this was the first case infected, and had been operated upon two days previously.

The source of the outbreak was not known, and it followed no definite course.

Cases with Wounds that got Scarlet Fever.—CASE I.—Tommy E., aged 3 years, admitted June 19th, 1886, for congenital talipes, had not had scarlet fever previously. Various mechanical means having been tried unsuccessfully, on November 11th, under chloroform and spray, Mr. Wright removed a wedge-shaped piece of the tarsal bones from the outer side of the foot. He had a good night after the operation; temperature next morning 97.6°; it rose in the evening to 100.4°, and at noon next day he came out in a scarlet fever rash. Fauces injected. He had not vomited. Transferred to the fever ward.

CASE II.—Robert G., aged 3 years, admitted October 15th, 1886, for splint sores, had not had scarlet fever previously. November 13th: vomited; refused food; fauces slightly injected; no rash; temperature 99.6°; nothing remarkable about wounds. The temperature rose to 100.6° next day, and a scarlet fever rash appeared over forearms, chest, and abdomen. Transferred to the fever ward.

CASE III.—Richard B., aged 6 years, admitted August 31st, 1886, for morbus coxæ. Had not had scarlet fever previously. November 1st, hip aspirated under chloroform. On November 14th, vomited; temperature 101°. Fauces injected. Transferred to special ward. November 15th, temperature 102.4°; indistinct rash about left thigh; this became more marked next day, and he was subsequently transferred to the fever ward.

CASE IV.—Joseph H., aged 3 years 9 months, admitted October 25th, 1886, for otitis. Had not had scarlet fever previously. October 28th, incision over mastoid and scraped. He left the hospital on November 14th, his last temperature being 97.6°. Two days later he had scarlet fever.

CASE V.—Annie H., aged 6 years, admitted October 27th for morbus coxæ. On November 11th, hip aspirated. November 13th, sudden rise of temperature, 100.4°; fauces slightly injected. November 15th, transferred to special ward; evening temperature 104°; fauces much injected; no rash. Subsequently sent to the fever ward.

CASE VI.—William T., aged 7 years, admitted November 3rd, 1886, for morbus coxæ and phlyctenular ophthalmia. Temperature normal until November 24th, when it rose to 99.6°. Fauces congested, and distinct red papular eruption over feet, left thigh, and abdomen. Transferred to the fever ward.

Cases with Wounds that went wrong but did not get Scarlet Fever.—CASE I.—Robert D., aged 15, admitted July 10th, 1886, for synovitis of knee. Had scarlet fever when "very little." November 4th, under chloroform and spray, Mr. Wright "erased" the joint. He was much collapsed after the operation, and remained so for a few days, when he rallied, and went on well until November 20th, when the temperature rose from 98° to 103.8°. Fauces normal; no shivering; had not vomited; complained a good deal of some enlarged glands in the left groin; wound dry; no blush in neighbourhood of it. November 21st, temperature had fallen from 105.2° to 98.2°. Wound unhealthy looking, with a distinct blush running from the upper and lower parts, skin indurated and tender; headache, furred tongue, and diarrhoea. He rapidly recovered, and was discharged on December 7th. This was undoubtedly a case of erysipelas.

CASE II.—Lilly S., aged 5 years, admitted October 25th, 1886, for acquired talipes equinovarus. November 11th, under chloroform and spray, Mr. Wright removed the astragalus, when the deformity was easily corrected. Did well until November 19th, when she complained a good deal of her foot, and the temperature went up to 102.8° from normal. Fauces normal; no vomiting; no rash; glands in groin painful and enlarged. Very slight discharge from wound; no blush. November 22nd. In the last few days the temperature has ranged between 100° and 103°; wound unhealthy, edges swollen and indurated, union given way. Temperature down and steady; free discharge from wound; general condition much improved.

CASE III.—James P., aged 4, admitted November 6th, 1886, for morbus coxæ. November 11th, hip excised under chloroform and spray. November 15th. The wound never did well, and now presents a very unhealthy appearance. Temperature has been going up since the 13th, and is now 101.8°. Fauces normal; no rash. He subsequently did well.

CASE IV.—Florence S., aged 4 years, admitted August 3rd, 1886, for abscess about hip-joint. August 7th, abscess opened under spray; this continued to discharge, and, on September 29th, hip further explored, and a large abscess, encircling but not perforating the capsule, was found. She did fairly well for some time, when there was evidence of pus being pent up somewhere. A further examination under chloroform discovered, by rectal examination, an abscess on the pelvic

surface of the ischium above and close to ischial spine. This was evacuated by chiseling away a portion of the bone above the acetabulum, and forming the margin of the sciatic notch. She went on very well until November 18th, when the wound took an unhealthy appearance, and has remained in an unsatisfactory condition since.

CASE V.—Harry B., aged 4 years, admitted September 29th, 1886, for morbus coxæ. Hip aspirated on November 7th. December 1st, evening temperature 102°; no injection of fauces; no rash; he had not shivered or vomited. The track of the aspiration puncture had become inflamed, and the hip tense and shiny. December 7th, a pale but distinct papular eruption on back and abdomen; it was not typical of scarlet fever, but of a hybrid character, somewhat resembling the irritant eruptions frequently seen in connection with wounds. Temperature 105°; pulse 168; tongue covered with a thick white fur; tonsils enlarged but not injected. He went from bad to worse, and died from septicæmia on December 16th, the rash persisting until December 12th.

CASE VI.—Hannah T., aged 14 weeks, admitted November 2nd, 1886, for hare-lip and cleft palate. November 6th, plastic operation. Good union resulted, but the health failed immediately after the operation; the temperature gradually rising, and on the fifth day was 103.2°. She developed broncho-pneumonia, from which she died on November 15th. The day before death the fauces were noticed to be injected, and some hours before death a rash appeared on the body generally; it was of a light red colour, mottly, and of a measley character.

The only case without a wound that got scarlet fever was that of Jane W., admitted on July 13th, 1886, for cervical caries: she contracted scarlet fever on December 18th and died on December 20th. The mainly local action of the poison in five of the cases with wounds, none of which had scarlet fever previously, and all of which were dressed antiseptically, and again, the fact that only one of the cases with wounds that got scarlet fever was dressed antiseptically, certainly is strong evidence in favour of the antiseptic mode of treatment in some way or other checking the progress of the poison; possibly by preventing decomposition taking place in the wound.

The infection probably takes place through the ordinary channels, and the wound or seat of inflammation, being the weakest part of the organism, is chiefly affected, this taking place from within instead of without, as in the case of ordinary germinal infection. Cases with wounds certainly appear to be more liable to infection than cases without wounds. But why in some cases the scarlet fever should first appear—the unhealthy condition of the wound being secondary—while in others the poison has a mainly local action, I cannot explain.

Dr. Goodhart, writing on this subject in *Guy's Hospital Reports* for 1879, concludes that "surgical cases are more liable to be affected than medical cases, and operation cases most of all; at the same time, it is probable that the presence of any local inflammation in any part furnishes a bed for the cultivation of the poison, and that it is probably embedded through the ordinary channels of infection, and not through the wound."

Mr. Howse, writing in the same *Report*, says "surgical scarlet fever does not differ materially from the ordinary form when the cases are treated antiseptically. If in any respect we are to note anything, it is the very small mortality which attends them. The only explanation of this which suggests itself to my mind is that these cases do, in fact, get the scarlet fever from smaller doses of the poison than persons in perfect health."

ON THE TREATMENT OF FIBROIDS OF THE UTERUS BY ELECTRICITY.

By W. WOODHAM WEBB, M.D., M.R.C.P. LOND., Neuilly-sur-Seine, France.

The Operation.—Dr. Apostoli does not pretend to make any innovation upon the current theoretical notions as to the treatment of fibroids of the uterus. While others with caustics, tents, scrapings, injections, incisions, ergot, and operations aim at renovating the mucous membrane of the organ, setting up a derivative process, bringing about a dissolution and absorption of the tissues, contraction of the tumour, and diminution of its bulk, with coincident relief of the attendant symptoms, he maintains that his way of gaining the same ends is by means simpler, easier, certain, and more exactly regulated. There is no mysticism about the matter. Others had essayed the electrical treatment, but not to their complete satisfaction. To account for this was a piece of plain reasoning. If such and such an agent were known to be able to produce such and such effects, and

those effects have not been obtained, the natural conclusion was that there must have been some defect in the method of application, some mischoice of the seat, or some miscalculation in the amount of power employed. It was not difficult to make out that such was the case here. More careful study of the local action of electricity, and experience in the way of utilising it, disclosed the source of failure. It was proved that much stronger currents than was supposed could be directed upon the internal surface of the uterus, that they could be made to pass through the tissues of a tumour effectively, that the circuit could be completed through the skin harmlessly, and that, by means of the galvanometer the intensity could be exactly adjusted to the nature of the case and the tolerance of the patient. Working downwards from principles to facts, practice was at length brought into accord with theory, and the way opened to success. Tumours could not resist electricity boldly and guardedly administered.

The fact of the two poles having different local effects regulates their use; they both cauterise. The positive pole is coagulating, and it hardens that with which it comes in contact without destroying the vitality. The negative pole, on the contrary, has dissolvent and destructive powers. The coagulating effect of the positive pole is, in the first place, utilised in transforming the hæmorrhagic surface of the interior of the uterus into one that will not allow of sanguineous exudation or excessive secretion, and then in causing contraction of the fibro-muscular mass, a lessening of its blood-supply, a lowering of its nutrition, with a consequent partial atrophy. The negative pole is brought to bear upon the uterine cavity and tumour, when reduction of size by electro-chemical action is the immediate object.

These galvano-caustic operations upon the mucous membrane of the uterus are therefore of two kinds, according to the nature of the case, and the pole required to be used. The manipulations are, however, much the same in both. But when, from distortion or displacement, the cavity of the uterus cannot be reached by the sound, another mode of procedure is rendered inevitable. To pass the disintegrating current through the diseased structure a puncture is made, and this artificial channel may or may not communicate with the cervical canal or the uterine cavity. It is either reserved for repeated introductions of the sound carrying the current, or new punctures may be made from time to time, on suitably presenting parts of the tumour.

Supposing that one of the galvano-caustic operations is about to be done, I will detail the separate stages of it in the order of their sequence. After testing the working power of the battery, the integrity of the regulators and conductors, and the exactness of the indications given by the galvanometer, so that there may be no chance of a shock to the patient by an interruption of the current of electricity during its application, the first duty is to insure the perfect purification of the hands and instruments to be employed. To disinfect the sound absolutely, it is better to pass it through the fire, or the flame of a spirit lamp, and when cold to plunge it into carbolic vaseline. The instruments should be arranged in the order they are wanted, within convenient reach of the surgeon, and immersed in a solution of phenol, in a shallow tray.

The patient, after proper instructions as to what is about to be done and the part she is to play, is then to be placed in position, lying on her back, with the buttocks projecting over the side of the bed, the feet resting upon chairs, the thighs spread out, the abdomen uncovered, and all the dress unloosed. Chloroform is not often necessary, except when a puncture has to be made. The slab of wet clay, with its conductor partly imbedded in its upper side so as to complete the circuit, is now applied to the lower part of the body, avoiding the thighs and the pubic hairs, after observing that there are no pimples or scratches on the skin. Should any be found, they must be protected with collodion, paper, or some bad conductor, so as to guard against the concentration of the current at those spots and the consequent eschars. Putting on the clay at this stage gives time for its close adhesion and the moistening of the skin. Folded linen or a towel is laid over it, and the hands of the patient serve to press it sufficiently.

A free vaginal irrigation with the sublimate solution is to be made, followed by a digital examination of the parts. The sound, fixed by a screw into its insulating handle, with so much of its length uncovered by the celluloid sheath as corresponds with the uterine measurement, is next introduced through the cervical canal into the cavity of the organ. This is a part of the operation which demands the greatest care and ability. It must be done without the speculum. The point is made to slip over the pulpy end of the index finger of the second hand, which serves as a guide when placed against the lower lip of the orifice. Every movement in advance or laterally can be thus directed, and assurance can be gained that the sound is fully inserted, and touches the upper end of the cavity. No force must be

used, and a gentle insinuating movement will succeed better than a hurried thrust. In retreating from the vagina, the finger should be trusted to gather proof that, in every part of its length, the insulating celluloid sheath, pressing against the neck of the uterus and extending beyond the vulva, is guaranteeing the safety of the canal. Similar precaution about this matter should be continued throughout the operation, as any slipping of the sheath and baring of the metal would occasion a painful shock, and perhaps derange the position of the sound.

Once satisfied that all is justly arranged and secure, the end of the rheophore coming from the galvanometer is to be made fast in the aperture for it in the handle of the sound, avoiding in the movement any displacement of the instrument, but at the same time making sure that it is not likely to slip out. To give proper support to the sound, and maintain its immobility or direct it, as the point is swept over the mucous membrane of the cavity, it is better to continue the index finger of the hand which holds it in the vagina, or, if it be withdrawn, and the instrument is only kept lightly but firmly between the finger and thumb, the back of the hand should rest against the inner side of the corresponding thigh of the patient.

There must now be a pause of some seconds, so that the woman under operation may recover from any little pain or agitation arising from the introduction of the sound. When this has calmed down the current of electricity may be turned on, commencing slowly, and not going for the first half minute beyond the strength of 20 or 30 milliamperes. Augment gradually to 70, 80, or 100 milliamperes. For the first sitting it is well to be content with this intensity. The dose that can be borne varies with every patient, and at different times with the same patient, but it should be held as a rule never to cause more than an easily supportable degree of pain in any case. Much, however, depends upon the mode of administration. By cautiously raising the amount and following the indications of the facial expression, gaining the woman's confidence by stopping as soon as she shows signs of impatience, and limiting the current by her power of bearing it uncomplainingly, in subsequent sittings an intensity of 150, 200, or, if necessary, 250 milliamperes may be arrived at. The maximum once reached it is continued to the end of the operation without change, unless the patient urges a diminution. The operation may be made to last, according to circumstances, for four, six, eight, or ten minutes.

The current must be stopped as it was begun, never abruptly, for that would produce a shock. Even with all precautions, the inverse current which is set up when that which has been used is suspended mostly causes a sensation of renewal, so that the patient fancies you are recommencing. The vaginal electrode is now to be detached, the sound carefully withdrawn, and the clay removed from the abdomen. If all has been properly done, the skin will be found cool and without any redness. A vaginal irrigation follows, and a strip of iodoform gauze is introduced into the vagina. The patient should be kept in bed for some hours, or, at any rate, made to avoid exercise or fatigue, and cohabitation with her husband should be forbidden. Uneasiness or slight pain in the abdomen is not an uncommon experience, and it is well to forewarn the patient of the probability, telling her at the same time that it will go off with rest. She must also be cautioned not to feel surprised should she find, for the first twenty-four hours, a small appearance of blood, and afterwards a little purulent discharge. Change the gauze, and wash out the vagina with the sublimate solution every day till the next operation.

The preliminary proceedings are the same when it is intended to have recourse to the negative galvano-puncture. The trocar is to be disinfected, fixed in the handle, and a sheath of celluloid fitted to it, so as to leave exposed as much of the point as may be wanted for a puncture of one, two, or more centimetres. Before being used the whole should be dipped in strong carbolic solution. As the negative pole is made use of with these punctures, the trocar may be of steel. Platinum is too soft to retain a point sharp enough to penetrate hard tissues. Taking off the sheath, it is pushed into the vagina and its distal end pressed against the spot chosen for the puncture. The trocar is then steadily thrust through it and into the substance of the uterus or tumour, while an assistant with his hand above the pubes holds the mass immovable in its place. The rheophore is attached, and the current set in motion. The depth of the puncture, the force and duration of the current, are matters to be decided upon by the operator in taking account of the peculiarities of the case. No formidable punctures are required, and it is advisable to restrict the length of the piercing part of the trocar to the smallest extent that will answer the purpose, always bearing in mind the sometimes abnormal situation of the bladder and the possibility of touching large blood-vessels. The same intensity of current may be employed as for

the cauterisation of the uterine cavity. The daily vaginal irrigation and change of gauze must be attended to, and the patient should be kept quiet, to avoid suffering and any unpleasant consequences from fatigue or irritation.

The repetition of these operations must be determined by a variety of considerations coming out of the general condition of the patient and the changes going on in the diseased parts. Intervals of two, three, or four days may be sufficient when complete repose can be indulged in. With other cases and circumstances, a much longer time may be given. The number of sittings required may be from three or four to more than thirty. Generally the later operations are better supported than the earlier ones, but at no time is the pain more than many patients submit to without murmuring, though where there is any nervousness or apprehension it is prudent to give chloroform to avoid the mischief that might happen from involuntary startings.

There are many practical details and matters of experience, which, when well known and observed, have a great influence upon the success of this method of practice, though separately they may seem to be of comparatively small importance. These would fill up too much space in the JOURNAL, and must be sought for in the writings of Dr. Apostoli, or, what is much better, by personal observation, by anyone who means to take in hand the operations which we are considering.

THERAPEUTIC MEMORANDA.

ANALYSIS OF THE WATER OF LEAMINGTON SPA.

I HAVE read with pleasure your editorial note on the re-opening of the Pump Room and Medicinal Baths at Leamington Spa. In this note one sentence seems to me to call for further explanation. You say that "the one thing which is next to be desired is that there should be an authoritative analysis of the water as it now is," etc. I am happy to be able to assure you that the Corporation have not been neglectful on this point. The question of analysis was most fully gone into four years ago, when the restoration and development of the Bathing Establishment was projected, and an authoritative analysis made by Professor Frankland. This I subjoin, in convenient form.

Analysis of Mineral Matter in Solution.

Results expressed in	Parts per 100,000.	Grains per Imperial Gallon.
Silica	74	52
Oxide of iron and alumina ...	42	29
Carbonate of lime ...	12.78	8.95
" magnesia ...	25	17
Sulphate of potash ...	1.04	73
" soda ...	208.63	146.04
" lime ...	45.20	31.64
" magnesia ...	22.46	15.72
Chloride of calcium ...	134.83	94.38
" magnesium ...	64.97	45.48
" potassium ...	3.27	2.29
" sodium ...	628.27	439.79
Bromide of sodium ...	.64	.45
Nitrate of soda ...	1.22	.85
Carbonate of soda ...	4.50	3.15
	1129.22	790.45

This analysis shows that the composition of our saline waters remains practically unaltered since the days of Loudoun and Jephson. It shows also that though, as you observe in your note, "chloride of sodium predominates" among the mineral constituents, yet many other important salts are present in large amount, and more particularly the sulphate of soda, forming 18.48 per cent. of the solid residue, and chloride of calcium, forming 11.94 per cent. of the same. The composition of our waters assimilates closely to that of the Kissingen waters, and it is in diseases of the liver arising from sluggish portal circulation and, in the gouty diathesis, that the waters of Leamington Spa are especially indicated. On this latter point I may add that we received most emphatic testimony in favour of our springs from Dr. Garrod in his recent speech on the occasion of the reopening of our baths.

Leamington.

R. EARDLEY-WILMOT, M.B. (Lond.).

ALLOW me to say that in 1885 I had a thorough analysis made of all the mineral waters in all the wells by Dr. Meymoth Tidy, Professor Brazier, Dr. Wilson Hake, and Mr. Napier Hake, and, as far as

I am aware, it is the only collective published analysis since that of Loudoun in the year 1831.

The names of the above gentlemen are enough guarantee that the work done by them is sufficiently "authoritative." Their analysis will be found in my little book upon the *Saline Waters of Leamington*, published by H. K. Lewis. I believe there is a considerable difference of opinion amongst eminent chemists as to whether it is possible to accurately "combine" the analytical data of mineral waters or not, some holding that it can be done, while others maintain (and Dr. Tidy amongst the number) that it is impossible. You mention sulphate of sodium as existing in the Leamington mineral waters.

Will any of your readers kindly combine the following analytical data and try to find me that salt?

Pump Room Well (No. 2), otherwise known as "Grove's Well."

Analysis by Dr. Meymoth Tidy, M.B., F.I.C., F.C.S., Professor of Chemistry, Medical Jurisprudence, and Public Health, the London Hospital, and Analyst for the City of London, made March 20th, 1885.

	Grains per pint.
Sodium	36.35
Magnesium	2.33
Calcium	7.52
Chlorine	56.15
Sulphuric Acid	25.05
Peroxide of Iron	.25
Silica	.14

127.79

Leamington.

FRANCIS WM. SMITH, M.D.

SURGICAL MEMORANDA.

OBSTRUCTION OF OBSCURE HERNIA.

THE following case may be interesting: J. W. sent for me on Christmas Day (Saturday), having been in great abdominal pain from the previous Wednesday, when he had lifted a heavy weight; he had vomited almost incessantly from that period, and the last two days the vomit had been fecal. I could detect only a very slight fulness in the left groin. This swelling was perfectly free from pain or tenderness, and not hernial; he had had no action of the bowels from the first. The passage of a long tube per rectum, and injection of a large quantity of fluid, had no effect. After giving by the mouth one-grain doses of opium for several hours without much benefit, I resorted to the expedient of placing him with his head down and legs up in the air against the wall of the room. I then rather violently kneaded or punched the abdomen for a quarter of an hour, with such beneficial effect that the patient, at the end of that time, exclaimed "something has given way; I am quite well!" The fecal vomiting did not recur; flatus readily passed, and the next day the bowels were relieved *per vias naturales*.

Upper Norwood.

GEORGE K. POOLE, M.D.

OBSTETRIC MEMORANDA.

SUBSEQUENT HISTORY OF A CASE OF RUPTURE OF THE UTERUS IN WHICH ABDOMINAL SECTION WAS PERFORMED TWENTY-THREE YEARS AGO.

THIS case, which was reported in the *Edinburgh Medical Journal* for August, 1864, and *The New Sydenham Society's Year-Book*, was the first successful one in which abdominal section had been performed in Great Britain for rupture of the uterus during labour at the full term. Its subsequent history presents several points of interest. After her recovery, I represented strongly to Mrs. M. and her husband the great risk she would incur by again becoming pregnant, and both agreed to have separate bed-rooms, an arrangement which was rigidly carried out for several years. During a trip to Wales, however, about eight years afterwards, their former vows were broken, and, in 1873, she again became pregnant. The late Mr. Whitehead, of Manchester, was consulted, and recommended the induction of premature labour, which was successfully carried out by Mr. Jones, of Chapel-en-le-Frith, at about the sixth month. She was afterwards attended by Mr. Chatterton, of Newmills, who likewise brought on premature labour once or twice. I regret much that I am unable to give details of these last operations, as Mr. Chatterton has long left the district, and her excellent medical attendant, Mr. Davenport, whom I met at the time of the rupture, has now been dead for many years. I saw her some time after the first induction of premature labour (in 1874, I think), and she was then in excellent health, and