Vol. III *December, 1903* *No. 12*

AMERICAN ELECTRO-THERAPEUTIC

AND X-RAY ERA

F. W. BUTTERMANN, M. D. EDITOR
C. H. TREADWELL, B. S. MANAGING EDITOR
R. FRIEDLANDER PUBLISHER

PUBLISHED MONTHLY

504 MASONIC TEMPLE, CHICAGO, ILLINOIS
1507 FLAT IRON BUILDING, NEW YORK

Subscription, TWO DOLLARS Per Annum

OFFICIAL ORGAN OF THE CHICAGO ELECTRO-MEDICAL SOCIETY

Entered at the Post Office, Chicago, Ill., as second class matter, August 12, 1902

American Electro-Therapeutic
AND X-RAY ERA

OFFICE OF PUBLICATION:
504 Masonic Temple, Chicago, Illinois

F. W. BUTTERMANN, M.D. . . . . EDITOR
Radiographer and Radiotherapeutist St. Joseph Hospital, Chicago.
C. H. TREADWELL, B.S. . MANAGING EDITOR

EDITORIAL STAFF OF PHYSICIANS:

J. RUDIS JICINSKY, M.D. . . . Cedar Rapids, Ia.
E. H. GRUBBE, M.D. . . . . Chicago, Ill.
RUSSELL H. BOGGS, M.D. . . . Pittsburg, Pa.
Radiographer at the Allegheny General Hospital.
G. G. BURDICK, M.D. . . . . Chicago, Ill.
WILLIAM H. DIEFFENBACH, M.D. . New York City
NOBLE M. EBERHART, M.S., M.D., F.S.S.c. Chicago, Ill.
A. DECKER, M.D. . . . . Chicago, Ill.

Publisher: R. FRIEDLANDER.

SUBSCRIPTION, PER ANNUM, ... $2.00
SINGLE COPIES, ... 20c

Make all checks payable to R. Friedlander, Publisher.

THIS JOURNAL IS DEVOTED ENTIRELY TO ALL BRANCHES OF ELECTRO-THERAPEUTICS

Contributions of actual experience by physicians using the X-Ray as a therapeutic agent are highly valued by this journal, and the editor is always willing to reserve space for such communications.

Contents

American Electro-Therapeutic and X-Ray Era

Vol. III December, 1903 No. 12

Original Contributions.

HIGH-FREQUENCY ELECTRIC CURRENTS IN MEDICINE.

By Emil H. Grubbe, B. S., M. D.

Professor of Radiography, X-Ray Therapeutics, and Electro-Physics, Illinois School of Electro-Therapeutics; Chief Radiographer, Illinois X-Ray and Electro-Therapeutic Laboratory; Professor of Electro-Therapeutics and Radiography, Hahn. Medical College; Vice-President Chicago Electro-Medical Society; Member American Roentgen-Ray Society, etc., Chicago, Ill.

The inquisitive scientist is always busy discovering new therapeutic agents. Hardly a day passes but what some new drug is discovered, which, according to the provers, possesses properties, which, to say the least, are little short of remarkable. One day we are presented with X-Rays, the next day brings a new coal-tar product, on the following day we are presented with a new method for aborting some virulent disease, which heretofore has been considered beyond our reach, later still, we are given N-Rays, and last, but not least, Radium.

The subject upon which I have been asked to speak to you, namely: High Frequency, High Voltage, Electric Currents, is, to most of you, no doubt, as new as some of the other agents I have just mentioned. As a matter of fact, however, this form of electricity has been used therapeutically for more than ten years. The principal reason for its remaining in the rear

so long has been inefficient apparatus. Only within the last three years have we been able to obtain generators which are satisfactory, and at the same time reasonable in price.

In order that I may make myself understood, and, in order that you may be able to compare this form of electric manifestation with the other, more simpler forms, with intelligence, we shall have to go back to the beginning—to primary things—and first consider some of the terms which are of necessity, used considerably, in a discussion of this kind.

No doubt many of you talk or read about amperes, volts, and ohms—the so called units in electricity—quite frequently, but possibly a few words on the exact meaning of these terms and their relation might not be out of place.

We will suppose, for the purpose of argument, that you all believe in the existence of the ether, that peculiar form of matter which is said to exist everywhere. The one function of this ether is to transmit or transfer physical conditions called forces. The principal kinds of force have been termed heat, light, sound, and electricity. In reality these so-called forces have one and the same origin and are therefore closely related. All of them, excepting sound, are made manifest to our senses through vibrations, or oscillations, or wave-movements (whichever you choose) in the ether; sound waves are vibrations of the air.

Electric vibrations differ from other forms of vibration only in rate and number.

We have different kinds of light vibrations, not only considered qualitatively but also quantitatively, and we may consider electric vibrations in the same way. The simplest form of electric vibration is the direct or continuous current—commonly called galvanic electricity. Next we have the alternating or indirect current—commonly called Faradic electricity. The particular use of the direct current is to produce chemical changes. This property is due to the fact that this current always moves in one direction. The indirect current is purely a function regulator, due to its to and fro motion, and it is practically devoid of power to produce direct chemical changes in the human body.

The unit—ampere—refers to the amount or volume of a

form of wave-movement in that peculiar condition of matter called ether.

Voltage refers to the force which sets up and keeps up this wave-movement.

The term ohms refers to the amount of resistance or opposition offered to this particular wave-movement.

The direct current is, technically speaking, a current of high amperage, i. e., large quantity and low voltage, i. e., it comes with little force. In the indirect current these conditions are reversed, and we have therefore a current of low amperage and high voltage. Indeed here the amount of electricity is only the fractional part of an ampere, but, this small quantity comes with a pressure of hundreds of thousands of volts.

The high-frequency, high-voltage currents originate in the indirect or alternating form of electricity. With comparatively simple apparatus we are now able to transform this alternating current so that the alternations occur many thousand times per second, and also there may be obtained an enormous voltage and amperage.

The high-frequency currents, then, are currents of high amperage and also high voltage, however, there is no danger in their use, because, they are not continuous, but alternate, or go back and forth in rapid succession. In the latest form of apparatus as many as 200,000,000 or more alternations occur per second.

With the continuous or galvanic current it is possible to kill a human being with 3-10 of an ampere coming at a pressure of about 500 volts; while with the high-frequency currents we may give several amperes at a pressure of between 500,000 and 100,000,000 volts, without the least danger to the person.

Tesla, as far back as the year 1890, proved the comparative lack of danger in using these currents, by allowing them to be passed through his body, when ten ordinary 16 C. P. incandescent lamps held in his hands became fully illuminated. We know it is necessary to have ½ ampere for each lamp to get its full luminescence, therefore Tesla's body must have conducted at least 5 amperes in the experiment cited.

More than thirteen years have passed since D'Arsonval proved these currents to possess decided therapeutic properties.

About ten years ago Oudin devised an apparatus which was so decided an improvement over the instruments then at hand that most wonderful results were obtained by its use in treating various diseases. Since then there has been a gradual but healthy development of the subject, so that to-day we have quite a long list of human ailments to which this agent may be applied and benefit derived.

Lately, many capable investigators have studied the properties of these currents and have supplied us with very reliable data concerning their action upon the body in health and disease.

The physical and dynamic properties of high-frequency currents are so radically different from those with which we are familiar in other electric manifestations, that they are really startling. The human body conducts these currents so readily that incandescent lamps held in the hand become luminous. It is not even necessary to bring the body in contact with the generator. Ozone in large quantities is liberated in the atmosphere surrounding the instruments. Geissler vacuum tubes become luminous at a considerable distance from the generator and without direct connection. Currents which are capable of doing these things, certainly ought to have a pronounced effect upon the tissues and functions of the human body. As regards physiological properties these currents are very different from other forms of electricity.

The fact that patients may be treated with large quantities of these currents without even becoming conscious of any action would indicate that the motor and sensory nerves are not active during treatments. The presumption is, that due to the high-frequency of interruption in the circuit the number of excitations of the neuro-muscular systems reach such a height that all reaction is arrested. According to Williams the following is a brief resume of the physiological effects of high-frequency currents: They are able to produce modifications in the general nutrition of the patient; there is an increase in arterial tension; respiration is increased and there is greater elimination of carbon dioxide; the blood becomes rapidly oxygenated; an abnormal ratio between urea and uric acid is reduced to normal readily; there is an increase in the production of bodily

heat; excitability of tissues to other forms of stimulation is decreased; local anesthesia lasting up to twenty minutes may be produced in some parts of the body.

The most notable results with this treatment have been obtained in the very common disease—eczema.

Dr. Bloch of Paris, one of the most able electro-therapeutists and an associate of the late Apostoli, recently reported a large number of cases of acute and chronic eczema in all of which remarkable results had been obtained by high-frequency currents after all other methods of treatment had failed to bring relief.

Similar reports come from other eminent observers.

It is true that for a number of years we have known of the good effects of the static spray when applied locally in cutaneous diseases characterized by pruritus, heat and scaling, but at best the remedy was only palliative. With the high-frequency currents we can sometimes actually cure these conditions with a few short treatments. Many cases of eczema of ten years' standing have been cured with half a dozen treatments. The currents are applied locally and occasion no discomfort whatever. Most sensitive parts may be treated without aggravation.

Acne in all its forms yields readily to this treatment. Here when the condition is purely local we use the local method of treatment, but if there is a systemic cause or complication, we also give the patient a general treatment and thus get the benefit of the nutrition regulating power of these currents.

Psoriasis also is amenable to this treatment. We have personally treated three physicians having this disease, and although time enough has not elapsed in two of the cases to verify the results, in the other the disease has not returned after ten months.

Malignant growths, particularly epitheliomas, react favorably in the majority of primary cases. Of course it would be folly to expect a good result from this or any other form of treatment after general carcinosis has set in.

Indolent and fissured ulcers respond rapidly to this treatment and clinical tests reveal results which must be considered permanent.

Since the X-Ray and the ultra-violet ray have done so well in the treatment of lupus, we would hardly expect to find any other agent to supplant them in fighting this disease. However, there are many cases which do not do well under either of the above forms of treatment and many of these have been cured by high-frequency currents.

Probably the results are obtained more rapidly due to the fact that every time we apply these currents a general electrification occurs, i. e., the whole system is influenced at each sitting. By many operators this treatment is preferred to the X-Ray, because, as a rule, the results are obtained more readily; there is better control of the inflammatory reaction, and the scars are most perfect.

High-frequency currents have also proved of great value in the treatment of catarrhal conditions of mucous membranes and for neuralgias. Even for sciatica, tic douloureux, choreaic and hysterical spasms they offer a very effectual method of relief.

Among the many general diseases which have been favorably affected may be mentioned neurasthenia, rheumatism, gout, tuberculosis and obesity.

In diabetes many observers have obtained such good results that the claim has been made that we now actually have a remedy which can cope with this disease. When we remember that diabetes is a nutritional disease and also the pronounced effects of the high-frequency currents upon metabolism, we can readily understand how such favorable results are possible. Due to the fact that these currents decompose the atmosphere generating thereby nascent oxygen, and also, due to the fact that the human body offers comparatively little resistance to the passage of these currents it will be plainly seen that diseases of the blood could be subjected to this treatment. The decided results obtained in treating anaemia and chlorosis by high-frequency currents have been reported by quite a number of observers.

Although from the list of diseases cited you may form an idea as to the wide action of this new therapeutic agent, it may be further stated that it brings results if properly applied, in the majority of cases. If time were not limited I could report

an extensive list of cases, and if vertification were necessary I could in many instances even produce the patients.

126 State St., Chicago.

TWO CASES OF SEVERE X-RAY NECROSIS, PRESENTING SOME UNUSUAL FEATURES.

By Clarence Edward Skinner, M. D., LL. D., New Haven, Conn.*

The first case reported was that of a woman fifty years old who had been under treatment for pseudoleukaemia for nine months, during which time she had had seventy-five X-ray treatments. Three weeks after the last treatment a severe X-ray burn developed eight inches by six inches in size, which soon became gangrenous, the destruction of the issue extending to a depth of three-quarters of an inch. The sore healed very slowly and after the gangrenous tissue had sloughed off, the galvanic electrical current was applied with most satisfactory results. The sore was entirely healed in five months. The most unusual feature about the case consisted of the development of a second burn, three by five inches in size, five months after the first, although no X-rays had been applied in the meantime. The severe pain caused by the second burn was entirely relieved by the use of a dusting powder, composed of equal parts of anesthesine and talc.

The second case was that of a woman forty-nine years old who had been treated for a year and three months for a cancer in the abdomen, during which time she had had one hundred and fifteen treatments. About one month after the last X-ray treatment two gangrenous areas appeared, which grew larger

*Abstract furnished us by Dr. Skinner of his paper read before the American Roentgen Ray Society, Dec. 10, 1903.

and larger for the next two months when one of the spots was two inches in diameter and the other was two in the vertical and three in the lateral diameter. These sores have existed seven months and have not yet entirely healed. In this case also a new burn appeared in another spot six months after the last X-ray treatment, although no X-rays had been given in the meantime.

Dr. Skinner concludes from these cases:

First, that a patient should not be given X-ray treatments at all frequently through a long period of time no matter how well they seem to bear them at first.

Second, that it is advisable in many cases to remove tissue with the knife which has been destroyed by X-rays and that galvanic electrical currents will be of great assistance in healing these sores after the gangrenous tissue is out of the way.

Third, as the skin of both of these patients was very much browned by the treatment and yet they developed severe burns, that "tanning" does not constitute immunity from burns, as is frequently believed.

Fourth, that the physiological action of the X-ray is not confined to destructive influences, but that it modifies the development of the cells as indicated by the development of burns five and six months after the X-ray treatments had been suspended, and because "tanning" and other abnormal structural conditions appeared in the new skin which had formed many weeks after the treatments were stopped, and which had not been subjected to the X-rays at all.

Fifth, that every case of X-ray burn must be treated by itself. No one routine method of treatment will prove serviceable in all cases, and no condition exhibits so emphatically the truth of the old adage that "What's one man's meat is another man's poison."

DANGERS OF THE X-RAY OPERATOR.*

By John T. Pitkin, M. D.

When for the first time one beholds an X-ray tube in operation, the mild green or yellowish color of its active hemisphere, the blood red or orange color of the inactive hemisphere, which can be obtained with strong condensor discharges, the ruby redness of the target or the light blue color of the cathode stream, a blue cloud hovering behind the target, the green circular, aurora borealis or green scintilating, radial, aurora australis, the bright green dancing spots of the cathode splash, the circular green zone of the tube reversed, the bluish twinkle of its fading light, the slower dying out of the incandescence of the target and the target's own modicum of ordinary light, the ever changing, ever expanding circle of colors on the cathodic cup, the bluish marking of the tube which has seen much service, perchance the pyrotechnoidal display of the punctured tube, he is liable to exclaim "how beautiful!"

As he observes the delineation of bones, viscera or foreign bodies upon the fluorescent screen or photographic plate, its curative power in skin affections, painful disorders, cancerous, tubercular and other malignant diseases, he will in all probability say, "how marvelous!"

Should he strive to fathom its physics, its modus operandi, ask himself of what form of matter the cathode and anode streams consist? Whether in the working of the tube there is transmutation of matter from one elementary form into others or of matter into energy? All of the colors of the rainbow depicted on the concavity of the cathode cup, how are they formed? From whence came they? Of what composed?

Are there separate and distinct rays emitted from the tube that cause burning, others fluorescence and still others photographic effects? Or do the same rays produce all of these phenomena? What rays possess the healing power? Where and how does the X-ray have its birth? Of what does it

*Read in part verbatim, in part by outline, at the meeting of the American Roentgen Ray Society, held at the University of Philadelphia December 9 and 10, 1903.

actually consist? If in the old form of Crooke's tube without a target the X-light is generated in the glass wall of the tube, wherever it is subjected to bombardment, heat and green fluorescence always accompanies the generation of the X-light, and if in the form of tube now employed a portion of the cathode stream passes by the target, or if the target is displaced and the entire stream passes by and generates X-light, likewise by the bombardment of the glass wall of the positive end of the tube accompanied by the green fluorescence (which on account of its position and shape I have christened the aurora borealis of the X-ray tube) with the usual modicum of heat, then does it not follow as a corollary, that wherever there is a green fluorescence of the glass wall of the tube with the production of heat there the X-rays are generated and the glass wall's surface is the state of molecular bombardment?

(2) If the rays of Roentgen have their birth at the target, why do they not shine through that structure as they do through the glass wall that is subjected to bombardment? Can the target reflect rays that are not reflectable, refractable or diffractable?

(3) Why are the different target rays convergent, the efferent rays divergent (leaving out of consideration the effects the manner of their respective construction), unless the former partake of the character of the negative, the latter of the positive, electrical, brush discharge?

(4) If there is not an anodal stream how shall we account for the bluish marking of the glass wall of the active hemisphere which is proportionable to the amount of service a given tube has seen?

(5) If the X-light is not generated in the glass wall, why does its volume increase with the size of the tube employed and consequently the extent of the glass surface is exposed to the anodal influence while the size of the target is relatively unimportant?

(6) If the X-light is generated both at the target and in the glass wall, would not the photographic plate show a double picture?

(7) If it is the X-ray that causes the glass wall of the tube to fluoresce with a green color, why does it not cause the same

phenomenon in a piece of glass held in any portion of the X-ray field?

Are infinitesimal particles of glass or other forms of matter projected from the tube into the X-ray field? (Nicola Tesla was one of the first to advance the hypothesis, that matter was thrown from the tube outwards into space.) If not, why is the X-ray inflammation of the skin nearly always upon the side of the parts presented towards the apparatus? Why does the clothing or a thin aluminum screen afford so much protection to the bodies of operators and patients? The dermatitis may end abruptly where the clothing has covered the person.

Is there some unknown radio-active elements like radium, polonium, thorium, uranium and helium in the glass wall of the tube a hypothetical roentgenium, if you please, which when subjected to bombardment emits radiant energy or radiant matter? If this is not the case, why should a new tube fluoresce with a bright grass green color, become duller more like an olive green, then yellowish, which in turn fades with months and years of use?

(2) Or why should the radio-activity of an adjustable vacuum tube gradually decrease after a year or more of service although the target glows with the usual amount of redness?

(3) How shall we account for the bluish, greenish and yellowish tints (not pyro stains) sometimes seen in the developed negatives?

(4) Why does the new examining screen follow somewhat the same change of colors as the X-ray tube? Will the incorporation of radio-active elements in the glass wall of the tube multiply its present capacity and its therapeutic effects? If so, what a promising vista of future possibilities opens before the radiographer.

Why should an 8-inch tube exhausted by use, recover by rest much more rapidly than a smaller tube? Upon asking himself all these and as many more equally pertinent questions, they may suggest he must invariably remark, "how profound!"

If he injudiciously ventures too near the excited tube, or remains in the weaker zone of the field too many days, months, perhaps years, and if in consequence he sustains X-ray inflam-

matory effects with their complications and sequelae, he is liable to ejaculate "how infernal!" for beautiful, marvelous, It is with the last subdivision or the untoward effects of the X-ray upon the operator with which the present paper is principally concerned.

X-Ray Inflammation. This danger to the operator increases with:

(1) Nearness to the tube (in a compound multiple ratio).
(2) Number, frequency and duration of exposures.
(3) Size, hardness and degree of excitement of tube.
(4) Poor bodily condition.
(5) An injury, blow or cut on parts slightly affected.
(6) Number of previous attacks, each attack leaving him more vulnerable.

Conversely, the danger decreases with

(1) Distance from tube.
(2) Infrequent and short exposures.
(3) Softness of tube, provided it is under-excited.
(4) Interposition of substances, clothing, screens of copper plate, iron, zinc, aluminum, plate glass, etc., their density, thickness and other qualities as yet unknown.
(5) Vigorous bodily condition.
(6) A position behind the target and the static machine from whence rheostat and spark gaps can be operated.

The relative danger of different types of tubes, and how we judge by the appearance of a tube the degree of penetration of its rays without the employment of the fluoroscope.

All other conditions being equal, a hard tube in which the free concave surface of the cathode cup has a light blue transparent, circular spot about the size of a silver dime, with a prismatic ring of colors at the outer border of the blue, the target thereof glows with a redness throughout its entire extent with a reddish white center, the glass wall of the active hemisphere covered with a translucent blue deposit, is the most dangerous, its rays most penetrating. A medium tube, or one having a cathode cup, colored with a dark blue, central spot about the size of a five-cent silver piece and having a target that glows with uniform redness, a blue cloud hovering behind the target, is less dangerous, its rays less penetrating.

A low tube, or one having a cathode cup, colored seal brown of a golden hue, or a minute blue-black central stream with a red border to the blue, having a blue cathode stream and a green aurora borealis, i. e., positive or northern green circles at the positive end, the stem of the same extremity having a green color, is least dangerous, its rays less penetrating. The classification of tubes into hard, medium and soft, is very general because in practice we are using tubes of every degree of each subdivision. But it will answer our present purpose if I make special mention of the extremely high and extremely dangerous tubes, that are hard to excite. Once started they light up irregularly, accompanied with a cracking sound. They have small dancing green spots, formed by the splashing of a portion of the cathode stream against the wall. They also have a green aurora australis. The outside of such tubes become rapidly covered with dust and elementary carbon. They are enveloped in a strong, high tension, magnetic field, which electrically charges all objects in the neighborhood. Such tubes emit rays of an extreme degree of penetration. The relative danger of these tubes will change when we have stronger, exciting apparatus. The latest capacity of the softer tubes has (probably) as yet never been utilized. The length of spark a given tube can back up is not mentioned because the solidity and thickness of a spark are more essential to the officient operation of a tube than its length (at least this has been my experience).*

(To be continued.)

---

*Additional notes taken at the Philadelphia meeting of the Roentgen Ray Society: Dr. James P. Marsh of Troy, N. Y., reported that the soles of his feet had been burned, their position, under the operating table, the doctor sitting near the patient. As a result of the condition of his feet, the doctor was obliged to be carried about by attendants. It was explained at this meeting that the dematitis probably came from the reflected rays of Goodspeed. Dr. Henry K. Pancoast stated that when a Crook's tube collapsed, a bystander sometimes felt as if he was in a shower of small particles.

ELECTRO THERAPEUTICS.*

Mr. President and Gentlemen of the Society: I am not one of those who think the army of honorable men who are devoting their time and talents to the healing art are obstinate or even too conservative in accepting agents of real merit, simply because they may be new or supported by blatant enthusiasts.

The profession as a whole have no time nor inclination to prove by practical application the false claims for every new "panacea" for human ailments sprung on the field of action by the giant of commercialism. Not trying to be exact, we are safe in saying the therapeutic value of electricity has been recognized for many years by a few faithful men.

The very fact that it has not been driven out of the field by reason of its being almost monopolized by quacks argues much for its merits. At the present date electricity does not go begging.

It has established itself. The conservative physician and even the surgeon who concedes everything grudgingly, and whose faith in whetted steel is equal to that of the apostle Peter, who, like some of our latter-day statesmen, believed in defending Christ with the sword, are opening their eyes to its wonderful achievements. There is now no danger that its value will go unrecognized, but rather the contrary.

Enthusiastic friends are falling over each other claiming for it powers and possibilities far beyond its practical present attainment.

Humanity will not suffer from the criticism of electricity. It has come to stay this time. Its utility can be easily demonstrated. No man nor set of men has a monopoly on its therapeutics. What it has done in one man's hands it can be made to do in another's.

In my hands it has done all that is claimed for it, while on the other hand I have been able to accomplish results that have more than met my most sanguine expectations.

The literature of electrical therapeutics is ample; indeed, so profuse that it is positively confusing as well as many times

*Read before the Hogen Medical Society, Oct. 1, 1903, by C. S. Roberts, M. D., of Lamar, Mo.

misleading. As most of said literature is so recent, to undertake to compile the best thought on the subject would be wasting your time, and to offer theories and individual opinions would be entirely premature.

So I have concluded to offer you no literature, no elaborate theories nor individual opinions, but actual experience, at the same time warning that it lacks the accuracy of maturity.

As I shall relate nothing but facts, I trust they will fall on good ground and bring to my professional brethren an hundred fold.

My experience in electro-therapeutics has been limited to the "galvanic" and "faradic" currents, the static machine with the "Roentgen" ray attachment.

When a man invests from $600 to $1,000 in electro-therapeutic apparatus he naturally expects returns of a substantial nature pretty soon thereafter, or contend with a very stubborn and stinging disappointment. I can truthfully say that I have, from a financial standpoint, been many times repaid, professionally I am satisfied, and from a purely scientific view I have been delighted.

You will note that all that has preceded has been of a general nature; from now on I will endeavor to be more specific and practical.

Much can be said of static electricity. It is a genuine stimulant and nerve tonic and a very powerful adjunct to the ordinary medical reconstructives. Some forms of rheumatism cannot only be benefited, but symptomatically cured with static sparks, sprays, massage and general electrification. Many forms of neuralgia, whether of recent date or long standing, which we all know have given us considerable trouble, will yield to this form of electricity in a surprising manner, and in some cases we are justified in using the old "hackneyed" phrase, it acts "like magic."

Constipation has almost ceased to be a source of revenue to the regular practitioner; what can be made very remunerative to the profession has fallen, almost body and soul, into the hands of the patent medicine vendors. It has gone on from bad to worse until now it takes several carloads of pills daily to insure the morning purge to this great American republic.

This need not be so, for with a good static machine and a simple understanding of its currents 95 per cent of these cases can be safely, painlessly and permanently cured and put from $25 to $35 into active circulation per "capita."

Prof. Neiswanger of Chicago contends that static electricity will permanently cure select cases of "Bright's diseases" and diabetes mellitus. The theory upon which he bases this claim is that said diseases are of purely nervous origin. Be this as it may, it is an established principle that static electricity is a great equalizer of functional energy, and while I cannot claim a cure in any of these cases or conditions, I have been able to stop the destructive advance, favorably modify most of the symptoms, and this to such a degree that I firmly believe in the near future that the consensus of medical thought will be in concurrence with Neiswanger's opinion.

In discussing the therapeutics of static electricity, or more properly speaking, the static machine, the most wonder-inspiring feature of this truly wonderful mechanical product is the Roentgen ray.

Prof. Crookes who perfected the vacuum tube which bears his name and has immortalized him, made it possible for the celebrated Roentgen to give us the greatest physical phenomenon catalogued in the startling achievements of the last century—viz., the Roentgen, or what he called the X-ray.

By the use of the Roentgen ray we are able to actually see some of the hidden mysteries of the living body, photograph dislocations and fractures and locate foreign bodies in the human body, which as you can readily see will aid us in more accurate diagnosis and sometimes simplify grave operations. I heard Prof. Gorden G. Burdick of Chicago say in one of his to me ultra-scientific lectures that he had been able to so accurately locate a shoe button which had been sucked down, or rather forced down, into the lungs of a child that the surgeon who had been called in was able to remove it, with a very simple and almost bloodless operation. I mean that the surgeon removed the button and not the child, as is too often the case.

This is all due to its physical properties, but its importance is accentuated very greatly by reason of its chemical property.

That it has a direct and positive chemical effect on tissue, whether normal or abnormal, no one can deny. That it can be so manipulated and applied as to be converted into a therapeutic agent of profound and far-reaching effect has been several times demonstrated in my humble office, and abundantly proven by the truly scientific on both continents.

Far be it from me to boast in even a business way, and much less in the presence of my professional brethren, whom I believe in the main honest seekers after truth, but I have seen in my own experience within the last two years lesions of decided malignant character and tendency stop their destructive process, the pains cease and slowly but surely decrease in size, finally disappearing entirely, leaving a soft, elastic cicatrix, which has shown no disposition to return. These have all been surface lesions, where a direct exposure could be had without intervening sound tissue, but we are giving it a test in deeper lesions and our results are giving us encouragement for further trial.

The surface lesions in which we have had most satisfactory results are "lupus," "epithelioma," "eczema," "acne" and some other skin eruptions that I am not able to classify.

The X-ray dermatitis, which is, according to our experience, almost essential to success, is sometimes a matter of no little consequence and makes one feel not at all comfortable as the course that it runs is exceedingly variable, and actual practice has demonstrated that the ordinary treatment used in other forms of dermatitis and ulceration of the skin are not only useless, but actually harmful.

We now have a patient under treatment for what has been diagnosed by three other physicians as pulmonary tuberculosis, and there are to our best judgment strong indications of that condition. She has been under treatment of X-ray exposure for ten to 15 minutes daily until reaction is evident, then every second day for four weeks.

She has now no evening fever, her appetite has increased 50 per cent, the chest pains which greatly interfered with her sleep have almost entirely gone, the cough has gone and weight increased, and her general condition and appearance improved in a marked degree, and this with no medicine, the

X-ray exposure alone. We do not know that this will hold good until complete recovery is reached, but we are hopeful and think that we have grounds for same.

The long-abused faradic and galvanic currents have gone through the fire of charlatanism and are rapidly taking the place to which their merits entitle them. Strange as it may seem, these currents so potent for good have been, with few exceptions, for more than half a century in the hands of men who knew naught of pathology or therapeutics and would be puzzled to distinguish between a gut and an artery.

Notwithstanding the disgust with which it has been covered by reason of the above condition of affairs, thousands of honets and ethical physicians have them in their offices in daily use.

Many of the pelvic disorders which we meet every day are due to derangement of the nerve supply of that hotbed of disease and the stimulating and toning effect of electricity, which works such happy results when properly applied, are in easy command of any medical student who will so apply them.

The fact that the bi-polar vaginal electrode, faradic current applied 15 to 20 minutes every other day will effectually cure a great majority of dysmenorrheas and ovarian congestions can be explained on no other grounds than that above stated. In forms of this trouble due to obstructions and infantile uterus the bi-polar vaginal will not be sufficient, but the intra-uterine electrode will be called for.

I thoroughly believe that if galvanism and faradism is exhausted no case of dysmenorrhea or amenorrhea need go unrelieved.

In displacements, ulcerations and catarrhal conditions, tampons, pesseries, carbolic acid and iodine applications are far surpassed by the easy, clean, painless and efficient massage of faradism, alternating current or the astringent and healing as well as antiseptic effects of oxychloride of copper secured and driven into the diseased tissue and covered over an inflamed and maturating surface by electrolysis.

One of the most prevalent and distressing sequela of constipation is hemorrhoids, which rapidly passes from a symptomatic condition to a pathological one, and while it cannot

be classed with malignant diseases, it seldom shows any disposition to get well itself.

If chronic constipation stands at the head of minor ailments, then surely hemorrhoids is a good second. The knife is the most rational and most radical remedy yet known, but we know that the dread of being "cut on" has driven its thousands away from the surgeon and condemned them to a lifetime of "pile cures," anodyne ointments and the world-renowned "Buckeye" worn in the pocket and other "hoodoo" remedies.

Galvanism will work a radical cure in a great many of these cases without pain, and one so treating these troubles will find himself intrusted with a large number of patients who would not even consult the physician whose only resort was the knife.

Some of the prettiest work that electricity can be made to do is in orificial stricture, whether spasmodic or permanent.

Dr. Robert Newman of New York, a thoroughly scientific physician and a systematic observer, publishes a list of 2,500 cases of urethral stricture, the documentary evidence of which has been investigated and found correct, in which he has wrought a permanent cure without a single death, and this with electricity alone. I doubt seriously whether any cutting man can even approximate such a record.

We have met with decided success in the reduction of strictures by following Newman's methods.

The time that reasonable patience grants me in this paper forbids that I should discuss all the ailments in which I have applied electricity successfully. In order to forestall a misunderstanding, let me repeat I have met stinging disappointments along the way where I have had reason to expect success, which teaches us that electricity, like all other agents in human hands, has its limits. No more so, however, than medication and surgery.

There are many things which electricity will not do. It will not remove a pus tube, a cystic tumor or repair a lacerated cervix or torn perineum or amputate a limb; however, it is calculated to do less harm than any powerful agent in the hands of medical men.

No one more fully realizes than I the lack of graceful literary arrangement of this paper, and the smooth marble finish of scientific dignity characteristic of a scholarly thesis, but in the absence of these high qualifications I give you the next best that I can give—viz., actual, everyday experience, "hot from the press."

C. S. ROBERTS.

COMMENTS.

We think the author is too enthusiastic in his statement of the efficacy of galvanism in the treatment of hemorrhoids and urethral stricture. He is not the only electro-therapeutist who disagrees with the surgeons on this point. Our columns are open to reports of work done. Unquestionably galvanism has been abandoned in great part by rectal and genito-urinary specialists in the treatment of these conditions.

THE TREATMENT OF TUBERCULOUS DISEASE BY ELECTRICAL METHODS.

(Abstract of a paper by Chisholm Williams before the Electro-Therapeutic Sub-Section of the British Medical Association.)

Of the 43 cases of pulmonary tuberculosis reported by the author in 1901, but 3 have died, the immediate cause of death being respectively, pneumonia, tuberculous kidney, and lardaceous disease; the rest are still living. It was found that the patients increased in weight; appetite and digestion improved. During the treatment the temperature of the patient uniformly rose, the rise depending upon the strength and duration of the treatment. Night sweats increased at first but gradually disappeared. The number of bacilli in the sputum increased early in the treatment but later on formed clumps, became short and stumpy, took a stain more readily and later in the treatment began to decrease. The disease has been arrested when the patient can take daily treatments of half an hour or more without showing a rise of temperature during the treatments.

High frequency currents when applied to tuberculous guinea pigs produced an inflammation around the pulmonary foci. After the subsidance of the inflammation, the lung is clear of bacilli.

The author also spoke of his experience with lupus. He claimed that the Finsent treatment, although very efficient, was not superior to other methods. He had employed the high frequency currents in the treatment of this disease with marked success. In tuberculosis of other parts he had combined the high frequency treatment with the X-ray.

In the discussion which followed, some operators did not report so favorably for the high frequency application.—Abstract from Medical Electrology and Radiology.

Editorial.

As we go to press reports come from the meeting of the American Roentgen Ray Society at Philadelphia that papers of unusual value were given. The discussions were often lengthy and valuable because they gave the clinical experience of operators in widely separated parts of the country. A full report of the meeting cannot be given in this present issue, but it will follow in subsequent issues. The following is a list of the officers elected for the ensuing year:

President—Dr. James B. Bullitt, Louisville, Ky.
Vice Presidents—Dr. John B. Murphy, Chicago.
Dr. Roswell Park, Buffalo, N. Y.
Dr. Chas. L. Leonard, Philadelphia.
Secretary—Dr. Russell H. Boggs, Pittsburg, Pa.
Treasurer—Dr. Weston A. Price, Cleveland, O.
Executive Committee—Dr. W. W. Johnson, Rochester, N. Y., Chairman.
Dr. Preston M. Hickey, Detroit, Mich.
Dr. Kennon Dunham, Cincinnati, O.

The next place of meeting will be selected by the Executive Committee. Several cities are under consideration, notably St. Louis and Cincinnati. A number of the members appeared to favor the latter city.

MINUTES OF THE MEETING OF THE CHICAGO ELECTRO-MEDICAL SOCIETY.

Held in the Rooms of the Illinois School of Electro-Therapeutics, November 24, at 8:15 P. M.

The meeting was called to order by President Burdick. The minutes of the previous meeting were dispensed with. On account of there being so few of the actual members present, it was also thought advisable to defer the election of officers until the next meeting of the society. A motion was made and seconded that H. H. Harwood act as secretary pro tem.

Dr. Stewart read a very interesting paper on reports of cases treated by the Oudin resonator, which was extremely interesting. The paper was discussed by Dr. Burdick. Mr. John McIntosh then exhibited the apparatus giving a thorough demonstration of same. A motion was made by Mr. McIntosh and seconded by Mr. Friedlander, that a committee be appointed to work up an interest to increase the membership of the society. President Burdick appointed the following committee: Mr. John McIntosh, Mr. Robert Friedlander, Mr. A. B. Slater, Dr. C. S. Neiswanger, Mr. H. H. Harwood. This committee to make some definite report by the next meeting.

The three following names were recommended for membership and were duly elected members into the society: Dr. H. J. Stewart, Dr. W. T. Stewart, Dr. J. T. Lave.

A motion was made by Mr. Slater and seconded by Friedlander, that a resolution be put on record thanking Dr. Stewart and Mr. McIntosh for the exhibition of the Oudin resonator high-frequency apparatus. The motion was unanimously carried.

A motion was made by Mr. McIntosh and seconded by Mr. Slater, that the next meeting be held on Tuesday, December 22, at the same place. The motion was unanimously carried.

The meeting adjourned at 10:15.

HYPERHIDROSIS AND ANGIOMA TREATED WITH THE X-RAY.

The following are very interesting cases reported by J. T. Dunn, Louisville, Kentucky, in the International Journal of Surgery.

Hyperhidrosis. In the treatment of this condition, as well as that of seborrhea, it is necessary to produce the reaction just as for the removal of superfluous hair, and continue this reaction by short, repeated treatments until the sweat follicles have been entirely destroyed. It is well to call attention to the fact that in treating cases of hyperhidrosis involving the palmar surface of the hands, it is necessary to be exceedingly cautious, as the reaction is unusually easily produced and pain is very severe in such cases. I have at times noted an unusually severe reaction, which has caused the patient considerable pain and myself no little uneasiness as to the ultimate result. It is my experience that reaction appears after six or eight treatments of ten minutes each when applied to the palms of the hands, and on account of the density of tissues involved, pain is severe if the reaction is excessive.

Case 4. Miss G., affected with an excessive sweating of the palms and fingers, required only six or eight treatments to effect a marked reaction resulting in considerable pain and swelling which continued for several days, but finally subsided, leaving the hands free from moisture. As, however, she did not continue the treatment the sweating again made its appearance. Upon her return she resumed the sittings and again the reaction was established, and continued treatment has resulted in a satisfactory drying of the parts.

Case 5. Miss P., excessive sweating of the palmar surface of the hands and fingers which was very disagreeable in handling papers, etc. The hands were exposed to the rays for about six minutes until six treatments were given, when an acute dermatitis followed in which the epidermis of the palms was thrown off. Atrophy of the sweat follicles was the result of this one series of treatments and the patient's hands are at present in good condition, though more than a year has elapsed.

Case 12. *Angioma.* Miss P., deep wine mark, involving almost entire right side of face. To make a test of the time and intensity of treatment required to cause a removal of this condition, I determined to expose only a very small portion and note the effects produced. A place upon the right temple was chosen and a metal mask, exposing a spot the size of a dime, was placed thereon and a series of sittings, numbering fourteen in all, were given, requiring one hour and fourteen minutes, at which time reaction began and treatment was discontinued. In about four weeks all evidence of reaction had subsided, and the spot thus treated had assumed the color of natural skin, the pigmentation having entirely disappeared. (American Pract. and News, Oct. 1, 1902.) Having thus tested the length of time required and the amount of reaction necessary to effectually destroy the discoloration, I enlarged the opening in the mask sufficiently to expose one-half of the entire forehead which was affected, also a portion of the nose. I realized that it was necessary to proceed very cautiously in treating this portion of the forehead, as I was aware of the fact that it was possible to injure the brain by pushing the treatment too vigorously; consequently, the treatments were given with a very soft tube. These sittings were of short duration, consequently the reaction did not develop until something like thirty or thirty-five had been given, at which time treatment was discontinued to await results. It is now about four months since she received her last treatment and still there are some indications of reaction, though very faint. The result upon the discolored area is that it has been almost entirely destroyed. It is very nearly the color of the natural skin, though to my dissatisfaction and the dissatisfaction of the patient the surface of the treated area has a glazed appearance. I do not doubt that the discoloration or wine mark can be removed, but for its removal such an amount of reaction is necessary as to destroy the natural appearance of the skin, leaving it smooth and shiny.

A CASE OF SCIRRHUS OF THE RIGHT BREAST.

Mrs. E. P. L., aged 82 years, came to me the fifteenth of last December with an inoperable scirrhus of the right breast of about three years' standing. This patient had been using an advertised, guaranteed, so-called cancer cure until the condition became so advanced that the realization was forced upon her that relief must be obtained quickly if at all.

The case presented a most extensive involvement of tissue, the whole right chest wall being implicated. There was an ulcerating area of about two and one-half or three inches in diameter, which with the infiltrated tissue about it, was firmly adherent. The lymphatics of the right arm were extensively involved from the axilla nearly to the elbow, subclavicular and cervical glands were indurated, hard and prominent, a mass presenting just above the clavicle the size of an egg; in fact, the whole condition indicated a most desperate state of affairs, in which, I believe, there was absolutely no hope of staying the progress except through the application of the X-ray.

Semi-weekly treatments have been given with a German tube of high penetrating power, the ray being generated from a static machine. Length of treatments varying from ten to thirty minutes, distance of tube from patient varying from two to twelve inches. The first few treatments were given without a screen or other protective and were directed to the glandular involvement of the arm, axilla, cervical and clavicular regions, leaving the ulcerating area as a central drainage point. The pain and odor rapidly decreased and entirely disappeared by the time four or five treatments had been given. The indurated glands rapidly softened and there was a free watery discharge at the point of ulceration, taking the place of the previous bloody pus discharge. When the treatments were directed to the central mass a lead shield was used, and while improvement was very slow it was evident. Treatments were guardedly pushed, and with caution the irritation was advanced to the point of causing a desquamation without a deeper X-ray burn (the condition presenting the appearance of a sun-burn), since then improvement has been more rapid. This case is still under treatment and improvement is progressive. The indurated

glands of the arm, axilla, neck and clavicular region have entirely disappeared; the involvement of tissue appears to be restricted to the immediate vicinity of the ulcerated area, which is now about one and one-fourth or one and one-half inches in diameter and freely movable; the depression of the nipple is disappearing and there is every evidence of complete healing.

While the history of this case is necessarily incomplete at this time, I have reported it to show what can be done in some cases of one class of apparently hopeless conditions.—*New England Medical Gazette.*

DEATH FROM X-RAY BURNS.

A letter was written to the Medical World by a physician from Springtown, Texas, describing an X-ray burn produced by a physician living in a neighboring town. The patient was in fine health excepting a chronic eczema and the X-ray was given to relieve the itching. Details are not given regarding the kind of tube used, but it was energized by a static machine. After several exposures, a burn of about 10-12 inches on the patient's back was produced. He was also burned on the left portion of the abdomen for a space of 4x6 inches and over the left lumbar region 4x8 inches. The skin sloughed off, leaving a red, raw, discharging surface. At times the itching was so severe that nothing but full doses of morphine could control him. After about three weeks' suffering, delirium set in, which continued for about five days, resulting in death. Able counsel was had and the greatest care taken to keep the surfaces aseptic and to support the general system.

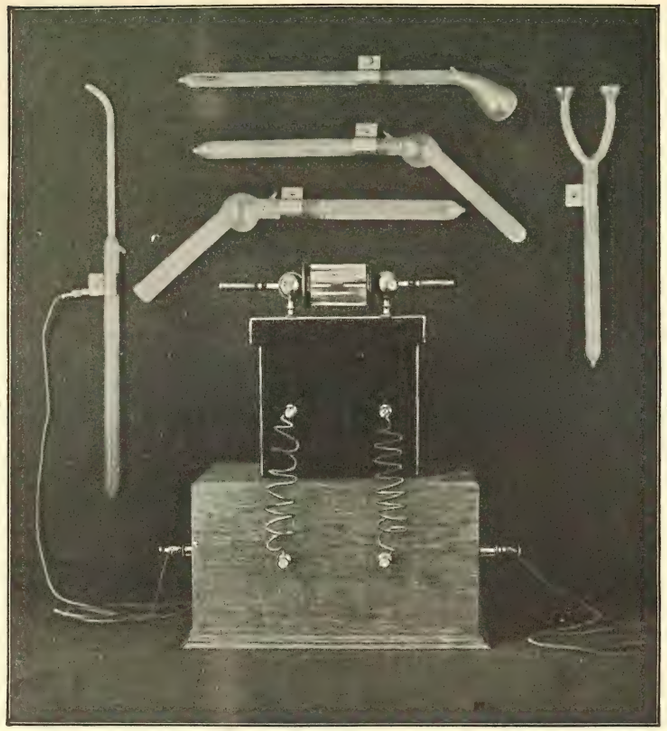
Comments.—The writer is quite correct in feeling that the X-ray is a dangerous agent to put in the hands of an inexperienced operator.

BOOK REVIEW

High Frequency Currents in the Treatment of Some Diseases. By Chisholm Williams, F. R. C. S., Edin. Published by Rebman Co., New York.

The Ouidin apparatus is just being introduced into this country although it has been in extensive use for a number of years in France. The author of this book is an English physician who has used the high frequency current for a number of years.

The book describes the apparatus for generating these currents, shows the principles upon which they work, and describes the different methods of applying the current. The subject is handled in a very satisfactory manner. The text is well illustrated by diagrams and pictures of the apparatus. The book is of great value to the electro-therapeutist. The author shows a commendable conservatism in regard to the value of these currents, and one feels that he is a conscientious observer. The fact that the book is already widely quoted speaks for its excellence.



For internal and external treatment of infectious and malignant diseases, physicians agree that the best results are accomplished by using a

High Frequency Apparatus

Complete Outfit... High Frequency Coil . . Condenser, Spark Gaps, and Dr. Snow's Set of Vacuum Electrodes **$50.00**

Highly Efficient with Static Machine or Induction Coil

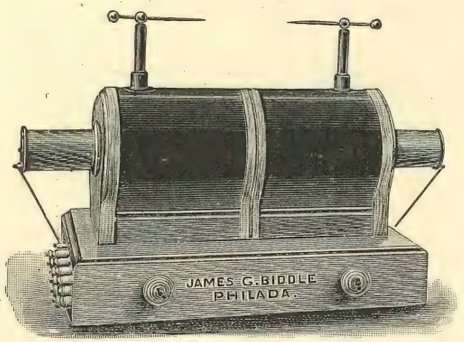
WRITE FOR PRICES.

SAMUEL T. HUTTON, Room 511, 39 State Street, CHICAGO

Manufacturer of X-Ray Coils

A New Catalogue

of X-RAY APPARATUS



We have just issued a comprehensive illustrated catalogue of **"Roentgen" Induction Coils and other X-Ray Apparatus.** It has been prepared at large cost, and we wish to send a copy to *every physician* who is interested in the subject.

Write for it—Catalogue No. 481.

The Roentgen Manufacturing Co. makes an unsurpassed line of high-grade Induction Coils with secondary spark ratings up to 40 inches; with self-starting mechanical or electrolytic interrupters.

"Roentgen" Coils operate on direct or alternating circuits of about 100 volts, or on 20 volts direct current as delivered by storage battery or motor-generator.

We supply complete outfits for fluoroscopic, radiographic and therapeutic use. Also X-Ray tubes for coils or static machines.

Our permanent working exhibit (with photographic dark room) should be inspected by possible buyers. We show just what the apparatus *will do*, and demonstrate the methods of procedure, from "starting" the coil to developing the radiograph.

JAMES G. BIDDLE

General Sales Agent

1112-1114 Chestnut St., PHILADELPHIA

American Electro-Therapeutic And X-Ray Era.

VOLUME III.

January to December, 1903.

F. W. BUTTERMANN, M. D., EDITOR.
C. H. TREADWELL, B. S., MANAGING EDITOR.
R. FRIEDLANDER, PUBLISHER.

AMERICAN ELECTRO-THERAPEUTIC AND X-RAY ERA.
504 MASONIC TEMPLE,
CHICAGO, ILL.

BRANCH OFFICE: 1507 Flat Iron Bldg.,
New York.

Index of Volume III.

A

B

C

D

E

F

G

H

American Electro-Therapeutic and X-Ray Era.

I

L

M

N

O

P

R

S

T

U

V

X