after thirty years' practice, and evidently very valuable, I think it may be unknown also to many others. The flannels are merely placed in the steamer of an ordinary potato steam-kettle; they quickly became thoroughly permeated by the steam, when the kettle is placed on the fire, and can be readily changed without any fear of scalded fingers during the attempt to wring them sufficiently dry, as in the ordinary method. My friend has, I understand, presented several steam-kettles, specially made for the purpose, to one of the London hospitals.

RICHARD NEALE, M.D. Lond.

OBSTETRIC MEMORANDA.

INVERSION OF THE UTERUS.

IN the number of the BRITISH MEDICAL JOURNAL for January 22nd, a case of "partial inversion of the uterus, treated by almost continuous pressure," is reported by Mr. Sympton; and, while he may be congratulated upon the successful termination of his case, I hope he will allow me, in the most friendly spirit, to point out the disadvantages of the method he adopted. The single curved repositr, which he used, is, as I have shown in a paper printed in the BRITISH MEDICAL JOURNAL (September 6th, 1879), the worst form of instrument, as it presses the fundus against the sacrum, instead of in a line with the axis of the brim of the pelvis. To remedy this fault of the repositr, Mr. Sympton put extra strain on the posterior elastic bands; and, using the perineum as a fulcrum, somewhat obviated the maldirection of the pressure. But the result, although ultimately successful, was unnecessarily delayed. "Almost continuous pressure" was kept up from October 25th until November 4th; whereas, had a double curved repositr been used, the cure would have been effected in less than two days.

I am able to make this statement upon the experience of five cases treated by my repositr: 1. By myself, reduced in 54½ hours; 2. By Dr. Williams, reduced in 33 hours; 3. By Dr. Gervis, reduced in 51¾ hours; 4. By myself, in 32½ hours; 5. By Dr. Rogers, in 40 hours; being an average of 43 hours for each case. Although, therefore, I am willing to agree with Mr. Sympton, that he cured his case by "well directed pressure," I hope he will allow me to submit that better directed pressure might have been employed.

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THE Surgical Society of Paris has awarded the Duval prize to M. Paul Séguin, prosector in the Faculty, for his work on Acute Abscesses of the Prostate; and has equally divided the Laborie prize between M. L. H. Petit, for his essay on Palliative Operations in Cancerous Subjects, and M. A. Heatherbe, for his work on Calcified Epithelioma.