fication of the Leclanché pattern, as well as the means we have for testing the electro-motive force, and the subsidiary apparatus for medical uses of electrolysis.

Gaiffe's modified Leclanché cell battery with twenty-four cells is contained in this portable box, which is so arranged that any two of the cells may be used at pleasure without disturbing any of the others. This is accomplished by the use of what is called a Dial Collector, by which every two cells are short connected by a wire, leaving the others out of the circuit. This cell is formed of carbon and sesquioxide of iron for one element and zinc for the other; the exciting fluid is water, into which is thrown one-fifth of its weight of zinc chloride, which must be neutral to test paper, and free from lead. In this cell the elements are secondarily depolarized so that the electrical action is quite constant for three or four hours of continuous service. Its action is unlimited, provided it is not overworked, and that the zinc is replaced when used up. This battery has been in pretty constant use for two years. Its electromotive force, in the size used here, is about three-tenths of a Volt. A Volt is equal to the electro-motive force which is furnished by about one Daniell's cell freshly charged,³ while an Ampère is equivalent to the strength furnished by an electro-motive force of one Volt passing through a resistance equal to one Ohm.⁴ It may be seen, therefore, that the quantity (as it is termed) furnished by Gaiffe's is small, owing to its enormous internal resistance. An instrument called a Voltmeter, applied to this battery, shows that the full strength will decompose in a minute of time twenty-three cubic millimeters of combined gases from a one per cent. solution of sulphuric acid and water, which is equal to two milliampère (one-thousandth of an ampère).

Another battery of the modified Leclanché cell, of which these two are a pattern, is made by Holtzer of Brookline, on a mechanical principle very similar to that of Gaiffe's, though the exciting fluid is a solution of ammonium chloride in water; but in this form which you see, the elements are large and offer a wider surface to a larger body of water. The internal resistance of this form of cell is very low, the tension is high and the quantity of the current is large. The action of this battery is very constant, and its power of decomposing water by electrolysis is very good, twelve of these cells decomposing one hundred and sixteen cubic millimeters of the combined gases from the same solution, and is, therefore, equal in power to ten milliampères, and has three times the electrolyzing power of the Gaiffe battery. Its work on the human tissues might be compared to that of a sharp knife as compared with that of a dull knife when using Gaiffe's battery. The consequence to the patient will be that less formidable scars and more certain destruction to the pilous follicle will result from its use in preference to other batteries of feeble power.

The instruments used for the purpose of epilation are an insulated needle-holder and a fine needle. I had hoped to go more fully in this application of electrolysis as a therapeutical measure, especially for the treatment of enlarged sebaceous sacs, or so-called wens, which are more readily cured by this than by any other surgical method. Its application to the cure of acne in its

varied forms is also wonderfully successful. I have, however, trespassed on your patience so long that I will defer further details for more general publication in some other channel, in a memoir which I am preparing for the general practitioner.

Hospital Practice and Clinical Memoranda.

REMOVAL OF A TUMOR OF THE LEFT THIGH ADHERENT TO THE SCIATIC NERVE, WITH EXCISION OF A PORTION OF THE NERVE.¹

REPORTED BY WM. R. LITTLE, M.D.,

Late House Officer of the Lynn Hospital.

Mrs. H., age twenty-five, occupation button-hole operator, was admitted into the Lynn Hospital May 12, 1885, having previously been seen by Dr. J. S. Emerson. She presented a large, firm tumor, on the posterior aspect of the left thigh, just above the popliteal space, which had been growing for a year and a half.

It first manifested itself by a dull ache along the thigh, followed by sharp lancinating pains upwards, one spot being very tender. Patient had no inconvenience while walking, but sitting caused severe pain. She had felt some anxiety about the tumor, thinking it might be incurable. She had been immoderately fond of roller-skating, and of feats of high kicking, in which latter trials she had beaten all her rivals. Her family history was good, except that her mother had had large fatty tumors on back, thighs and arms. The patient was first advised to see Dr. C. B. Porter, of Boston, who advised removal of the growth. An exploratory aspiration of the tumor was made on the 13th of May, but no fluid was found. On the next day, May 14th, the patient was etherized and the operation for removal was performed by Dr. Emerson. An Esmarch's bandage being applied, an incision seven and a half inches long was made on the posterior aspect of the thigh, directly over the tumor which was closely adherent to the surrounding tissue. These were detached by dull dissection until the pedicle was reached. This was found closely connected with and apparently incorporated in the sciatic nerve to the extent of about an inch. The tumor had grown backwards and downwards, and found its way in under the nerve, so that the nerve lay in a groove on the upper surface of it. It was impossible to dissect off the attached portion and it was decided to resect the nerve to the extent of an inch and a half, and thus remove all the diseased structure. The cut end of the nerves were approximated and retained in position by three catgut sutures. All hæmorrhage was arrested, and a drainage tube put into the wound which was then closed by sutures and strips of plaster, the whole being covered by a modified Lister dressing, with iodoform gauze as a protection. The leg was placed at nearly a right angle with the thigh and held by bandages. On the evening of the second day from the operation the temperature rose to 104°. The dressing was removed, the tube thoroughly syringed out with carbolyzed water and the wound redressed. Each night thereafter the temperature declined one degree till normal was reached, the wound closing with very little suppuration. Patient was in good spirits, complained

³ Five to ten per cent. less.

⁴ The Ohm is about equal in resistance to 485 meters of pure copper wire of one millimeter diameter at 0 degrees Centigrade.

¹ Read before the Essex South District Medical Society.

of but little pain and had an excellent appetite. She was frequently tested as to sensation in the foot and leg, which was impaired though not wholly lost. If the great toe was touched she thought for a time that it was the little toe, and vice versa. It was supposed that the cut ends of the nerve in some way became twisted so that the sensation travelling up the nerve fibres on the inside of the leg from the big toe beyond the line of section crossed to the outside, and vice versa.

On the 28th of May extension was begun, a movement of two or three inches being accomplished at a time. Her condition remained good till the 25th of June, when she had some slight febrile disturbance lasting but a day or two. She was discharged the third of July, and then had impaired sensation below the knee. There was no motion except with the thigh. She had no ache or pain when sitting, and no tenderness on the thigh. She stood upon the foot for the first time on the 26th of July, but the knee had a tendency to come forward. From this time till the 11th of August she used a cane to assist her in walking. On the 12th of August she walked to the doctor's office and back to her residence without any assistance. At present there is a slight limp in walking, but she affirms the whole limb to be growing stronger each day. She can go down stairs easily, but has some difficulty in getting up stairs. On the outside of the foot there is no feeling whatever, but on the inside and on both the inside and outside of the leg she says the feeling is as natural as ever, but the foot is completely powerless. Within the last few weeks she has twice noticed a sensation of itching on the sole of her foot. For the last three weeks she has followed her occupation without any discomfort.

The tumor was ovoid in shape, twelve inches in its longest circumference, and weighed eleven ounces. The pedicle was firm and fibrous. It was a sarcomatous tumor whose cells were embryonic in character and embedded in connective tissue. As sarcomata originate invariably in the connective tissue structure, this tumor must have found its origin in the neuroglia of the nerve. On section, the tumor presented a bony substance about one and one-half inches in diameter encased in a softer tissue to the depth of about an inch. Ziegler says, "sarcomatous tissue may easily be the result of proliferation of the cartilage of a chondroma or the fibrous tissue of a fibroma, and conversely sarcomatous tissue;" may equally well be transformed partially into osseous tissue, and the growth of this tumor seems to confirm the latter statement.

The resection of the nerve; the peculiarity of sensation experienced by the patient during her convalescence; the probable origin of a sarcomatous growth in the neuroglia of a nerve; its growth and development to the formation of bone; were all features of unusual interest.

— Two wills were lately offered for probate in Salem, Mass., one made in 1807 and the other in 1802. The testators died respectively in 1822 and 1842. Where the wills have been during this time is not explained. Both wills were allowed by the Probate court. The testimony as to the genuineness of the signatures of testators and witnesses was all offered of course by very aged witnesses, some of them being upward of eighty years old. The court, however, evidently had confidence in the reliability of their memory.

Reports of Societies.

PROCEEDINGS OF THE SUFFOLK DISTRICT MEDICAL SOCIETY.

CHARLES M. GREEN, M.D., SECRETARY.

OCTOBER 31st, 1885, the President, DR. GEORGE B. SHATTUCK, in the chair.

DR. ROBERT AMORY read a paper on

ELECTROLYSIS AND ITS THERAPEUTICAL APPLICATIONS.¹

DR. J. C. WHITE said that he had operated for hypertrichosis by electrolysis in many cases in the last four or five years. According to his experience, there will be a slight amount of scar formation in a certain proportion of the cases, not dependent upon the degree of inflammation produced by the operation, which is inevitable in some measure in every case, and not to be foretold in any instance. The scars are, however, when a very fine needle is employed, only minute, cup-like depressions at the mouth of the follicles destroyed, and are much more noticeable in brunettes than in blondes. He knew no way to prevent this result in skins thus disposed. The slight deformity thus produced is, however, in no way comparable to that of the pre-existing hair growth. Contiguous follicles should never be operated upon simultaneously. A certain proportion of the hairs operated upon, also return, even with the greatest possible care, about one in eight or ten on the average, which have to be subsequently removed. Eventually the operation was always successful. He generally used the very finest jeweller's broach, but occasionally the irido-platinum needle of Dr. Hardaway, of St. Louis, who first applied the operation to hypertrichosis. The needle is passed directly down by the side of the hair until it reaches the hair papilla, a point readily recognized by the experienced hand. The operation has nothing to do with the sebaceous glands, and the "foam" which always issues at the side of the needle is the escaping hydrogen generated in the albuminous fluid. The kind of battery he considered unimportant, and this was the unanimous opinion of dermatologists expressed during a discussion of the operation at the recent meeting of the American Dermatological Association. He had generally employed a chloride-of-silver battery, which required refilling but once a year, although used nearly daily. He thought that the treatment of vascular growths by electrolysis was rarely successful unless very superficial.

DR. MORTON PRINCE said that he had been fortunate in not seeing much scar formation following the process, though when he first began to use electrolysis more scars resulted than did later. This improvement in the results was probably due to greater experience. To avoid scars it is desirable to observe three precautions, namely: not to remove at the same sitting hairs that are situated close together; not to insert the needle too deep—that is, below the hair follicle; and third, not to use too strong currents, even though more hairs thereby returned. If this happened, the operation could easily be repeated, and pain and soreness of the skin largely avoided. He had found that different parts of the face bore electrolysis differently.

In a case under his care at present, for example, the strongest currents were borne upon the side of the

¹ Extracts from this communication appear on page 529.