

From notes first published
in 1940

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1945

Revised and enlarged in 1955

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1959

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Printed in the U. S. A.

PHOTO ACTINIA OXYGEN THERAPY BY ELECTRIC REACTION

Oxidation is a process of life. The living cell is not only the smallest independent unit of biological structure but it is also the smallest unit capable of maintaining complete metabolic activity. The metabolic activity of the cell is an expression of the dynamic inter-relationship of chemical and electrical reactions, many of which are concerned with the liberation, interchange or utilization of free body energy. Moreover the great majority of the reactions are controlled and co-ordinated by specific colloidal catalysts called enzymes, functioning in heterogenous media, in which electrical reactions of the cells of the body play a predominant role and bear a close relationship to intra-cellular oxidative catalytic functioning of the body as a whole. It must be remembered that to make the life producing cycle complete an important factor is oxygenation and electrical stimuli of the adrenal and other glands.

Poisons contained in the cells of the body (Toxemia) accumulate when the oxidation processes of the body are seriously impaired. These poisons cause a disintegration of the tissue and blood protein and hinder or stop, depending on the extent of the toxemia all vital processes. It is factual knowledge that in a well functioning organism toxins in the cells are burned rapidly in the process of carbohydrate metabolism.

Restoration by chemical or electro chemical reaction of the proper metabolism or body chemistry

is a way to rapid recovery. The use of chemicals may, if the use be excessive, set up a counter detrimental reaction that can result in an improper balance of the body chemistry. Application of electrical currents of proper frequencies and ray treatment will not have this reaction.

To promote health fluorescent antioxidants must be removed from the cells. This is accomplished by the establishment of a "chain reaction" in which oxidation catalytic reaction is set up by proper body chemistry and, in the case of electrical treatment, causing suitable catalytic oxidation. This catalytic oxidation becomes the reactionary agent and the fluorescent substance, the reactors whereby the toxin can be destroyed. The introduction of oxygen into the molecular structure of the toxins is equivalent to detoxification. That is why proper Photo Actinia Oxygen Therapy may prove so valuable when the antioxidants are destroyed and their retarding action on normal hexose oxidation is removed and there is a shift toward normal physiology.

Any region of the body can be traumatized and the circulation so injured that the area becomes the site for the reception of toxin. Faulty protein metabolism with its toxic end products lowers body resistance to disease entities, and no doubt can be a causative element in the stimulation of virus activity resulting in sickness and death.

It has been proven that after the first meal ingested by a newly born infant that the intestinal tract becomes contaminated and loses its sterility. After years of exposure to faulty diet and elimination with all its accompanying evils, it is only natural to

assume that the eventuality is intestinal toxemia and therefore enzyme deficiency. It is doubtful if true intestinal toxemia can exist if hepatic function in all its phases are kept up to par or as nearly so as reasonable proper contractions will keep them so. Even as allergy is another symptom of faulty liver functioning, so might intestinal toxemia be indicative of the same.

From what has been written on the electrical therapy discoveries which have for sometime been known as Cosray therapy, it becomes apparent that man is an electronic mechanism. In our study of death from shock, we hold that death is not due first to failure of the heart, nor the failure of the arteries, or of the capillaries nor the pooling of the blood in the large veins or any loss of any elements in the blood stream. The slow fading away of life from the organs is not due to an accumulation of poison in the blood, or to changes in the respiration or in the capillaries of the lungs. Neither is it due to fat emboli in the lungs or changes in the hydrogen-ion concentration of the blood. We believe it is due to excessive physical stimulation of the sensory nerves. No amount of trauma or physical injury in an area where the sensory nerves are blocked by various causes will cause excitation, depression or death. It is the excessive impulses causing the discharge of nervous energy that finally kill.

Or in other words, the depletion of the body electrical energy is the cause of death from shock.

Since all matter is electrical in nature, and since, in the final analysis, all energy is radiant and electrical energy, one must conclude that protoplasm is gen-

erated and operated by radiant and electrical energy. That protoplasm is a system of generators, conduction lines, dialectrics, and capacitors in the living cells for producing and holding body electrical charges. The actual current is generated by oxidation and for this reason no life can be maintained without solar radiance as an aid and support to living cells. When the body, by sickness, injury or other causes, cannot or does not utilize solar radiance, the proper application of electrical energy, radiant energy, and rays act as an aid in maintaining the body cell energy balance, until the body can carry on of its own accord. When the body is unable to utilize the artificial application of rays and frequencies, or if they are not the right rays and frequencies, their application is of little or no benefit. That is why we do not have, nor will we ever have a cure-all. The body must effect its own cure; all we can do is to try to help it.

The same body energy that effects fertilization and normal cell growth, also can, through normal influences, generate tumors and cancers. That is why the food we eat is of such great importance, and when the body does not get the proper food balance, sickness is the result. Also, if the body cannot utilize what it does get, then the application of electrical energy, through rays and radiation, becomes the best and, in some cases, the only method of restoring normal body function.

Pure water, pure air and proper diet are a prerequisite with proper electrical treatments to give the cells of which we are made a chance to restore the body to health. One cannot over emphasize the

value of proper radiant and electrical energy balance in the promotion of health.

The science of electro-biology has been neglected by those working in the healing arts and until a clear picture of electrical energy of a single cell and its essential value to all the cells and the whole body, and for that matter all life, is fully realized, or at least recognized by our doctors, they will be passing up one of their greatest assets and modality in the treatment of those who are entrusted to their care. The application of electrical energy to the body can never supplant the doctor, but he can get results through the application of radiant energy that is in harmony with cell life, which he can obtain in no other way.

Some additional interesting characteristics and results have been noted of the action of rays and frequencies on the human body. The chemical constitution of the body seems to be definitely affected by the rays and frequencies of electrical currents. It is known that the unit of both structure and function of the body is in a cell. The essential constituent of cells is protoplasm. Chemically protoplasm is a very complex aqueous mixture of substances, containing carbon, oxygen, hydrogen, nitrogen and small quantities of sulphur, phosphorus, calcium, sodium, chlorine, magnesium, potassium and iron.

The principal compounds of protoplasm are proteins, which furnish the main source of energy expended in functions. There are in addition carbohydrates, fats, water and inorganic salts. It is believed by some biologists that if we had the formula for the proper stereo isomeric associations of the elements and compounds of protoplasm, life could be

artificially produced; others assume an additional vital principle as a prerequisite of life. Be that as it may, many experiments have led us to give considerable credence to the thought that electrical rays and frequencies are the sonic of life and through this sonic, life has been maintained and prolonged for a time even after normal functions of life had naturally ceased.

Physically protoplasm is a granular semifluid gelatinous substance. It possesses properties characteristic of both solids and liquids. It is an aggregate of colloids and crystalloids. An organism is essentially an aqueous solution, holding in suspension colloidal substances of great complexity. Colloids exist in two states, a liquid or sol-state, and a semi-solid, or gel-state. There exists no short line of division between colloids and crystalloids; these terms designate phases or states rather than substances. Protoplasm is a sol; and since its fluidity is due to water, it is commonly classed as a pydrosol. It passes readily into a gel condition. In living protoplasm this metamorphosis is a reversible process. Agents which effect an irreversible gelatin of protoplasm tend to bring life to a standstill. Death is therefore a process of coagulation.

We have gone into the above to prove our point that the proper electrical action in the body has a chemical action upon the body; a direct metabolism. To accomplish this metabolism by electric action the frequency and rays must be of a sonic in harmony with the natural sonic of life and the electrical capacity of the body in micro farads.

If the frequency and ray applied to the body conveys the proper metabolism that the property of living protoplasm by virtue of which it can elaborate as is done from the food material, the complex chemical action of the rays and current will build up in the body these complex compounds which are necessary for the restoration of health and convert the same into kinetic energy for the performance of specific health functions that the body is in need of. Because the essence of reproduction is cell multiplication and living cell has the power of production of other cells like itself when properly fed, we need the application of the life-giving electric metabolism which will feed the living cell so that they may reproduce other living cells and burn out the dead cells which hinder the growth of healthy cells. Our electro therapy devices produce enzymes in the body through electro chemistry, a catalytic and oxidizing action in the cells and tissues, under which production diseased cells cannot continue to grow. In order to put over some of the points of proper electro therapy, we have in this paper repeated some statements by way of emphasis.

Therefore let us sum up the following factors that usually are present before body function is greatly impaired.

1. The presence of the causative toxin of the indicated disease.
2. The possibility of a virus or germ.
3. Protein toxemia.
4. Intestinal toxemia with enzyme disturbances.
5. Hepatic insufficiency.

6. Loss of tissue tone through adrenal and other glandular insufficiency.

A most careful physical should be given by a competent physician. Then if it is determined by the attending physician to be necessary a laboratory examination should be given each patient to determine the vital reserve and extent of the diagnosed disease and the damage to the tissues.

Often, supportive vitamin and other therapy is needed from the very start for the more serious ailments. So many times the attending physician falls heir to the semi-terminal case, with failing heart and respiratory embarrassment, the prodromal symptoms of which may have been overlooked in former physical examinations. Great controversy exists today as to the relative merits of the synthetic vitamin versus the natural vitamin. We do not wish to enter that controversy but as far as photo actinia oxygen electric therapy is concerned the physician must avoid the use of opium in *any* form, or any derivative.

By the stimulation of the cells of the body with electrical currents of frequencies which do not overheat the cells, circulation will be greatly increased, ozone and oxygen in the body and the process of oxidation stimulated in a natural way aiding in the elimination of toxemia. This is accomplished because where there is an abundance of oxygen or ozone, the living cells of the body seem to burn more sugars and starches and normal cell and tissue growth is the result. Lack of oxygen in the cells causes an accumulation of toxic poisons and the disintegration of tissue and blood protein. If the electricity applied synchronizes with the natural cell energy of the body,

the body itself becomes an actual part of the oxygen generator and photo-ionization is set up through the avalanche of the streamer formation of electrons from the corona discharge which enters the body from the electrical modalities applied. The result we have found is the healthy cells are protected from the diseased cells, and the diseased cells are given a chance to rebuild themselves or, if they cannot do that, they are given the chance through the process of electrolysis to pass off as wasted material through the action of the kidneys making room for healthy cells to take their place.

Life and death are very closely connected with electrical activity is reported by Dr. Robert S. Schwab of the Brain Wave Laboratory of the Massachusetts General Hospital Medical School. There are, according to this report, four types of body electrical currents.

Vision is of an electrical nature too, according to a report of W. R. Sicles of Columbia University, in which he states, "you eye works like a photo-electric cell," and that there is an electromagnetic "pull" in one's vision.

When the object is to restore health, to save life and suffering, why not use the method nature does which originates in the solar system and the universe. Again let it be remembered, life and body radiant energy are akin to each other and without proper radiant energy and electrical energy, life cannot be maintained.

It is a well-known fact that an injured or ailing life cell is negative in its potential relation to healthy

cell walls. The body must maintain a proper electrical balance.

Lipoids are essential constituents of all protoplasm and are found in the films which form cell membranes. It is the electric charge of the membranes which gives the cells their stability of structure.

Following up the results obtained in many cases by the application of "Photo Actinia Oxygen Therapy" through electrical and ray radiation treatments we are convinced that life and death are very closely associated with electrical phenomena. The central nervous system, the cells of the brain and of all the major glands and organs of the body are all activated by the harmony of the electrical balance of the body cells. If the electrical balance is correct, the cells are healthy, if not the cells and all the parts effected become sluggish and ailing and in time the whole body's metabolism and structure is effected and this finally results in failure of the system to a greater or lesser degree.

Not only is the radiant and electrical energy of the human body governed by the neuroglandular system, but radiant and electrical energy are diminished and even suspended by certain agencies that interfere with oxidation or with the infinitely delicate dielectric films of the cells that hold the electric charges. One of these agencies that interfere seriously is narcotics. That is why we have been so insistent that the use of narcotics be avoided when one is being treated by the Cosray electrical therapy and ray modalities. It has also been our findings that these electrical modalities have so relieved pain that the use of narcotics is not necessary in most cases after a very short time.

Our findings also show that these modalities, to a great extent, heal the damage done to living cells by radium and X-ray radiation. Also certain tubes have been developed which have been found to be useful in healing tissues and restoring the blood injured or destroyed by various radiation, including those of heat and those associated with rays emanating during the disintegration of radio active substances and nuclear fission radiation.

Historical background of radiation burns and radiation sickness show that there have been schools of thought that were to some degree opposite. There were X-ray martyrs as also those from radium burns in the early years of these discoveries.

There are some today who exhibit atomic radiation hysteria, but the fact remains that for every ill there nearly always has been an antidote.

The Yarom research has brought to light a great aid in the treatment of infra-red, alpha and gamma radiation burns.

It has been stated that in the final analysis all things are electrical in nature. If we go a little further, we may assume without danger of contradiction that all things sum down to rates of vibration. Changing sand into glass, weed and cloth into paper and many other changes of a product's rate of vibration. This is what is taking place in material emitting radio active atoms during nature's spontaneous disintegration or change of radio-active substances.

From vibrations below the audible spectrum into the audible range, on to frequencies up to 10K cycles to the frequencies used in radio communication and beyond including those in the upper quasi optical

region, which latter rays all come under those known as Hertzian Waves, we have no change of basic principle, only a change in rate of vibration. The "Tube" will deliver frequencies from a low B to three octaves higher to a higher B. The Piccolo ranges from a C¹ to D¹, yet they all include harmonics that we designate as A .B. C.'s, etc. So it is with all rates of vibration, Hertzian waves overlapping infra-red rays, infra-red overlapping solar rays including visible rays, ultra violet, X-rays, Alpha, Beta, Gamma rays and finally on to radiations associated with Cosmic Rays and into infinity. All matter has its own particular rate of frequency, rate of vibration, cycles per second, Angstrom units or whatever term one gives the phenomena, but still it is all a case of vibration. The universe is rendering its symphony of vibration and everything is a part of this symphony. In the laboratories of the universe, we find the uranium and radium A, B, C¹, D (radio lead) radium E. F, changing finally into lead; nature obtaining these changes by changes in the rate of vibration.

A healthy body composed of living cells is giving off rates of vibrations. When one brings living cells into the field of radiation from any source and that field of vibration varies too greatly from the natural frequency of the living cell, we "burn" those cells so exposed; be it from infra-red on to gamma or what have you. The results are the same. The living cell is injured and will deteriorate, and if the injury is great enough, the cell will die. Why, Because the cell has been caused to vibrate at the rate of frequency of the influencing radiation. If now, one applies a rate of vibration which will

counteract the damaging rate of vibration and restore the rate of vibration by this new applied influencing rate of frequency, the cell can be restored to its normal frequency. This is especially true if the frequency is restored before disintegration and decay set in.

The "Yarom" ray will offset damage done to living tissue by those radiations, i.e. infra-red burns, radium, X-ray and all nuclear radiation if applied soon enough after exposure and will, even after considerable time has elapsed since the radiation damage was sustained, rebuild and restore the damaged cells and assist in rebuilding new cells, keeping down infection, assist in the sluffing off of dead cells and relieve pain. It will also assist in controlling the white and red cells of the blood. This mode of treatment is also valuable in the treating of those parts injured or "burned" in X-ray and radium therapy. This means much of the detriment of these radiation treatments is offset with no offsetting of any of the values such radiation therapy may have had upon the body.

In order to maintain the acid-alkali balance between the nucleus and the cytoplasm of the cells of the body, that is the electrical potential which is essential to life and furnished immediate driving energy of the process of life itself, it is necessary to find a means of artificially establishing this balance when the cells of the body no longer naturally maintain balance. We have found that the application of electrical frequencies and rays of productive rather than destructive wave lengths will greatly assist in the maintaining of the electrical potential balance which is required to sustain health and energy. We are

also convinced that the electrical potential within the cells of the body is maintained by oxidation and variations in oxidation accompanying variations in body temperatures and the lining up of waste material.

With this aim in view we devised, after years of experimentation, electrical equipment which energizes the human body by Photo Actinia Oxygen Therapy brought on by electrical reaction.

Organisms are operated by electricity. The body electrical impulses, maintained by oxidation, sustain life and increase the energy in protoplasm. If this excitation is too greatly lowered the final result of this loss is death.

The above presents a fundamental fact. While blood transfusions are most effective in the immediate treatment of shock, the effect gradually diminished and shock will deepen into prostration and finally unconsciousness and even death; altho the patient may be filled with blood and saturated with atmospheric oxygen yet the patient's oxidation fails when his body's electrical impulses fail. In other words, when a certain depth of shock is reached, atmospheric oxygen is not ionized and without ionic action life cannot be maintained.

When oxygen is not ionized there is such an impairment of normal function of or within the protoplasm as to produce exhaustion and shock. Cosray Electric Therapy modalities theory is to cause oxygen ionization through proper balance of electrical currents and rays. In our research we turned to physics to determine the proper application of radiation and electricity combined with the structure of

the living cell. One may artificially grow the human cell for much of this investigation.

Whenever protoplasmic energy is decreased every organ, tissue and cell of the living body has a lowering of resistance to infections and ailments of every kind. The protoplasm of the human cell is continually battling against the protoplasm of bacteria. It is our theory that the energy of the body that causes growth and function is clearly electrical.

The role electricity plays in living organisms cannot be over estimated, the bipolar (negative and positive) function of the living cell being a chain which makes up the battery of the living body. Because the cell is both acid and alkaline (clearly an electrical action) from what type of medication could one expect better results than from electrical therapy in "recharging" the cells and establishing proper balance between the nucleus or positive element and the cytoplasm or negative element whereby a greater rate of oxidation in the cell may be maintained?

As electricity passes through the nuclear membrane the electrical tension increases through the process of oxidation and one has an oscillatory electrical potential. This is a process of life and may be kept at a proper oscillatory rate by the application of electrical modalities energized by a multiplicity of rays and frequencies, by a combination of inductive, conductive, capacity and radiation application of the proper rays and frequencies of electric currents.

By the application of proper electrical and radiation treatment we have demonstrated that reconstruction of cell form and resumption of function

are dependent upon the restoration of potential difference between the nuclear membrane and the cytoplasm or negative element of cell life. The above effect can be demonstrated in any medical laboratory.

The application of destructive electric current and rays can, by this same test, prove the destructive powers of the wrong application of injurious potentials and frequencies as well as radiations.

All protoplasm depends for its survival and function upon maintaining a proper electrical potential difference in its cells and in its entire mass. Electric energy can assemble and operate protoplasm. As oxidation does not take place within the mass of the cell but within a definite unit, one may assume the units could be considered the sources which supply the energy of the organisms of the body. When this action is retarded by illness or injury the application of restorative electrical potentials and radiations are valuable. Wrong potentials, frequencies and radiations may result in undesirable results or even serious injury.

One must recognize the application of electricity and or radiations to the cells of living organisms can be dangerous and therefore this science is one which requires an understanding of living organisms and their relation to electrical currents and radiations. Without this knowledge one may find the use of certain rays and frequencies very harmful. There are wave lengths that may kill the cells or delay their growth and that, if the purpose is to stimulate cell growth, is very dangerous.

However there are methods whereby rays may be "screened" and their detrimental effects elimi-

nated and their healing effects utilized. Cells may be revived by certain light rays, some of which are beyond the visible light rays. The effects of gamma rays and X-rays may be neutralized and their deteriorating effect offset just as can be done with infrared rays by the Yarom tube.

It is not the long wave heat radiation or diathermy radiations which build up protoplasm but the energy which generates the electric charges and currents that operate protoplasm. To build an organic compound it requires high frequency radiations by knocking off electrons, changing their paths and thus altering the charge of the atom. High frequency radiations give chemical affinity to atoms. To build organic compounds high frequency currents are essential.

Internal organs can best recover from ailments when they are "fed" proper radiations from a suitable modality, similar to letting sunshine in on the organs of the body, endowing them with energy as if from the sun. The mechanism of memory reason and imagination depend upon body electrical potential. Body electrical potential is, in part, dependent upon the rate of the emission of electrons from atoms of the body in the process of ionization and the process of ionization is in part dependent upon the impacts of high frequency saturation in the living cell. When certain glands, thyroid for example, do not fully function or do not receive the proper help from the adrenal glands, the thyroid hormone loses much of its specific effect. Likewise in myxedema, adrenalin loses its specific effect. The result is faulty electrical potential and improper development and

operation of the organs and faulty metabolism of the body, with other failures. The proper electrical balance which may be artificially maintained, will result in a corresponding increase in the chemical and electrical properties of the protoplasm.

The human body has definite rhythms of activity and exhaustion as has an electric battery and it has similar cycles of activity and rest. There are certain phenomena that may be used to sustain the validity of the conception of activity and rest. The life force of animal or man is electrical energy. When an animal is kept awake but given food and drink and physical and psychic repose, the animal inevitably dies, usually within five days. The behavior of the life cells is similar to that of an electric battery, both the life cells and the battery gradually "run down" and finally come to a standstill. Life ceases, there is no struggle, the mechanism of life (electric potential) has run down, it has reached equilibrium. Energy has departed and the circuit is dead.

This is not the fact in case of sickness, for in sickness certain organs may maintain their charge more than others, therefore life in some organs ends before they have given up all their energy. Charging the human or animal body from an outside source by the proper electrical energy will greatly aid in maintaining life. The delicate and complicated electric mechanism of animal and human life can be depolarized by sleep or by the application of a "charging energy" just as can an electric battery. One cannot continue to polarize the body without serious results. This can be done by lack of sleep as well as through disease. Electrical charging can only restore the liv-

ing cells, just as a normal being cannot depolarize (sleep) himself to death. Electrical charging of the living animal cells can only be accomplished by electrical currents and rays of proper frequencies which will balance with the natural charge of the living animal cells.

Depression and death follow asphyxia, hemorrhage, excessive cold, insomnia, excessive doses of anesthetics, narcotics or cyanides. The extent of the depression produced by each of these can be estimated accurately by measurement of body electric potential. Electricity is the energy that drives the organism. The electric potential is an important factor in the distribution of electric energy in protoplasm. The symptoms of excitation, depression and death are the external manifestations of the changes in the electric potential of the organism.

In the application of electric energy and radiations the modality must be one which will "act" at the point of saturation for, as in the excessive activity of the thyroid-adrenal sympathetic system which brings about the genesis of excessive radiant and electrical energy and induces detrimental results, so can the improper application of electric therapy of improper rays and frequencies bring about detrimental results.

Proper electrical therapy requires special modalities for the various organs of the body, it's cells and protoplasm. One cannot guess, one must know which rays and frequencies are best for the heart, liver, muscles and every other part of the body; you must know their natural rate of vibration.

The organic, nitrogenous amorphous matter which makes up the greater portion of the organic substance of living matter, exclusive of the cell walls, is called protein. In animals, including human beings, by far the greater part of the tissue solids are generally protein. It is then obviously important that the electrical charge of proteins and the radiations emitted on the oxidation of the nitrogenous constituent of all protoplasm be maintained at a proper level. Nature cannot always do this. Therein lies the value of the proper application of the right electrical frequencies and radiations to assist nature in maintaining the proper rate of oxidation in establishing and maintaining the electrical potential balance required to maintain health and energy.

When radiant electric energy decreases and finally fails in death there follows a complete dispersion into space of the radiant energy still locked in the organic molecules, and the carriers of energy, the nitrogen, the carbon and the oxygen, return again to their natural position in the atmosphere or Cosmos from which they were once captured. The physical cycle is completed as the physiologic cycle is completed; an energy cycle and a life cycle have each run their course.

During the summer of 1940 on the requests of various doctors, a branch of the United States Government, and the public, the Research Institute, Inc., devised an electric therapy apparatus and certain tubes which were improvements over some electrical therapy equipment we had had designed and tested for several years with encouraging results in the treatment of various human ills. This had come

about through certain discoveries we had made and experimented with in electric currents and vibration (frequencies) from those of very low frequencies to those of ultra high frequencies and rays beyond the light rays. Also those rays associated with the disintegration of radio-active substances.

In 1941 we wrote "There is a great deal of work to be done with our medical equipment in order to determine to what extent it will effect cures of the various diseases; what diseases it will cure and what diseases it will not cure. A thoroughly trained medical research scientist could very profitably spend his time experimenting with this equipment to so determine." Which diseases it would "cure" and which it would not was a reasonable question at that time; only so, however, because we did not, at that time understand the functioning of these modalities and their effect on the human body nor the response of the human body to their reactions.

It soon was discovered there is an unlimited field of research to be explored by men properly qualified in electrical science to investigate the possibilities of rays and frequencies in the treatment of the human body. These modalities did not cure certain diseases or any diseases. What they did accomplish was to stimulate production of red blood cells, muscle stimulation, stimulate venous and lymph flow, stretching of tissue, reflex stimulation and a general stimulation of the body so that the body might effect its own cure.

- ① Certain tubes were designed to kill germs, another
② tube to kill fungi, others to encourage normal cell
growth and to others to retard certain cell growth.
One tube assisted the body in restoring tissue so fast

that a person could burn themselves, and by treating the burned area with one of these tubes, the pain would leave in a short time. And by the next day one could hardly tell where they had been burned.

In reflecting on what may happen in the application of these modalities on the ailing human body (and the improved methods which will come through the years, judging from the great advancements made since 1940) one wonders if the body may not even be encouraged to rebuild its defective atomic structure. Remember we have discovered that these modalities do not cure of themselves; but so effect the metabolism of the body that the body may be helped to effect its own cure. Because the human body has within itself its own powers of reconstruction the present and potential value of these developments is beyond our present power of estimation and it is adaptable to be used on practically every type of human ailment.

This in no sense constitutes a cure-all only insofar as the human body possesses within itself the power to cure itself.

The laboratories of the Research Institute organizations should be looked upon (by all and especially the medical profession) as institutions that have and will continue to bring about inventions, discoveries, formulae, processes and aids to their profession; and not as something trying to take from them patients which they feel their training and experiences best qualify and entitle them to treat. Our work in no way should be looked upon by them as competitive. We have no such ambitions. Our aim is to help not

hinder in the search for better means of aiding suffering humanity.

In the course of these comments on our therapy work we may at times repeat some of our former statements in order to emphasize certain facts.

Some research is also being done to devise a testing method and an electronic device which will give a reliable test in the determination of cancerous conditions. It has been found that where the cancer has been wholly removed by surgery, the blood serum "under test" returns to the same texture, color and fluorescence as the blood from non-cancerous animals and humans. It has been determined this is not the case when the cancer has been treated with Gamma or X-Rays or nitrogen mustard.

The scientists of the Research Institute are carrying on extensive investigations in ultra sonics, artificial radio active substances, transmutation of metals and the study of rays beyond the light rays.

The Research Institute, Inc., is a Utah Corporation organized on a non-profit basis to carry on scientific research. All of the stock is held in trust and the officers receive no salaries and no dividends are paid to stockholders. Another field of research is electric and photo therapy and the study of the behavior of individual cells of the human body and their action in various growths and tumors.

Malignancy has been investigated from many angles to try to find out if it could be caused from a virus, from an injury to the cells and tissue of the body or from bacteria.

Investigations were made to determine the extent the sun and other light rays might play in the

injury or destruction of cells and tissue to form cancerous growths as also injury and poisons from coal tar products and other cancer producing substances.

Finally an electronic tube was developed which feeds into the body rays and electrical currents which retard malignant cell growth. It has been found that by making the human body a part of a corona regulator or ozone generator that the body will produce ozone and in the generation of the ozone by the body the very marrow of the bones, tissues and cells of the body will be saturated with ozone to the extent that the body will give off ozone for hours after the treatment has been discontinued. Thus saturation of the cells, tissue and all parts of the body with ozone will curtail the fast growing cells and tissues of malignancy. This curtailment is accomplished because where there is an abundance of oxygen or ozone, cells seem to burn more sugars and starches and normal cell and tissue growth is the result. Lack of oxygen causes another type of sugar splitting that causes a very dangerous growth of cells.

Cancer cells and other malignant cells and tissues are young, fast growing cells but unlike embryo cells they consume less oxygen than normal adult cells although they have their own method of sugar consumption and dangerous growth. This discovery of the Research Institute's scientists in 1938 lead them to reason that by the feeding or saturation of malignant cells with a great deal of ozone or oxygen these fast growing dangerous cells could be made to change over to normal cells and the tumor would disintegrate or dehydrate. Then by the stimulation

of the body and increased circulation by the Moray method of electric therapy of certain rays and frequencies of current rays the dead or useless cells will pass off as waste material. The weakened surrounding cells which have not yet become malignant or virus afflicted, will by this stimulation and increased assimilation of more oxygen or ozone in time revert back from slow breathing rapid dividing cells to more normal sugar consuming cells again.

Besides making a study of cancer the Research Institute has done successful work in many cases of tuberculosis and diseases of the lymph vessels. Some interesting results have also been had in the treatment of various forms of atrophy, including progressive muscular atrophy and atony of the stomach.

The Cosray discoveries in therapy are based on the therapeutic value to living cells of photo ionization of the cells and tissue and the photo actinia oxygen treatment of the cells and tissues as also the marrow of the bones. The Moray or Cosray devices also operate so as to create a diffusion in the electron avalanche which enters the subject under the corona discharge; a concentration of the space charge and photon production of the avalanche which is absorbed by the molecules or atoms of the subject.

In a unique way the Cosray tubes and appliances feed oxygen (ozone) and various rays and frequencies of electric current into the living body in such a way that the body itself becomes an actual part of an oxygen generator and photo-ionization is set up through the avalanche of the streamer formation of electrons as they hit the cells of the body.

The result is the healthy cells are protected from the diseased cells and the diseased cells are given a chance to rebuild themselves or, if they cannot do that, they will pass off as waste material making room for healthy cells to take their place.

A tube developed at the laboratory and to which the trade name "Cosray" has been given has proved of value in the treatment of bacterial and mycotic diseases and those due to certain forms of animal parasites, as well as fungi infections.

Experiments have shown that discharges from special oscillating tubes produce a superficial hypersia, and may act as a very strong derivative, and does relieve pain on the same physiological basis without the painful irritation of the skin and tissue. We may expect results also on all contractile organs such as the liver, the spleen and muscles.

Other investigations being carried on by the Research Institute of Salt Lake City, Utah, and the results which are being obtained, are very promising. We find very valuable aid in the treatment of arthritis, sinus infections, varicose and epithelial cells. With certain specially constructed tubes there is a very specific biologic and bactericidal action.

Life and death are very closely connected with electrical activity is reported by Dr. Robert S. Schwab of the brain wave laboratory of the Massachusetts General Hospital and the Harvard Medical School, as reported in June, 1941, to the American Institute of Electrical Engineers. Also see Moray's report on this subject printed in 1928-1930.

There are, according to this report, four types of body electrical currents. Cosray devices help furnish all four body types.

Vision is of an electrical nature too, according to a report of W. R. Sicles of Columbia University, in which he states, "Your eye works like a photoelectric cell," and that there is an electromagnetic "pull" in one's vision.

Some additional interesting characteristics and results have been noted of the action of rays and frequencies on the human body. The chemical constitution of the body seems to be definitely affected by the rays and frequencies of the Cosray devices. It is known that the unit of both structure and function of the body is in a cell. The essential constituent of cells is protoplasm. Chemically protoplasm is a very complex aqueous mixture of substances, containing carbon, oxygen, hydrogen, nitrogen, and small quantities of sulphur, phosphorus, calcium, sodium, chlorine, magnesium, potassium and iron.

The principle compounds of protoplasm are proteins, which furnish the main source of energy expended in functions. There are in addition carbohydrates, fats, water and inorganic salts. It is believed by some biologists that if we had the formula for the proper stereo-isomeric associations of the elements and compounds of protoplasm, life could be artificially produced; others assume an additional vital principle as a prerequisite of life. Be that as it may, many experiments have led us to give considerable credence to the thought that electrical rays and frequencies are the sonic of life and through this sonic, life has been maintained and prolonged for a time even after normal functions of life had naturally ceased.

Physically protoplasm is a granular and semifluid gelatinous substance. It possesses properties characteristic of both solids and liquids. It is an aggregate of colloids and crystalloids. An organism is essentially an aqueous solution, holding in suspension colloidal substances of great complexity. Colloids exist in two states, a liquid or sol-state and a semi-solid or gelstate. There exists no short line of division between colloids and crystalloids; these terms designate phases or states rather than substances. Protoplasm is a sol; and since its fluidity is due to water it is commonly classed as a pydrosol. It passes readily into a gel condition. In living protoplasm this metamorphosis is a reversible process. Agents which effect an irreversible gelatin of protoplasm tend to bring life to a standstill. Death is, therefore, a process of coagulation.

The above has been gone into to prove that proper electrical reaction in the body has a chemical action upon the body, a direct effect on the body's metabolism. To accomplish this proper balancing of the body's metabolism by electric action the frequency and rays must be in harmony with the natural sonic of life and the electrical capacity of a body in micro farads.

If the frequency and ray applied to the body conveys the proper metabolism, that property of living protoplasm by virtue of which it can elaborate as is done from the food material, the complex chemical action of the rays and current will build up in the body these complex compounds which are necessary for the restoration of health and convert the same into kinetic energy for the performance of specific health functions that the body is in need of. Be-

*Electrical Capacity
of the body in micro.*

cause the essence of reproduction is cell multiplication and living cell has the power of production of other cells like itself when properly fed, we need the application of the life-giving electrical metabolism which will feed the living cell so that they may reproduce other living cells and burn out the dead cells which hinder the growth of healthy living cells. The Moray electric therapy devices produce enzymes in the body through electro chemistry, a catalytic and oxidizing action in the cells and tissues, under which production cancer cells cannot continue to grow.

In other words, one's body must effect its own cure. The electrical action acting only as a cultivator of the living cells giving them needed strength to produce other living cells which will crowd out the dead and useless cells which will pass off as waste material, especially through the action of the kidneys.

To try to cover the subject of malignancy from our viewpoint is beyond the scope of this publication. I might, however, refer to some facts and theory that have come out of our research. Our smaller cancer tubes have been so successful we now want to build large tubes of the same type.

The ability of matter, especially living cells, to absorb light is well known. When we use the word "light," we do not mean just those visible rays which are commonly referred to as "light." We mean also those rays beyond the common light rays. All vibrations make themselves known in one way or another and like those rays or vibrations, or call them what one will, light, electricity, etc., are a variety of matter.

Absorption of light, refraction of light, excitation of one variety of or rate of vibration or light by another kind, the scattering of light or its dispersion, its effect, beneficial or otherwise, on all matter, organic or inorganic, are due to the wave lengths of the light applied. Light and electricity are a variety of matter coming within certain wave lengths or rate of vibration. Rate of vibration is the difference between all matter organic or inorganic. Rate of vibration is the difference between all matter living or dead; rate of vibration or wave length being the difference that causes transmutation, changing and restoring, changing from one rate of vibration to another. This is evolution in its true sense, evolution from one rate of vibration to another. In illness it is the changing of healthy cells and tissue to unhealthy or dead cells and tissues; the biological effect of radiations on animal and vegetable matter, from malignant to non-malignant or non-malignant to malignant.

Certain vibrations have proven detrimental to cell growth. This detrimental effect on cell growth is the reason for more injury to living healthy cells being done in the X-Ray and radium therapy than the value received in the treatment of malignant cells and tissue by these modalities. The healthy cells surrounding cancer cells may become cancerous after the original malignant cells have been treated with radio active radiations.

We feel that with the Cosray method of photo actinia oxygen therapy, we have overcome the above difficulty which is encountered in X-Ray and radium therapy and at the same time these modalities in-

crease oxidation and transpiration, helping the living protoplasm of the body in sustaining life, protoplasm being living matter in its simplest form. Protoplasm in an organized droplet is known as a cell or protoplast.

When cells are permanently joined together they become tissue and tissue joins to form organisms. The cells of amoebae and bacteria are complete organisms of themselves and that is why certain rays and electronic action can destroy them without injury to the surrounding living tissue of the body. Protoplasm usually is capable of flowing freely and is generally of a high consistency even while flowing. Because of its consistency it is susceptible to photoactinia oxygen therapy. In effecting the protoplasm one effects the whole body at its source of maintenance.

Electric therapy, when correctly used, is a real corroborant in the treatment of living cells. All life started in water and no living cell can be produced nor can life be maintained except in an aqueous medium. Nearly all living cells when freely suspended in a watery solution will seek their natural electrical polarity and will travel toward one electrical pole or the other when they are subject to the right type of an electrical field.

Because living cells including bacteria, fungi and fern spores are influenced by an electrical field, an electric current plays an important factor in the maintenance of health and life.

Matter in its colloidal state has many properties distinctive to itself, some of which are strictly electrical and manifest themselves in the movement of

the molecules in an aqueous environment and in an electrical field and ray saturation.

The passage of water through living tissue is essential to living organism and when done under the influence of electrical voltage of proper characteristics the effect on such living cells is, we claim, very beneficial. Through this action whole cells of the body may be caused to migrate from one part of the body to another. In other words, healthy cells may be caused to travel from a healthy part of the body to a sick or injured part to restore sick or injured cells and tissue. This is a form of electrolysis.

Water, salts of minerals, carbohydrates, fats, protein, enzymes, hormones and other substance all play an important part in cell embryology and when aided by the flow of an electric current, of the right frequency, potential and quantity, (amperage), cell development is greatly aided. If the development of certain types of cells are not desired, such growth retarding or cell destruction may be accomplished by agitating those cells in a suitable electrical field and saturating the cells with rays which set up a faster rate of oxidation, a burning up process. This method is used where destruction of cells and tissues is desirable.

Where a building up process is desired, as in the case of cell injury, through disease or physical injury, the reversed process is used as given before. These findings have proven to us that this process is of the greatest benefit in building up of flesh and muscle. Such restoration is of exceptional value in the treatment of heart ailments, restoring spraining,

twisted or stretched muscles and torn tissue and in atrophy caused by poliomyelitis.

Working on the theory that cancer is a deficiency disease and that no remedy or combination of remedies has ever been discovered or ever will be discovered that will cure *all* types of cancer because the disease as it appears in different parts of the body has a different anatomical structure.

In order to be able to treat cancer successfully one must adapt the remedies to the disease as it is found to exist in the different parts of the body. It is necessary to treat the causes and not just the local effects of the cancer. We have reached a degree of success in the treatment of cancer so that we feel our doctors can treat this ailment with the confidence of success in a large percentage of the cases coming to us.

Cancer is on the increase, especially among men. This is the case for the Metropolitan area of Atlanta, Ga., first area where a National Cancer Institute survey has been completed. Years ago we advanced the theory cancer is basically a virus infection. The years have not changed our opinion.

In the Atlantic area the rate at which cancer attacks has increased from 313 per 100,000 population in 1937 to 340 per 100,000 in 1947. The relative increase was much larger among males than females, from 176 to 212 per 100,000 (21%) among males, but from 250 to 259 (4%) among females. The death rate increased from 73 to 99 per 100,000. Why this increase? It is our opinion it is caused by the definite depletion in the food energy value of the food we eat. This is especially true of agricultural products because of the depletion of the soil. This is

especially true in some sections of the country more than others.

Experiments have shown that animals and humans fed wholly on certain California grown products are lacking in hormones and other essentials necessary to health. These deficiencies can be supplied by feeding the soil where the food products are grown. Present methods attempting this have failed to such an extent as to make the food positively deficient. The next and for the time being the best and surest way is to add essential hormones and minerals in their colloidal state to the food we eat. This is the only form in which the body can properly assimilate them. By colloidal we do not mean substances merely reduced to such an infinitesimal size that they are kept in suspension in solution. We mean the natural colloidal state as found in vegetation. Then we may obtain the addition of food energy by treating the food products with certain rays.

The ordinary agricultural crop at best converts only three-eighths of one percent of the sunlight that falls upon it into food energy. As we are what we eat, it is paramount that our food be supplied with the missing essential energy products. This can be done by proper food radiations, colloidal additions and synthesis.

It is an accepted fact that the length of day and night is a very important factor in the growth and development of most plants. The more sensitive plants normally attain their flowering and fruiting stages only when the length of day falls within certain limits. Some respond to a long day while others respond to a short day. That is why we have early

and late maturing species depending on the length of day to which they are exposed. Animal cells also react also to light rays and to rays beyond the light rays.

However, experience has taught me that there are modalities which do have a beneficial effect upon cancer, as we find it in different portions of the body, when they are applied according to indications.

No remedy, or combination of remedies has ever been or ever will be discovered that will cure *all* forms of cancer. Such a thing is impossible for the simple reason that the disease, as it appears in different parts of the body, has a different anatomical structure. It, therefore, is apparent if we are to be able to treat cancer successfully we must be able to adapt our remedies to the disease as we find it existing in the different parts of the body. A remedy that would affect cancer of the liver might have no effect upon cancer of the breast. Especially when cancer of the breast, most of the time, is not centered in the breast but other organs of the body, mostly the reproductive organs. A remedy that would have a curative effect upon cancer of the tongue might have none whatsoever upon cancer of the stomach.

We have had cases of cancer come to our Medical Doctors for treatment which have been operated on even several times, or radium or X-rays used. Our faith in the knife as a cure for cancer and that for X-ray and radium has been rudely shattered as four-fifths of the severe cases we have seen in the past twelve years, after these modalities have been used, have turned out worse than before the knife, X-ray or radium had been used.

We are confident that if cases are treated by the complete Cosray modalities before any treatment has been used and if they come for treatment within a reasonable time after the disease begins its onset, we can relieve 90% of all cancer cases. We have worked with doctors who perhaps, in their life time have seen more cases of genuine cancer than most physicians and they maintain the Moray modalities are further advanced in the treatment of cancer than any other method of treatment known to man today. One must know how to treat all chronic diseases successfully for it is very seldom that one meets with an uncomplicated case of cancer, and many times the complication is the cause of the cancer.

The day is past when a physician with an aescarotic paste or bottle of herb syrup or some kind of a general purpose injection or dope can start out honestly to cure cancer. That is the worst form of Quackery. It has taken many years to lift our method of treating up to the dignity of a specialty but we want to place our work into the hands of men whose heart and soul is in their work of saving the victims of disease from an untimely grave. Such men can and will do a grand work for suffering humanity.

Cancer cases are on the increase so all these present general purpose remedies which have been and are lauded time and again as a cure of this disease must be failing when so many people are dying in the same old fashioned way. Certain societies are trying to deceive themselves and the public that cancer is not on the increase but the fact is the mortality from cancer in its advanced stages is as great as it was fifty years or more ago.

The cry is get at your cancer early. Fine, but how many times is the disease well on its way even before the best expert can discover it. Another *thing one must remember, any treatment, whatever it may be, that weakens the vitality of the patient lessens the chance of recovery.*

The great mass of the medical profession consider cancer a local disease and they have made it a practice to cut out everything that looks like cancer. It would be far better if the knife were looked upon in most cases as a great cultivator and not a means of curing cancer or of prolonging the life of the person afflicted with any real degree of success.

There is too much uncertainty about this business of cancer and many physicians who at first blindly followed the "text book" in the treatment of cancer sooner or later lost all faith in any treatment in relation to cancer.

One must remember that when one takes a case of cancer for treatment, we must look the patient over carefully and learn most of his basic habits of life. Never forget the fact that the general health of the patient must be better before the cancer can become any better.

Every modality used in the treatment of the human body must work in harmony with nature, not against it. Every modality that lowers the vitality of the patient just lessens the chance of recovery that much. One cannot treat cancer as an enemy that must be driven from the body by force of arms.

We must remember there are remedies which may be too powerful and in this fight of disease one must take into consideration the disease, the method of

treatment and the vitality of the patient. The vitality of the patient being strong enough to withstand the mode of treatment and the action of the disease and the patient can get well. We must aid nature, not give her a beating if we expect her to aid us in trying for a cure. Nature is the best friend we have in our efforts against any disease and especially is this true of cancer.

The effect of the Cosray electric therapy discoveries on the human body has been a subject of many years of study. Amazing results have been had because they assist the body to function naturally. Why? The organism of the human body is a bipolar mechanism combined with electrical cell action of various potentials and frequencies. When the organisms cease to function properly in the production of the electrical potential, i.e., the maintenance of the acid and alkali balance between the nucleus and the cytoplasm of the cells which is so essential to life and which is the immediate source of the living energy of life itself; the result is, depending on the degree of non-function of this bodily electrical potential, either various degrees of illness or even death.

Research has established that this vital electrical energy of the cells can be maintained mainly by oxidation and that the Cosray devices and tubes greatly stimulate oxidation of the cells. The body cells are capable of the accumulation of electrical energy. In other words, they are capacitors which respond to certain electrical impulses. Proper artificial cell oxidation is a wonderful aid in the prevention of shock which causes depression and death.

Any theory of the nature of matter by which life is manifested must identify the primary factors in the genesis of protoplasm. It must account for the process of sustaining life. It must recognize the energy that produces and operates protoplasm and while one must take into consideration the various energies that take place in the cell life, that is heat, mechanical and chemical energy combined with the radiant energy absorbed from sunlight and other forms of energy coming from the Cosmos one cannot ignore the electrical energy question for in the final analysis all these various bodily forms of energy are electrical and through this medium all forms of living cell energy are maintained even to the production of protoplasm through the maintenance of body potential and capacity.

The nucleus of the cell is comparatively acid, the cytoplasm of the cell is comparatively alkaline. They are separated by a membrane or dielectric which goes to constitute a source of electrical energy by capacity.

There is a definite interrelation in the human body of moisture, oxidation and electrical potential. Also the dependence of oxidation upon electrical potential and the dependence of electrical potential upon oxidation all make it absolutely necessary that in order to maintain health a proper oxidation and electrical balance must be maintained.

The state of consciousness or unconsciousness is the result of the percentage of ionization taking place in the cells. If an excessive amount of the thyroid hormone is thrown into the blood and from there into the brain cells such an increase of

high frequency radiation above the normal is caused that the action of the body is so intensely stepped up and the person reaches such a state of pathologic tension that they find sleep impossible. They then resort to the use of sedatives which corrects nothing and the final result may be greater and greater nervous tension. Proper application of "Cosray" has in most cases given a natural relief by stopping the unnatural or excessive excretion of the thyroid hormone. One could go on to show that improper electrical potential of the cells have a very definite detrimental reaction upon the various glands and metabolism of the body. Electrical balance of the body has a very definite effect on the liver, brain and adrenal cortex, between which there is such a vital relationship and which without the proper function of, there can be no sustaining of life.

The above has been written to show how essential proper electrical actions of body cells are to maintain health and life. Books could be written to cover the subject of this important function. Many books have been written on Electrotherapy and Light Therapy—some very recent ones; but as the Cosray discoveries are an approach from an entirely different angle the Cosray method must not be confused with other electric therapeutic methods which are mostly based upon the claimed healing virtues of the current and rays applied while by the Cosray method the body functions of circulation, respiration, oxidation and the chemical constituents of the body cells seem to be definitely affected by the rays and frequencies of the Cosray devices and modalities.

In other words, one's body must effect its own cure. The electrical action acting only as an exciter of the living cells giving them needed strength to produce other living cells which crowd out the dead and useless cells which will pass off as waste material, especially through the action of the kidneys.

We have referred to the human body as a capacitor. It can also be referred to as an antenna for the reception of and radiation of electrical energy and rays besides being a generator of electrical energy.

We stated above that the vital electrical potential of the cells is maintained mainly through oxidation and that in turn the electrical potential within the cell governs oxidation. This is why the proper application of the right rays and frequencies of current to the body can be helpful in maintaining cell balance and body metabolism. The membranes which separate the cells although they are of infinite thinness are of high dielectric capacity and therefore, are particularly adapted to the storage and adaptive discharge of electric energy and the energy oscillates as with any capacitor.

All matter including the atoms of the body is susceptible to motion. All atoms appertain either to matter or energy, and continually pass from one to the other thus producing kinetic energy. This action becomes the very foundation of life. The electric charge of the cells of the body is a charge of energy and electric current a flow of energy which accounts for the propagations of the heat and other forms of radiant energy of the body. The process of electrifying a cell is, therefore, the storing of energy in and around the cell in the lipoid structures which

surround the trillions of cells which compose the body. Electrolytic solutions and colloids which make up the bulk of the body are especially adapted to electrical processes. Hydrogen ions permeate all living cells. The slightest change in the hydrogen-ion concentration fundamentally changes the living cells.

Proteins hold active nitrogen within the body which nitrogen is released by electric currents and it is this action which is the fundamental source of the life giving energy of the cells. The oscillatory reaction which applies to capacitors used in electrical devices applies to the human body. The cells are continually oscillating, charging and discharging. Or in other words, there is a continuous flow of electricity from the living cell in one direction until the discharge is completed and an oscillating discharge occurs—that is, the first flow will be followed by a back-rush, the oscillations going on as long as life is maintained in the cells.

When the living cells fail to oscillate normally, illness is the result. Herein lies the value of the Cos-ray Modalities to assist in maintaining these cell oscillations until they have built themselves up to the point where they again oscillate normally. Expressing the above by mathematical formula we have:

Let Q be the charge of the cell at any instant, C its capacity, R the resistance of electrolytic solutions and colloids which make up the bulk of the human body and are especially adapted to this electrical process, and L its co-efficient of self-induction. Then if I be the intensity of the current and E the electromotive force, we have the equation.

$$E - IR = \frac{d}{dt}(LI) = L \frac{dI}{dt}.$$

In this case $E = Q/C$, and $I = -\frac{dQ}{dt}$. Therefore

$$L \frac{d^2 Q}{dt^2} + R \frac{dQ}{dt} + \frac{Q}{C} = 0.$$

The solution of this equation is

$$Q = Ae^{\mu t} + Be^{\mu' t}$$

where μ and μ' are the roots of the equation

$$\mu^2 + \frac{R}{L} \mu + \frac{1}{CL} = 0,$$

or

$$\mu = -\frac{R}{2L} \pm \sqrt{\frac{R^2}{4L^2} - \frac{1}{CL}}.$$

Writing

$$\alpha = \sqrt{\frac{R^2}{4L^2} - \frac{1}{CL}},$$

we have

$$\mu = -R/2L + \alpha, \quad \mu' = -R/2L - \alpha,$$

and

$$Q = e^{-\frac{Rt}{2L}} (Ae^{\alpha t} + Be^{-\alpha t})$$

where A and B are constants determined by the initial conditions, viz. that initially we have $Q = Q_0$, and $I = 0$, which give

$$A + B = Q_0 \quad \text{and} \quad A\mu + B\mu' = 0,$$

or

$$A = Q_0 \left(\frac{1}{2} + \frac{R}{4L\alpha} \right), \quad \text{and } B = Q_0 \left(\frac{1}{2} - \frac{R}{4L\alpha} \right).$$

Hence at any time we have

$$Q = Q_0 e^{-\frac{Rt}{2L}} \left\{ \left(\frac{1}{2} + \frac{R}{4L\alpha} \right) e^{\alpha t} + \left(\frac{1}{2} - \frac{R}{4L\alpha} \right) e^{-\alpha t} \right\}.$$

Consequently the current at any instant is

$$I = -\frac{dQ}{dt} = \frac{Q_0}{2CL\alpha} e^{-\frac{Rt}{2L}} \left(e^{\alpha t} - e^{-\alpha t} \right).$$

Hence if α be real — that is, if we have $R^2 > 4L/C$ — the quantity Q will gradually diminish to zero as the time increases.

If, however, we have $R^2 < 4L/C$, then α will be imaginary, and writing

$$\alpha' = \alpha \sqrt{-1} = \sqrt{\frac{1}{CL} - \frac{R^2}{4L^2}},$$

the above formulæ become at once

$$Q = Q_0 e^{-\frac{Rt}{2L}} \left(\cos \alpha' t + \frac{R}{2L\alpha'} \sin \alpha' t \right),$$

and

$$I = \frac{Q_0}{CL\alpha'} e^{-\frac{Rt}{2L}} \sin \alpha' t.$$

In this case the current starts from zero and rises to a maximum; it then falls to zero and becomes reversed, after which it passes through a series of oscillations. The discharge, therefore, does not take place in a single flow from one cell to the

other, but a back-rush sets in, and a series of currents, or oscillations, occur alternately in opposite directions.

The current attains its maximum intensity when
 $\tan \alpha't = 2L\alpha'/R$ (maximum current).

The zero value of the current is reached when

$$\alpha't = n\pi \quad (\text{zero current}),$$

and consequently the charge at the same time is at its maximum, for we have $I = -dQ/dt$. Thus the charge oscillates backwards and forwards, attaining positive and negative maxima after the lapse of equal intervals π/α' , the time of a complete oscillation being

$$T = \frac{2\pi}{\sqrt{\frac{1}{CL} - \frac{R^2}{4L^2}}}.$$

If the resistance be small compared with the reciprocal of the capacity we may use the approximate formula

$$T = 2\pi \sqrt{CL}.$$

The successive maximum charges occur when $I=0$, or $\alpha't = n\pi$; they are therefore

$$Q_0, \quad Q_1 = -Q_0 e^{-\frac{\pi R}{2L\alpha'}}, \quad Q_2 = Q_0 e^{-\frac{2\pi R}{2L\alpha'}}, \quad Q_3 = -Q_0 e^{-\frac{3\pi R}{2L\alpha'}}$$

The quantities therefore diminish in geometrical progression, and the energy of the charge diminishes correspondingly on each oscillation, being lost in heating the circuit.

Whether the discharge is continuous or oscillatory therefore depends on whether $4L$ is less or greater than CR^2 , and an oscillatory discharge may be obtained either by increasing L or sufficiently diminishing C and R .

These predictions of analysis have been confirmed by examining the spark, during discharge, by means of a revolving mirror after it has passed

through the human body using the human body as a capacitor. When the resistance of the circuit was high the spark was merely drawn out in width—that is, at right angles to its length but when the resistance was sufficiently reduced, as in the case of a healthy normal body, so that the oscillating discharge might occur, the band was reduced to a broken image consisting of a series of strips, each strip corresponding to a discharge.

If the capacity be expressed in electrostatic measure, and the self-induction in electromagnetic, this expression takes the form of $2 = \sqrt{CL} v$ where v is the velocity of light.

The quantities, therefore, diminish in geometrical progress, and the energy charge increases and diminishes correspondingly on each oscillation. In the cycle of diminishing, the energy is used in radiation or in stimulating the body or both.

Whether the cycle of discharge is continuous or oscillatory depends on whether $(4L)$ is less or greater than (CR^2) , and an oscillatory discharge may be obtained either by L increasing or the sufficiently diminishing of C and R .

The displacement current "through" the dielectric, (lipoid structures which surround each cell of the body) of a healthy cell is $C dv/dt$ and the current other than leakage current, which "passes" from one cell to another is also $C dv/dt$ per unit cell. This current is not a conduction current corresponding to a flow of charge, but a displacement current. If the electric flux v then in each cell $v C v$ and the displacement current $dv/dt=C dv/dt$. Displacement current and conduction current may in ordinary

electrical devices be undistinguishable as far as magnetic effects are concerned but this is not true in the cells of the body. The displacement current in the body does not have the dissipation such as the $R I^2$ loss of conduction current has in a metallic conductor of finite conductivity.

Displacement current is always of considerable importance in all radiation phenomena.

In the case of active malignant growths it is common knowledge that in pathological specimens studied they have a high conductivity in companion with normal tissue and the inactive portions of the same growths with non-malignant growths.

This high conductivity of malignant growths makes it possible to treat malignant cells with proper rays and frequencies of electric current which leads to their destruction or the retardation of their growth without injury to the normal cells.

No attempt will be made to explain the mechanical or electrical construction of the Cosray therapy modalities.

Suffice it to say results are being obtained and the proof of the right concept and scientific construction is being established by the results which are being obtained by the Cosray Modalities including very gratifying results with the Cardiovascular System and muscular ailments.

Because of prior proven successes in the treatment of the human body by the Moray Electric Therapy discoveries over a period of many years, the value of these modalities was called to the attention of the Deputy Administrator of a branch of the United States Department of Agriculture by certain Government Scientists in June 1940. On July 12,

1940, upon the written request and order of this branch of the United States Government, T. Henry Moray began to build the first three commercial Cosray Electric Therapy devices. Since that time these modalities have received extended clinical tests by various M.D.'s in various sections of the country. To quote one written report by Wesley J. Hommel, M.D., wherein he states, in writing of the Cosray photo actinia oxygen devices he had used over a period of several years in his treatment of various cases. "I believe it is the most advanced therapy in the treatment of many human ills of anything I know of."

The gratifying results obtained over the ensuing years have substantiated the confidence originally placed in these discoveries.

DISEASE, NUMBER TREATED, RESULTS

The following is a numerical count of disease, number treated, number of results and the number in which no results or effects could be noted. In the case of cancer eight patients who are listed as having had relief because they died with little or no pain with out the use of opiates. In the case of leukemia, and dystrophy the individual must be treated periodically as no permanent relief has yet been obtained altho the diseases have been arrested in their progress and the patient can return to normal living. With atrophy the deterioration of the tissue is arrested. No lost muscle is restored.

In Diabetes, only the side effect of deterioration of tissue and vital organs is considered as being arrested; some insulin is still required.

With injuries and teeth extraction, the swelling is reduced and the rate of recovery increased.

No toxic reactions due to treatment have ever been noted, even in cases of pregnancy. No burns have been received from treatment, altho caution must be used wherever a Blue Cosray tube is necessary as a modality.

Type Cases	Number Treated	Number Relieved	No Effect	% Relieved
Arthritis	38	34	4	89
Spinal Arthritis	4	4	0	
Adhesions	7	5	2	
Asthma	5	5	0	
Atrophy	4	3	1	
Allergies	17	12	5	
Bronchitis-chronic	6	6	0	87
Bronchitis Non-chronic ..	2	1	1	
Blood Pressure	11	10	1	99
Brights Disease	1	1	0	
Bowel Spastic	2	2	0	
Cancer	78	54	24	75
Colitis	5	4	1	
Cataract	2	0	2	
Cyst	6	6	0	
Diabetes M	8	8	0	
Diabetes I	1	1	0	
Distrophy	2	2	0	
Epilepsy				
Grand Mall	3	3	0	
Petty Mall	2	1	1	
Eye Impingment	3	2	1	
Eye Damage	4	4	0	
Goiter	6	5	1	83

Type Cases	Number Treated	Number Relieved	No Effect	% Relieved
Gallbladder	5	2	3	
Heart	14	11	3	78
Infection	31	31	0	100
Injuries	11	11	0	100
Kidney Trouble	5	5	0	
Leukemia	4	4	0	
Metabolistic General	44	44	0	
Multiple Sclerosis	6	3	3	50
Nephritis	4	1	3	25
Neuritis	5	5	0	100
Paralysis	5	4	1	80
Prostate	10	9	1	
Pneumonia	2	2	0	
Phlebitis	1	1	0	
Rheumatism—inflammatory	5	4	1	
Sinis	309	304	3	98
Spinal Slip Disc	5	5	0	100
Skin Irritation	6	4	2	
Stomach Ulcers	12	12	0	100
Ticdouloureux	7	6	1	88
Tumor-Fibroid	10	10	0	88
T. B. of Bone	35	33	2	94
T. B. of Lungs	9	4	5	
Teeth Extraction*	13	13	0	
Varicose Veins*	8	5	3	

Out of 785 treated, 30 did not complete treatment or discontinued treatment. Of the 750 that did complete treatment, 42 were not relieved at all and no effect could be noted.

The result of these discoveries is not a "cure all"; but is a builder of cells in the body and a stimulation of the vital functions of the body to a point where the body may effect its own repairs as established by hundreds of case histories compiled by Medical Doctors who have used these modalities over periods of years. Cosray devices are another modality to be used with the normal methods of practice of the physician. To be used by those licensed to practice the healing art, a medium to stimulate photo Actina oxygen activity of the cells to get full benefit of and efefct from normal therapuetic practiceses.

The subject of electricity in medicine is an inspiring demonstration of how progress is interlinked, not only in the arts and sciences, but with other fields all over the civic world. In the fulfillment of the prophecy of D'Arsonvla we can look forward to further interesting discovery in the realm of physics to benefit the health and happiness of humanity.

PHOTO ACTINIA OXYGEN

Therapy Cosray

Advantages — The restoration thru electrochemical reactions of the proper metabolism or body chemistry is a way towards rapid recovery. To promote health fluorescent antioxidants must be removed from cells. Kills fungi and infections. Metabolism is shifted toward normal physiology.

Suggested Dosage—A minimum of 26 hours extended over a period of not less than one hour a day for six days a week for four weeks. This should be extended for more serious diseases according to rate of progress of patient.

Side-Effects—None. Normal treatment may be continued as long as desired.

Supplies—Cosray is a product of the Research Institute, Inc. of Utah. Equipment may be supplied on yearly basis. For information write Cosray 2505 South 4th East, Salt Lake City.

How Used—Cosray is to be used in conjunction with the Physician's normal therapy.

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