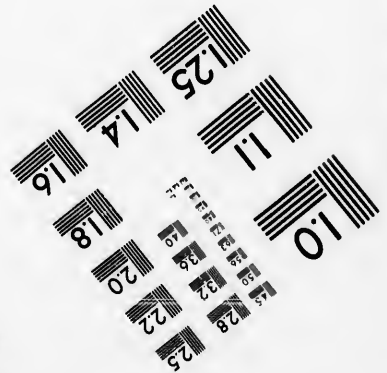
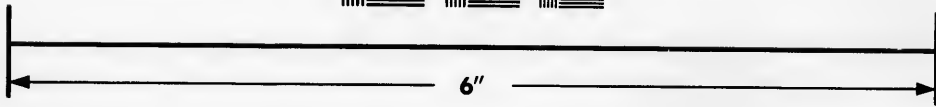
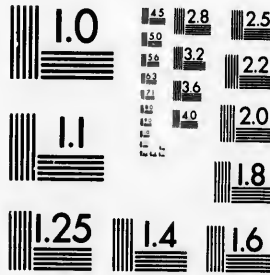


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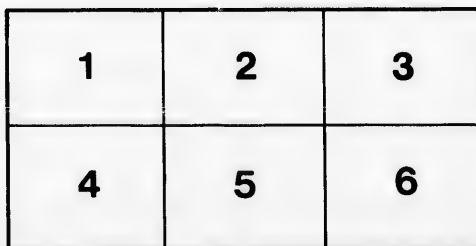
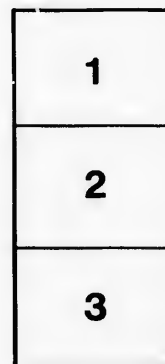
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15

ON THE

APPLICATION

OF

LOCALISED GALVANISM

IN THE

TREATMENT OF DISEASE.

BY H. PALMER,

Professor of the Principles and Practice of Electropathy,

TORONTO, C. W.

BLACKBURN'S CITY STEAM PRESS, 96 YONGE STREET.

1863.

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THE PUBLICATION OF MY SMALL PAMPHLET ON THE
APPLICATION OF ELECTRICITY AS A REMEDIAL AGENT, IN WHICH
ITS CURATIVE POWERS HAVE BEEN FULLY TESTED, A SUFFICIENT
NUMBER OF FACTS HAVE ACCUMULATED TO WARRANT THE BELIEF
THAT WE HAVE AT LAST DISCOVERED IN MILD STREAMING ELECTRICITY,
THE MANAGEMENT OF AN AGENT OF UNEQUALED POWER
IN THE TREATMENT OF DISEASE. MUCH HAS BEEN SAID AND
WRITTEN UPON THE MEDICAL APPLICATION OF ELECTRICITY, BUT THE
HITHERTO GENERAL USE BY PRACTITIONERS OF THE BROKEN CURRENTS
GIVEN OUT BY THE ELECTRO-MAGNETIC AND MAGNETO-ELECTRIC
MACHINES, ARE THE STRONGEST PROOFS OF THE IGNORANCE
STILL PREVAILING WITH REGARD TO THIS YOUNG BUT IMPORTANT
BRANCH OF THE PHYSICS; AND ALTHOUGH ELECTRICITY IS BY NO
MEANS ADVOCATED AS A SPECIFIC FOR ALL THE ILLS OF LIFE.

There are cases where either, used alone, might have failed, which if combined might have succeeded, yet as a remedial agent, electricity furnishes us with a power, in comparison with which everything else becomes subordinate.

In an age like ours, in which the collateral sciences are making such rapid progress, the healing art or medical science cannot afford to stand still, although it must

ERRATA.

PAGE 3,—9th line of preface from top, for *practioners* read *practitioners*; and the 15th line, after *life* read *nor to the exclusion of medical advice, or other remedial means.*

PAGE 17,—9th line from top, for *proprietor* read *author*; for *amourosis* read *amaurosis.*

PAGE 32,—12th line from bottom, for *ligatures* read *ligaments.*

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PREFACE.

Since the publication of my small pamphlet on the application of electricity as a remedial agent, in which its curative powers have been fully tested, a sufficient number of facts have accumulated to warrant the belief that we have at last discovered in mild streaming electricity, the management of an agent of unequalled power in the treatment of disease. Much has been said and written upon the medical application of electricity, but the hitherto general use by practitioners of the broken currents given out by the electro-magnetic and magneto electric machines, are the strongest proofs of the ignorance still prevailing with regard to this young but important branch of the physics; and although electricity is by no means advocated as a specific for all the ills of life.

There are cases where either, used alone, might have failed, which if combined might have succeeded, yet as a remedial agent, electricity furnishes us with a power, in comparison with which everything else becomes subordinate.

In an age like ours, in which the collateral sciences are making such rapid progress, the healing art or medical science cannot afford to stand still, although it must

necessarily be the last to move on. The microscope is already unfolding to the astonished gaze a new anatomy of parts that have hitherto been hidden from view. Chemistry is lending its mighty aid, and electricity steps in the last, because the finest substance we have to deal with, and acquaints us with those principles, or governing laws upon which is based the true theory of disease, and its method of cure.

Those principles or governing laws are briefly sketched here (with the view at some future period of further elaboration, they will however be recognized as true) in order that the greatest space of these few pages may be devoted to the method of applying the galvanic current in a few of the most prominent forms of disease.

I will merely add that this little treatise is more especially designed for the comprehension of the unprofessional reader. I have therefore endeavored to avoid technicalities, humbly presenting it to the inquiring and candid reader with the request that he will overlook its defects in style and expression, not only for the sake of the truths that may be gleaned from it, but from an earnest desire to assist in placing the treatment of disease on a more simple and rational footing than it at present occupies.

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ELECTRO PHYSIOLOGY.

Electricity pervades all bodies, both animate, and inanimate. In the former, a portion is constantly polarized by the living organism, in the latter, it is always in a state of rest, unless the molecules of the body are disturbed; there are therefore two states in which this agent can be placed: first, a state of rest; second, a polar state of action.

That in action, has been termed positive, while that in rest, has been called negative.

The positive state is warm and expansive.

The negative is cold and contractive.

The two positive states repel each other, so do the two negative ones; but the positive and negative states attract each other, in order to assume a state of rest. All the alkalines go over to the negative, while all the acids proceed to the positive state.

The positive poles of electro motive molecules are always turned in the direction that the electric current goes, so that the negatives point in the direction from whence the current comes; the head of the current is therefore warm and expansive, while the tail of the current is cold and contractive.

The animal system requires a due amount of electricity in a polar state, in order to enjoy the highest amount of health and vigor.

When the positive electricity is deficient, the organic functions become dormant, more or less according to the deficiency. When the positive force is in excess, the organic action will be proportionately excessive.

An undue share of electricity may be distributed all over the body as evidenced in fevers, or it may be concentrated in one organ or part, as in local pain, heat, swelling; in either case, causing the acids to predominate locally or generally in the system. On the contrary a deficient amount of positive electricity in the animal produces the reverse of the foregoing, viz.: *chill*; or it may be deficient in one organ or part, evidenced in slow digestion, torpidity of the liver, &c., causing the alkalines to predominate.

Electricity, being the finest substance in the body, is the first to become affected in disease, then the nerves—these ramifying upon the surfaces of every conceivable portion of the body, become lost or end in the paranehema of the organs, affect the soft, and lastly the hard solids of the body.

The existing state of electricity in the living body is influenced by the mental emotions of the mind, as well as by the outward physical agents, but by the former, more directly than by the latter. The emotions of love, hope, and joy, exalt, while those of fear, revenge,

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or hatred, depress the electricity circulating in the system.

All chemical agents belonging to the class called sedatives, reduce, while those belonging to the class called excitatives, increase the polarized electricity already circulating in the nerves, but they do so chemically, and therefore indirectly and always generally, when in a great many cases, the effects of a remedy should be produced locally only.

That in the normal action of the organism, electricity proceeds from the nervous centres—the brain, the spinal column and several ganglia—along the millions of nerve chords, to their terminal ends, for the purpose of carrying on the functions of animal life, and the movements subservient to will.

That in order to cure disease, we should act directly upon the electricity in the portion of the body that is affected; by means of another polarized electric current. The object can be only to rouse the electricity at rest, into a state of polar action, or on the contrary, to cause that already in excess, to assume a state of rest.

The ingoing current produces negative effects, such as cold, contraction, &c.

The outgoing current produces positive effects such as heat, expansion, &c.

When a current is sent in a direction from the roots or centres of the nerves, to their terminal branches, their excitability is lessened.

When a current is sent in the opposite direction, the excitability of the nerves is increased, consequently a portion of the positive state of electricity, can be instantly changed into a negative state, and its results will be less heat and expansion, and less action in the capillaries. On the other hand, where weakness already exists, a portion of electricity in rest, can be instantly roused into polar action, and the result will be, warmth, and increased action of the capillaries.

The circulation of the blood is governed by the electro nervous fluid, evidenced by the expansive, and contractive movements of the respiratory and circulatory apparatus.

That when an excessive share of electricity is distributed to one part, the blood follows; as is evidenced in apoplexy, &c.

The electro nervous current proceeds from the brain and spinal column, the positive poles of the nervous system, and the nerves serve as channels to conduct it downwards and outward to every other part of the body.

The electro muscular current proceeds from the interior of the muscular fasciculi and flows upon their outside longitudinal surfaces.

An excess, or a deficiency of the electricity in polar action may occur either in the nerves or in the muscles, or in both together. When the electro nervous force is abnormal in the nerves, it will be evidenced in the sensitive system, as follows, viz :

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First, pain,—neuralgia.

Second, loss of sensation,—anesthesia.

In the moter system.

First, by involuntary movements of the body.

Second, by paralysis in its circumscribed sense.

When the muscular electricity is abnormal, either the acid or the alkaline elements are rapidly absorbed, and the result is either a congestive, or an inflammatory state.

Disease for all practical purposes, may therefore be divided into two great classes, viz:—

A, positive, or warm and inflammatory.

B, negative or cold and congestive.

In applying electricity to the nerves, our object can only be to, increase or decrease, their excitability. In order to lessen their excitability, the positive disk is placed upon the positive centre, and the negative one over the termination of the nerve. We shall thus have placed the poles of a like nature together, consequently a portion of the natural electricity circulating in the part is repelled, according to the law or principle—like polarities repel. Uniting it becomes latent, agreeable with the principle—opposite forces combine in order to assume a state of rest, consequently the excitability of the nerves is decreased. By reversing the foregoing arrangement of the poles, we must necessarily place the unlike polarities together. Now, an attraction takes place, and the electricity that was previously made to assume a state of rest, by the other operation, is by this

set free again, and the excitability of the nerves will be augmented. When the sensitive nerves are more particularly influenced, it will be sometimes necessary to galvanize the cutaneous ends of the fibres,—at other times over the localities of the roots only.

When disease more particularly affects the other structures of the body, remedies either of an acidifying, or an alkaline nature combined with the electrical treatment, facilitate the cure. In class A, the acids of the system are rapidly absorbed, hence acids and the refrigerants are called for. In class B, chemicals of an alkaline nature are required.

In localizing the application of electricity, it is necessary to act upon the muscular electricity of the part.

When a continuous uninterrupted voltaic current is transmitted through the body, it passes straight through from the positive, to the negative disk, and no where else. The centre of the current's path through the body, may be termed the point of neutrality. To this centre therefore the ingoing current is negative and cold. The outgoing current from this point, is the positive and warm half. In illustration of this vitally important fact—place the naked disks upon the delicate skin, one on each arm. No sensation of heat is experienced under the positive, where the current enters, but where the current makes its exit out of the body, at the negative one the sensation will be warm, hot, and perhaps unbearable; agreeable with the prin-

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iple. The electro motive molecules turn all their positive poles in the direction which the current goes, and their negative ones in the direction from whence it comes, consequently, one-half of the current produces the positive, while the other half gives the negative effects.

In the electrical treatment of class A, it must be obvious that in order to exert a curative influence, the affected part must be brought under the control only of the ingoing, negative, or cooling half of the current. On the contrary, those of class B, must be submitted to the influence only of the outgoing, positive, or warm half of the current.

It is evident from what has been stated, that vibratory or shock currents, pass up and then down the structures many thousand times in a minute, and consequently, the electro motive molecules of these parts, are being constantly upset, or made as rapidly to reverse their positions. The electro magnetic and magneto electric machines are therefore wrong in principle; the current emanating from them, contains a very small amount of electricity, but of extremely high tension or force.

It is the opinion of those most eminent for their success in this young branch of physics, that it cannot be too much borne in mind, that for medical purposes, the indispensable requisites in a battery, are weak tension, great quantity, and a continuous polar current. The commission before whom the experiments

were conducted at the school of medicine in Paris, stated in their report, that they had reason to conclude, that a current from the voltaic battery penetrates and effects the nerves and muscular structures more deeply than ordinary machines. [Becquerel Vol. 1.]

In directing attention to a voltaic battery so small as to be conveniently carried in the waistcoat pocket, it might at first sight be imagined from its diminutive size in comparison with the large shock machines, that the evolutions of electricity evolved from so small a compass, could lend but little aid as a therapeutic agent. Let it be remembered however, that the greatest living authority of the day in this matter, has stated that during the decomposition of nine grains of salt and water, an amount of electricity is set free, exceeding in quantity the amount displayed in the most terrific flash of lightning. Becquerel has also shown that the electricity evolved during the decomposition of a few grains of common salt, is capable of producing chemical changes in every respect analogous to those which in the hands of Sir Humphrey Davy, required the Royal Institution's enormous batteries of six hundred double plates to demonstrate. The spiro-tubular form of my battery unlike those of any other, is perfectly free of all extraneous material between the battery's elements, and therefore allows an extraordinary amount of metal surface to come in contact with the exciting agent, vinegar, producing an enormous quantity of electricity with

sufficient intensity to overcome the resistance of the body. It may be interesting to observe, that every alternate element throughout this battery twists in a contrary direction to its neighbor, producing an additional or higher relation of electric power. Professor Wedeman, in 1862 read a paper before the Royal Society calling their attention to the peculiarity of the spiral twisting of plants, some tending in one direction and others in the contrary one, and, stated that after passing a current through an iron wire, twisted in the direction of a right handed screw, the wire at the end become positively magnetic, and that when he twisted it in the contrary direction, and the current passed through, it became negatively magnetic, thus demonstrating, that electricity flows in plants, and that those which twist in a direction with the sun's course are positively magnetic, while those on the contrary, which turn in the opposite direction are negatively magnetic.

The chemical powers of this little instrument is evidenced in the decomposition of water into its respective gases, and as a counter irritant, producing visication. in one minute.

Numerous experiments, and among others, the interesting and highly important researches of Matteucie, and Du Bois Raymond, prove conclusively that electricity plays an important part in the animal creation.

Matteucci proved beyond doubt, that electric currents are circulating through the *muscles* of a living animal; and he came to the conclusion, that the electric current was produced by the chemical action of nutrition in the muscle itself; and that when a continuous electric current is sent from the brain to the extremities, the muscular electricity, is prevented from entering into the nerve, and the latter loses its excitability; and that when the electric current is sent in the opposite direction, the muscular current accumulates in the nerves, and its excitability is augmented. Du Bois Raymond however, conclusively demonstrates, that electric currents exist in all parts of the nervous system, independently of the muscles. The apparatus he employed to demonstrate these facts, was a coil of copper wire, of three miles and a half in length; wound round a wooden bobbin, which was fixed upon a stand. Each end of this wire terminated in a separate minute cushion, made of layers of blotting paper, which rested firmly on the edge of two glass tumblers. A magnetic needle upon an index scale, stood at some little distance, but perfectly isolated from the bobbin of wire. A small piece of nerve, was now placed in contact with both the cushions of paper, and it was found, that when contact was made with the longitudinal sections only, or with the transverse, artificial sections only, the needle remained perfectly stationery at zero; but the moment the transverse section of the nerve touched one cushion, and the

longitudinal section the other, the coil of wire became charged, and induced the needle to describe an arc of 10 degrees upon the index scale, a piece of muscle produced the same phenomena: thus, shewing that electricity is generated in the interior of the nerves, and muscles, and that the positive force circulates upon the outside surface of these structures.

In order to demonstrate the circulation of electricity in the muscular action of living animals, Du Bois Raymond now placed the ends of the coil of wire in two separate basins of salt water; and upon placing a hand in each solution, the needle remained pointing at zero, so long as the hands remained quiet, and alike passive, but the instant one of the hands was closed,—the other remaining passive, the coil became charged and deflected the needle.

Du Bois Raymond therefore came to the conclusion, that the electric current is produced by electro motive molecules in the nerves; as well as in the muscles, and that they are to be considered as in the condition of a closed circuit; that every current, produced by a nerve, is to be regarded as derived from a current circulating in the nerve itself.

That the nerves and muscles together with the brain and spinal cord, are endowed during life with an electro motive power.

That if any part of a nerve is submitted to the action of a permanent current, the nerve in its whole extent,

suddenly undergoes a material change in its internal constitution, and returns as suddenly, to its former condition, on breaking the current. That the exciting current throughout the nerve, sets in action electro motive elements, which turn all their positive poles in the direction in which the current goes, and their negative ones in the direction from whence it comes.

MANAGEMENT OF THE APPARATUS.

SOLUTION FOR DAMPING THE BATTERY.

Acetic acid, obtained of a druggist, reduced with water to the strength of strong vinegar.

Wet a small piece of sponge with the acid solution, and lightly, but thoroughly saturate both sides of each wing of the battery; then replace it in its case, taking care that the P on the battery, and the one marked on the case, shall be on the same side; hook on the conducting cords and it is ready for use.

Be sure to rinse the battery after using it, in a little cold water, wipe with a soft cloth—hang the instrument on a nail until dry, then replace it in the case, and it will be fit for use on another occasion.

Keep the brass connections clean, and bright. Be careful not to get the conducting cords wet, or the silver

cord beneath the cotton, will become tarnished and stop the current: when tarnished, the part becomes stiff, and may be readily detected by passing the strings through the fingers, the remedy is to cut out the part, re-unite the silver cord, and cover over with the cotton again.

NOTE.—A new pair of strings will be forwarded by Post to any address, on receipt of letter prepaid, enclosing forty cents in postage stamps. Extra appliances can also be obtained by addressing the proprietor.

Whenever, the *naked* metal plate, or the fork is used, connect it with the cord leading from the N pole of the battery, or the required effects will not take place, while the other disk is *always* in these cases, covered with wet cotton, and held in the *patient's hand*.

Where both tin disks are used, each one must have a strip of cotton cloth, the width of the tin disk, and about ten inches long, wrapped round it several times. These cotton coverings must always be wet when used.

It must be borne in mind, that the current comes up out of the battery at the anode pole or door marked P, passes along the conducting cord, to that point of the body, upon which its disk is applied, then goes directly through, in as straight a line as possible, and comes out of the body at the point where the other disk is placed, then proceeds along the cord, down through the cathode pole, or door marked N, into the battery again, and so on, round and round.

DISEASES REQUIRING THE ELECTRICITY CIRCULATING IN THE NERVES TO BE INCREASED.

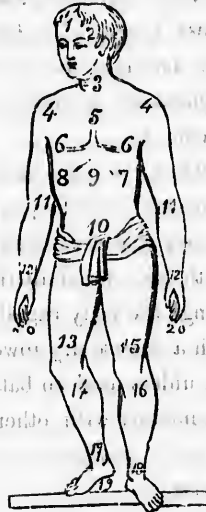
In these affections an undue share of nervous force is in a state of *rest*; hence the nerves having lost a portion of their excitability, the result is weakness.

Treatment.—Rouse the latent electricity in the part into *polar action*.

General Debility,
Hysteria,
Amourosis,
Deafness,

Loss of Smell,
Loss of Taste,
Loss of voice,
Paralysis of other nerves,

Loss of Cutaneous Sensation.



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NEGATIVE STATES OF DISEASE.

GENERAL DEBILITY.—*Application*—Place the soles of the patient's feet in a tepid solution of salt and water, of any strength, put a couple of hot bricks under the pan, to keep up the temperature of the solution.

The solution must be in connection with the P disk. Wrap wet cotton round the N disk, and let the operator apply it high up on the nape of the neck, for one minute at A, then at B another minute, then C, and so on at each vertebræ, all down the spine,—time occupied forty minutes—every other day. Period of treatment, four weeks, unless the debility, is attended with hypochondriasis, or hysteria, when the treatment will be one, or two weeks longer. If the debility proceeds from losses, and derangement of the generative organs, make the applications as directed under that head also, and attend to rule A.

RULE A.—Exercise, without fatiguing the mind, retire and rise early, sleep with the head to the north, in an airy well ventilated room; the windows facing to the south, so as to admit the sun's rays as much as possible; sponge the body rapidly, wipe quickly, and rub the part with a coarse dry towel briskly, until the skin is red, and unless used to bathing, cover over, and proceed in like manner with other parts of the body—time altogether, not exceeding five minutes, once to three times a week.

AMOUROSIs—*Paralysis of the Optic Nerve.*—The word is derived from the Greek, it means to darken, or to obscure.

The eye being an organ of special sense, is adapted only for the purpose of transmitting to the brain, by means of the sensorial nerve, the impressions of the rays of light which fall upon the retina.

In the normal action of this organ, the object perceived by the mind, and the rapid contractions, and dilations, are simultaneous, because the eye and its nerves with their centres form a complete voltaic circle.

In amourosis, there, is a complete or partial loss of sight; and although the eye appears perfectly natural, close inspection reveals, that the pupil is more, or less dilated, and is incapable of contracting.

Treatment.—Wet the cotton round both disks, with fresh water; place the P disk, on the closed eyelid; wet the hair on the lower portion of the back of the head; place the N disk on the wetted part, a little to the opposite side from the centre of the eye under treatment. Time, not exceeding three minutes to each eye, every other day. Period of treatment, from one to forty applications.

DEAFNESS.—*Paralysis of the Auditory Nerve.*—The ear being an organ of special sense, is only adapted for the purpose of transmitting to the brain, by means of the auditory nerve, the impressions of the vibrations of the air, which is propagated through the walls of the

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vestibule, and cochlea, to the fluid within, in which float the filaments of the acoustic nerve. This nerve transmits the impression of sound to the mind, and when paralyzed, ceases to do so.

Application.—Attach the ear instrument to the P conductor, wet the sponge, and place it in the tube of the affected ear, wet the hair on the lower portion of the head, and place the N disk at a point a little to the centre of the opposite side from the ear under treatment. Time, five minutes or less, to each ear, every other day.

NOTE.—Lawrence states: “As a general guide, if the deafness varies with the weather, or the general state of the health, the application producing a humming noise, which ceases with the current, the patient may be certain of receiving benefit. Period of treatment, from one to thirty applications.”

LOSS OF SMELL.—*Paralysis of the Olfactory Nerve.*
Treatment.—Attach the P conductor to the ear instrument, wet the sponge and insert it in the nostril; place the wet N disk on letter A, back of the neck—time, two or three minutes every other day; period of treatment, one to fifteen applications.

LOSS OF TASTE.—*Application.*—Attach the ear instrument to the P Cord, and place it on the roof of the mouth, then on the tongue; put the other N disk on the back of the neck, then on the roof of the mouth, while the other is upon the tongue. Time, same as the foregoing.

LOSS OF VOICE. *Paralysis of the Laryngeal Nerve.*
Application.—Attach the P cord to the throat instrument, and apply it over the larynx; place the wet N disk on the neck at letter A. Time, one or two minutes, every day—period of treatment, one to twelve applications.

ANESTHESIA.—*Loss of Sensation of the Skin.*—*Treatment.*—The patient holds the wet P disk in his hand. The operator attaches the N cord to the fork, and applies the points lightly on the affected parts, for a few seconds only, at a time, this will bring back sensation in the part, apply the fork over other portions, the next, or the day after.

PARALYSIS OF NERVES AND MUSCLES.—*Practical Rules from Duchenn, Becquerel, Meyer, Lawrence, and others.*

1. Electricity should never be used, so long as there are involuntary twitchings of the limbs.
 2. Electricity cannot prevent the coming on of atrophy, but after six, or ten months, the muscles begin to be nourished again, when electricity should now be used.
 3. Paralysis of large muscles, require to and fro currents, and the applications require the poles to be of a flat, and unyielding surface, and both placed upon the belly of the muscle.
 4. If the electro muscular contractility is not lost, the local galvanization may be commenced at once.
- Cures take place in the following order :

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First, in the muscles, nearest the centre of larger trunks of nerves, then sensation, next nutrition, then the tonacity appears, and lastly, voluntary power.

The average period for the treatment of traumatic paralysis, is three months, but many cases require several years.

PARALYSIS OF THE LOWER EXTREMITIES.—*Treatment.*—Place the soles of the feet on thick brown paper, thoroughly saturated with a solution of salt and water; place the P disk on the paper; the wet N disk must be put at letter C, on the spine, from ten to twenty minutes, then on letter I, on the lower portion of the spine, for same length of time—use every other day.

PARALYSIS OF ONE OR BOTH UPPER EXTREMITIES.—*Treatment.*—Place the hand, or both if affected, in a bowl of salt and water, connect the P pole with the solution; place the N wet disk at letter C, for twenty-five minutes, every other day.

PARALYSIS OF THE TONGUE.—*Treatment.*—Connect the P cord, to a small silver spoon, apply it on the tongue; place the wet N disk, on the upper portion of the back of the neck, from ten to twenty minutes every other day.

DISEASES, REQUIRING THE ELECTRICITY
CIRCULATING IN THE NERVES, TO
BE DECREASED.

These affections are generally caused by an excessive share of electricity in polar action; hence the nerves, become unduly excited; the result is either pain, or involuntary motions of the body.

Neuralgia of the head, or face.

Neuralgia of the side.

Neuralgia of the lining membrane of the chest.

Neuralgia of the sciatic nerve,—lumbago.

Delerium tremens.

Chorea,—St. Vitus' dance.

Tetanus,—Lock-jaw.

Epilepsy.

Treatment.—Cause a portion of the electricity in the part affected, to assume a state of rest.

NEURALGIA.

Lawrence says, "The various quack remedies advertised as specifics for the cure of this exceedingly painful affection, are the strongest proofs of its obstinate nature.

"The principle, or law, that a sudden, or acute pain, developed on the surface of the skin, antagonized certain sciatic neuralgias was derived from the veterinary art; and the result of electric cauterization, in the treatment of this disease, in those cases in which medical treatment has been employed without avail, proves this law to be true."

NEURALGIA IN THE FACE.

Application.—Place the wet P disk in the patient's hand. The operator will then attach the N conductor to the fork, and apply its points lightly over letter A, nape of the neck, for a few seconds at a time. The object in all neuralgias is to produce a more intense pain than the original one, when this is accomplished, take away the fork, and both pains are gone.

NEURALGIA IN THE HEAD.

Application.—Same as the foregoing.

PLEURISY, AND PAIN IN THE SIDE.

Application.—Apply the points of the fork, lightly over the part affected, for a second or two at a time, while the patient holds the wet disk in the hand, to complete the circuit.

LUMBAGO.

Application.—The patient holds the wet P disk while the operator places the points of the N fork lightly over letter I, on the small of the back, a few seconds at a time for one minute, after which, apply a strengthening plaster, on the part.

SCIATICA.

This formidable disease, will not give way to ordinary treatment; the excruciating pain is however always instantly arrested by means of the fork, and an application of one minute will always afford the patient a good night's rest. When the points of the fork are

used, the patient of course always holds the wet P cord in the hand, to complete the circuit, after giving four or five applications, should the pain still return, make the application as follows, viz: place the wet N disk on the skin, under the foot; place the wet P disk over letter H:—time, one hour every other day.

Note.—After the cure, should the limb be weak, simply reverse the poles, for a few sittings.

CHOREA—ST. VITUS' DANCE.

Treatment.—Give a general application to the spine, as for general debility, then place the P wet disk, on the cerebellum—lower portion of the back of the head—place the wet N disk, over and above the temples and forehead, from three to five minutes, twice a week. Attend to Rule A.

DELERIUM TREMENS—SLEEPLESSNESS—MENTAL EXCITEMENT.

Application.—Place the wet P disk on the top of the head, previously wetting the hair, as it is a non-conductor. The soles of the patient's feet must be placed on a wet towel, or better still, in a dish of water, and a little common salt thrown in; connect this solution, or the towel, with the disk of the N conductor—time, four to five minutes.

Treatment.—When the fit is on, make the application as for apoplexy. During the intervals of attack, make the application as for general debility, and attend to Rule A.

TETANUS.—TRISMUS, OR LOCK JAW.
Application.—Place the wet P disk at letter A, back of the neck, and the wet N disk over the muscles affected until relieved, use salt and water for wetting the cotton on the disks.

DISEASES OF A TORPID, OR CONGESTIVE NATURE.

Treatment.—Submit the part affected, to the positive outgoing, or warm half of the galvanic current.

TORPIDITY OF THE LIVER.

Application.—Place the wet P disk a little above the hip of the opposite side of the body from the liver, and the wet N one over the region of the liver, for ten minutes, then shift the P disk to the naked sole of the foot, ten minutes longer.

CONSTIPATION.

Application.—Connect the throat instrument with the P disk, and direct the patient to introduce it into the back of the mouth, place the wet N disk to the anus—time, three to five minutes every other day.

DYSPEPSIA—SLOW DIGESTION.

It has truly been said, "The stomach is the workshop of the living animal;" for it is here, where the food

becomes converted into chyme, by the solvent powers of the fluid, called gastric; it is here where the capillary bloodvessels imbibe the dissolved azotised neutral substances, and the water; the residue passing on into the duodenum is changed into chyle; well prepared chyme is the natural stimuli of the *duodenum*, *liver*, and *pancreas*, and pure chyle is the appropriate excitant of the *lacteal* vessels; consequently when the stomach ceases to do its appropriate work, it directly involves the other organs, and intimately affects the mind.

The prompt removal of nausea, distension, weight, oppression, and spasmodic pains of the stomach, and the general languor, and debility, are evidences of the value of the galvanic current in dyspepsia.

Treatment.—Place the wet N disk over No. 9, the pit of the stomach; place the wet P disk on letter C, to complete the circuit—time, one hour and a half every day. We have known cases of many years' standing, after all other means had been tried in vain, to yield to this, in from four to ten days.

Note.—It will be necessary to tie a broad ribbon round the waist, to keep the disk in its place; the dress will secure the other disk in its position.

Observation.—Should this application fail to benefit, we may conclude, the mischief is owing more especially to an absence of nervous, rather than of muscular electricity.

In this case, simply reverse the poles for the same

length of time, place the P disk on the pit of the stomach, and the other at letter C.

DIABETES.

Application.—First, give application as for general debility, then place the wet P disk over the kidneys, and the wet N one over the region of the bladder—time half an hour every other day.

DISEASES OF AN ACTIVE OR INFLAMMATORY NATURE.

Treatment.—Submit the part affected, to the influence of the ingoing, or cold half of the galvanic current.

Inflammatory rheumatism.

Inflammation of the liver.

Acute inflammation of the eye.

Apoplexy.

INFLAMMATORY RHEUMATISM.

Application.—First, make the application as for general debility, with these exceptions, viz: The N disk must be in contact with a solution of strong vinegar, and the soles of the feet placed therein. The P disk saturated with the same solution, must be passed all over and down the spine; then thoroughly saturate two bands of coarse brown paper, in the same solution, and apply as follows, viz:

If the shoulder is affected, wrap one of the bands round the arm at 6, and connect it with the N disk. Make a pad of the other band, and place it at letter O, on the back. If the elbow, fold a band round the arm, above and one below 11, place the P disk on the upper, and the N on the lower band. If in the knee, fold bands at the numbers, one above, and the other below the joint. P on upper, N on lower band. Proceed in like manner when the ankles or wrists are affected—time, in every case, ten minutes.

INFLAMMATION OF THE LIVER.

Application.—Place the wet P disk over No. 8; place the wet N disk above the hip on the opposite side of the body, for ten minutes, then shift the N disk to the sole of the right foot, for ten minutes longer.

ACUTE INFLAMMATION OF THE EYE.

Application.—First give the general application as for fever. Then place the wet P disk all round the region of the eye for five minutes. Direct the patient to hold the wet N disk in the hand, on the same side with the eye under treatment.

Another plan is to place the P wet disk over the closed eye lid; the patient, as above, holding the wet N disk—time not exceeding three minutes.

Another—place the wet P disk in the patient's hand; let the assistant apply the wet N disk for a few seconds at a time over the temple of the eye affected, the object being to create a redness of the skin.

APOPLEXY.

The electricity of the nervous system, in this affection, is concentrated upon the great nervous centres; hence, a rush of blood follows.

Treatment.—Place the patient's naked feet in a tepid solution of salt and water; connect this with the N disk. Let the operator pass the wet P disk three or four times down the spine, from top, to bottom; then wet the hair on the top of the head, and hold the P disk there not exceeding five minutes. If consciousness has not returned, repeat the application down the spine only, until the senses are restored.

DISEASES OF THE GENERATIVE ORGANS.

ABSENT AND SUPPRESSED MENSTRUATION.

Treatment.—Attend to Rule A, and give the applications, as for general debility; then during the week of the new, and the full moon; make the applications as follows, viz: Attach the N conductor to the womb instrument, and introduce it into the vagina, until the wet sponge touches the os, or mouth of the womb; place the wet P disk at letter A, on the back of the neck. Time, one hour at bed time; by this operation, the womb will be brought under the influence of the warm, expansive, half of the current.

IMMODERATE FLOW OF THE MENSES.—FLOODING.

The cause of this formidable, and often exceedingly dangerous affection, is simply owing to a relaxed or dilated state of the muscular orifices, or mouth of the blood vessels of the inner surfaces of the womb, hence their contents are poured out.

Treatment.—Submit the organ, to the cool, and contractive influences, of the ingoing half of the electric current.

Application.—Attach the P conductor to the womb instrument, introduce it into the vagina, until the wet sponge touches the os, or mouth of the womb. The N disk at letter G, on the back—time, until the flow is arrested.

FALL OF THE WOMB.

This very common complaint is caused by a weak, or relaxed state of the muscles, and ligatures, supporting the womb.

Treatment.—The cord leading from the P pole, must be attached to the vaginal instrument; wet the sponge and introduce the instrument into the vagina, until the sponge touches the os, or mouth of the womb; then place the wet N disk attached to the other cord, on letter G, on the back. Time, twenty to thirty minutes every day—period of treatment, from two to fifty applications. The following facilitates the cure:

NOTE.—Make a tea of a handful of the roots of lady's slipper, to a quart of boiling water, when cold drink a wine glassful, three or four times a day.

LEUCORRHOEA, OR WHITES.

Application.—Attach the N conductor, to the metallic, vaginal instrument; introduce it into the vagina, place the wet P disk, at letter H. Time, one minute twice a week, and give one or two applications, as for general debility, attend to Rule A.

WEAKNESS OF THE SEMINAL DUCTS.

Application.—Place the wet P disk between the anus and scrotum, and the wet N disk at letter H, on the spine, for twenty-five minutes, every other day—attend to Rule A.

DROPSY OF THE SCROTUM.

Treatment.—Attach a fine pointed silver needle to each of the terminal brass wires of the conducting cords, and apply their points in the sac, upon opposite points of the circumference of the tumor, for ten or fifteen minutes every other day. Period of treatment, thirty days.

HEAD ACHES.

Application.—Place the wet P pole over the part affected. The patient holds the wet N disk in the hand, to complete the circuit—time, one to five minutes. If the stomach is the cause of the ache, make the applications the same as for dyspepsia.

**DISEASES REQUIRING ELECTRO CHEMICAL
DECOMPOSITION TO BE PRODUCED.**

In the treatment of these diseases our object is:

- 1st. To decompose the morbid deposits.
- 2nd. To disperse it by absorption.

Cancers.

Tumors—Goitre, &c.

Fever sore.

Catarrh.

Gout and Rheumatism.

Opacity of the Cornea.

Hydrocele, or Dropsy.

Note.—At the end of the application, give the general treatment, in order to arouse the absorbents; seat the patient on the wet P disk, and apply the wet N disk over the chest, stomach, and bowels.

CANCERS.

An electro-lytic institution, has been founded in Moscow, under the direction of several medical gentlemen; who report to have cured sixteen cases of cancer, and to have removed the whole of a female breast, without the use of a knife, or the tying of an artery.

Treatment.—For an open cancer, attach a small silver plate to the brass wire of the P conducting cord, and apply it on the open sore, and attach the brass wire of the N conducting cord to a small zinc plate; place the latter on another part of the sore.

The application will produce a coagulated crust over the surface, under the silver, and when this sloughs off, there will be a healthy sore; the foetid smell, the constant severe pain, and the hardness will be greatly relieved.

GOITRE—THICK NECK.

Treatment.—Submit the enlargement to the influence of the contractive cool half of the current.

Application.—Apply the wet P disk over the circumference of the swelling; at the same time, place the wet N disk over the entire spine, commencing at A, then at B, &c.; allowing the disk to remain for one minute at each joint of the spine—every other day.

FEVER SORE.

Application.—Seat the patient upon the wet P disk, place a five, ten, or twenty-five cent silver piece on the open sore, then touch the silver with the terminal brass end of the N conducting cord, for a few seconds at a time,—use every other day. If there is an orifice in the sore, pass a silver probe into it, and touch it with the brass end for a few seconds at a time—use every other day.

CATARRH.

Numbers are suffering from this disease because in its early stage it is considered to be merely a common cold and consequently allowed to pass into a chronic or negative condition, in which state it may continue for years, the acrid poison gradually involving the whole of the air-

passages and lungs. It does not appear to be curable by ordinary means, but it is readily removed by the mild streaming electric current, if not too far advanced.

Treatment.—Place the wet N disk at the root of the nose, roof of the mouth, the throat and upper part of the chest. At the same time, direct the patient to sit upon the wet P disk—time from five to twenty-five minutes, according to circumstances, every other day.

RHEUMATIC EFFUSION INTO THE JOINTS.

The application of the electric current to joints which are stiff and distended with fluid will succeed in rendering them supple, and its continued use will affect the absorption of the fluid.

Application.—Apply a disk on each side of the joint, it matters not which pole, the object being to pass the current through and through the part. The N disk should be wet in a solution of strong vinegar.

RHEUMATIC GOUT—PAIN IN THE SMALL JOINTS.

Mix thoroughly a teacupful of good dry hard wood ashes with one pint of scalding water, when sufficiently cool, wet both the disks thoroughly with the solution and apply the one leading from the P pole, two inches above the part affected, the other disk two inches below the affected part—time, from five to ten minutes, or until the pain is gone.

OPACITY OF THE CORNEA.

“This is the result of adhesive inflammation. The

rent acts most beneficially in those cases where the effusion has taken place between the layers of the cornea, and has not become organized.

Application.—Connect a small ball of silver to the cord leading from the N pole, place it lightly over the opacity, place the tin disk in the patient's hand—time, a few seconds at a time. A pricking, burning pain will be experienced, the conjunctiva will redden, and some lachrymation be produced, but these effects will quickly subside on applying cold water. If the opacity begins to break up under the application, it will soon disappear."

—*Lawrence.*

EXTRAORDINARY CURES.

The address of any of the parties whose initials are given in the following cases, may be obtained by any person, who deeming himself to be similarly affected, feels desirous of communicating with the party.

CASES OF PARALYSIS;

Right Wrist.—Four years and a half standing, very great difficulty in using the pen. Case, Mr. B., of Chatham, C. W.; one application of ten minutes, cured this case.

Eye Lids.—C. H., of Detroit, U. S.; some years previous, received a kick from a horse, injuring the frontal bone. Four applications were given to the

patient, when he was enabled to raise the lids without the use of his fingers.

Right Arm.—Mr. I., farmer of Aylmer, C. W., received an injury from a falling tree, striking the shoulder, twenty-four years ago, unable to lift the arm. One application of ten minutes enabled the patient to use the arm freely, and he declared he was now worth two dollars a day.

Left Arm.—Mrs. S., of Bayham, C. W., had been unable to use the arm for fifteen years; after ten minutes application, the patient used her arm freely.

Left Arm.—Mrs. Capt. C., of Windsor, C. W.; total loss of motion and sensation for three months. In fifteen minutes the arm was completely restored.

NEURALGIA.

Mrs. Woods, of 29 Abbot Street, Detroit, U.S.; severe intermittant pain, commenced seven years ago; first in the small toe of the left foot, shifting occasionally near the ear in the back of the head, severe pain every morning in the right temporal region for the last four years; pain in the right shoulder, and contraction of the muscles of the right arm and fingers, numbness in the right arm and left leg. The electrical applications were continued for nearly five weeks, when she was dismissed cured; the arm was restored to use on the first application.

Miss S., Dundas Street, London, C. W., severe inter-mittent pain in the face for three days; one application of three minutes permanently cured the patient.

Mrs. G. C., of Talbot Street, London, C. W.; severe "tic" in the face, for three nights, the last attack kept the family up all night; one application completely cured this lady.

Miss S. J. K., of Sparta, C. W., severe intermittent pain in the face for three weeks, three or four teeth had been extracted, but the pain continued; an application of one minute entirely cured this patient.

Mr. D., of Aylmer, C. W., severe intermittent pain in the face for one week; two applications of one minute each, entirely cured this patient.

Mrs. O., of London, C. W., sciatic nerve exheruating pain in the left limb for some days; fifteen applications entirely cured this lady.

Miss N., of Lobo, C. W., sciatic nerve great pain in the hip and left limb for some weeks; applications every forty-eight hours during six months cured this lady.

RHEUMATISM AND GOUT.

Acute Rheumatism.—Pulse 110. Miss S., 34 Griswold Street, Detroit, U. S., attacked in the shoulder; entirely cured by two applications, within forty-eight hours.

Rheumatic Gout.—Pulse 105. Miss MeD., of London, C. W., exheruating pain, had not slept for the last two nights, other remedies had no effect in allaying the pain; an application of eight minutes entirely subdued the pain. A subsequent application of five minutes entirely cured this lady.

Rheumatic Gout.—Mr. M., of London, C. W.; several attacks within the last five years; generally confined to bed six to nine weeks. Present attack commenced four days ago, in the left shoulder. Ten minutes application enabled the patient to dress himself; it had previously required two persons to take off his coat; the patient's fingers were stiff and useless, owing to the deposits of lethate of soda upon the joints. A few subsequent applications enabled the patient, as he expressed it, to use these rather useful members—the hands—freely.

TUMOUR.

Mrs. B., of London, C.W.; tumour the size of a large pea on the lower eye-lid; had been forming for three years; four years previously a tumour was removed from the same lid by the knife. Application, three minutes every forty-eight hours; treatment continued for two months, when the tumour had entirely disappeared.

Acute and Chronic Inflammation of the Eye.—Mr. B., of Aylmer, C.W., attack commenced in one eye 36 hours previously, now extended to the other; obliged to keep both from the light. Two applications of ten seconds each, and other chemical means, cured this patient entirely in 30 hours after.

Miss C. H., of Norwichville, C.W., chronic sore eyes for three years past; lids of both eyes drooping; the eyes appear to be half closed; cannot perceive a marble at two yards distance. Three weeks application

of three minutes every 48 hours entirely cured this patient.

ASTHMA.

Mr. J. K., farmer of Malahide, C.W., spasmodic humid asthma of 4 years and 9 months standing; unable to work even for half an hour a day. Applications every 48 hours, and other remedial means, enabled this patient, in three weeks, "to do as good a day's work," he said, "as any of his hired hands."

DYSPEPSIA.

Mr. T., of Nissouri West, C.W.; this patient dare not touch meat; wore the battery for two hours every day for six days; says he can now eat anything, and feels altogether different.

Mr. A. A., of London, C.W.; dyspepsia for upwards of 20 years. Patient says he wore the battery all night for four nights, and experienced the most signal benefit. Eats and digests anything, and is rapidly gaining in flesh.

Mrs. G., of London, C.W., in a very weak state for the last 16 months; has worn the battery for a number of times; would not be without one for any consideration; is always benefited. Can now eat three meals a day, before she could only partake of two very light meals; her general health has much improved.

Mr. T. C., of Strathroy, C.W., had been troubled for some time with indigestion; always experiences the greatest relief after using the instrument. This gentle-

man received a cut on the lip from a stone, some 20 years previously; the lip has always been tender since, with occasional breaking out, until within the last six months, when a constant succession of dry scabs were thrown off, accompanied by a burning pain, which nothing relieved, used the battery about six times, and it is now almost healed; after the first application the pain never returned.

SUPPRESSED MENSTRUATION.

Miss A. B., Strathroy, catamenia absent for two years. One application succeeded in restoring the menses.

GENERAL DEBILITY.

Mr. B., of London, C.W., had applied the battery a number of times, always felt better after using it; has gained in flesh considerably; had tried other means, water cure institution, &c.; experienced the best results from the use of the battery.

FOR DENTAL OPERATIONS.

As an anesthetic, the battery will be found useful in the painful operations of drawing or filling sensitive teeth.

Application.—Attach the P conductor to the “head wire,” and adjust it so that the wet sponges will lay over both ganglions of the dental nerves; slide the N conductor on to the handle of the forceps, the instant the latter grasps the tooth, the current flows without intermission, from both ganglions, to the tooth, under operation, and prevents in a great measure, if not always entirely, the transmission of pain to the brain.

Broken and intermittent currents are not available for the purpose, because the mind recognizes the pain, between the vibrations, be they ever so rapid.

Notc.—There is nothing gained by wearing a glove, but the jaws of the forceps should have at least three coatings of shellac varnish upon the outside surface, so as to prevent the lips, tongue, and gums of the patient from diverting the electric stream.

We have seen a great number of teeth extracted without the slightest pain of any kind.

(From the British American Journal.)

PALMER'S ELECTRO-VOLTAIC INSTRUMENT.

We were exceedingly pleased a few days ago, in having been waited on by Mr. Palmer, a gentleman from London, C. W., who called to make us acquainted with

an instrument devised by himself, intended for the purpose of transmitting through any portion of the body, a continuous stream of galvanism. It is exceedingly simple in its construction, and is at once put into action, by merely damping the tubes, which are 42 or more in number, by diluted acetic acid, or a weak solution of salt and water.

The current thus evolved is continuous and unremitting, and when the little battery is enclosed in its card case, it will continue to generate the excitement for a considerable time without redamping.

Although the current possesses sufficient force to overcome the resistance of the bodies of six or more persons in contact, if properly managed, yet by applying the moist sponges which may be attached to the conductors, its intensity becomes very much mitigated, so much so as to become scarcely perceptible to the great majority of individuals, and therefore by no means unpleasant.

By placing the silver points, which accompany also the instrument, upon the skin previously dried by a little powdered rice, a slight amount of irritation is at once induced. A higher amount of irritation may be caused by previously breathing upon the skin; while by damping the part with the salt water, the most intense pain is at once perceived, amounting in a few moments to actual vesication.

The shape of this truly valuable little instrument and its size adapt it for the waistcoat pocket, while the simple, uncomplicated and ready mode for procuring from it an uninterrupted stream of galvanism are important considerations, and in striking contrast with the cumbrous and troublesome intermittent-current batteries now in use, and which we venture to predict it will completely supersede.

Mr. Palmer has patented his invention in this Province, and steps are being taken to secure patent rights in the United States, Great Britain, France, and Germany.

Its low price, which varies with its size, from \$5 to \$8, highly recommends it to general favor among the profession; and we hope that while this invention will unquestionably tend to the relief of human suffering, it will also return an ample reward to the patentee. It has been already tried in some of our Hospitals, and in the original department of this number we have inserted a short report of a number of cases in which its employment has been highly satisfactory.

From MR. THOMAS JOHN HAYES, Resident Medical Officer, Toronto General Hospital.

I have tried Mr. Palmer's pocket voltaic battery on several patients, with the consent of the respective medical officers interested in the case, and must say that the relief afforded was in most instances very satisfactory.

A female patient was brought from the police station yesterday, in a state of high nervous excitement. I requested Mr. Palmer, who was then in the hospital, to try his battery, which he did with most extraordinary success. The patient became perfectly calm within a period of five minutes, and in less than fifteen minutes was in a quiet sleep, which lasted for nearly nine hours, without any depressing effect on the system. This woman was not under the influence of alcohol at all. I believe her excitement is caused by some domestic affliction. From what I have seen, I believe Mr. Palmer's invention will prove a very valuable aid in practice.

Toronto, 13th March, 1861.

From ROBERT CRAIK, Attending Physician, Montreal General Hospital.

I have had the pleasure of observing the effect of electricity, as applied by means of Mr. Palmer's pocket battery, in several painful diseases, and have no hesitation in declaring the beneficial effect to be more rapid

and complete than after any of the methods formerly in use. I give in illustration the following case:

Harriet Pepper, a patient in the Montreal General Hospital, had been suffering from severe muscular pain in the right shoulder and arm, to such an extent as to render even slight movement intolerable. By the use of the battery, she was able in less than five minutes to move the arm freely above her head, and to dress herself without assistance. After the lapse of forty-eight hours the pain had not returned.

Montreal, 10th May, 1861.

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