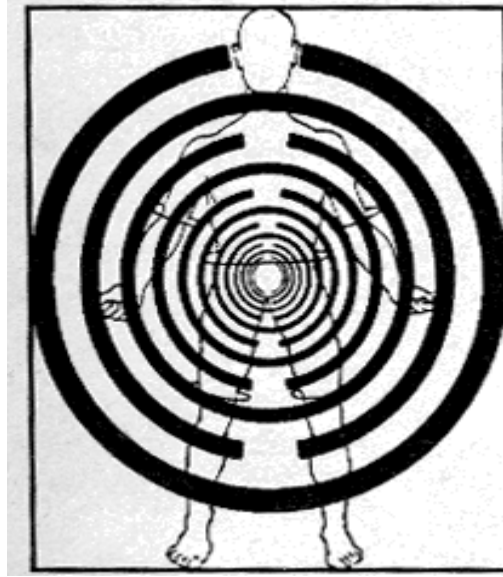


Lakhovsky's Multiple Wave Oscillator



**Georges Lakhovsky, Bioelectric Pioneer
(1869-1942)**

It's Only Natural
Chapter IX

The Electromagnetic Nature Of Life: Magnatherm

Since the beginning of man's existence on earth, he has pondered the nature of life itself. Even with all our great scientific advances, there is still no CONSENSUS on the basic nature of the life within us and other animate beings. The most generally accepted theories are based on the chemical and/or stimulative-inhibitive theory of existence. The most we can get from most authorities is that it may be of some value to regard life as the sum total of the properties and activities of a highly organized aggregate of various chemical compounds that we call protoplasm.

Among these properties they have called attention to irritability as a diagnostic property of a living body. Upon this Herbert Spencer based his classic definition: "Life is the continuous adjustment of internal relations to external relations." Observation teaches us that this adjustment to environmental changes is possible only within narrow physiologic limits. For example, the human body can adjust itself to changes in external temperature only when these changes are very moderate.

Viewed from this angle, they hold that life is the interplay between the organism and its environment by which the organism either adjusts itself to the environment or adjusts the environment to itself.

I believe that such a definition is what our young people call a "cop-out." It tells only what life does; it doesn't tell what life is. Unfortunately, such an attitude has frequently been the nature of science since its inception. When a scientist is incapable of explaining something, he describes what he sees, makes up a few Latin or Greek names for the rest to impress us and then goes on to something else. This is particularly true in medicine, where most of the tongue-twisting disease names have nothing whatsoever to do with the cause or true nature of the disease but are only the description of its most obvious symptoms in Latin or Greek.

Some researchers haven't been satisfied with such smug descriptions of the nature of life. Some have listened to the voice of their conscience when contemplating the usual theories on the nature of life and have been able to see through the usual inane double talk couched in Latin and Greek, which all too often passes for scientific thought. They realize that much of the phenomena we encounter in living can't be explained readily by the stimulus/response theory of life as put forth by their orthodox colleagues.

Surprisingly, many of these researchers have developed concepts similar to each other, even though their work has been accomplished without knowledge of their fellow investigators. All these studies have gone beyond the chemical or mechanical basis of life and have been carried into the molecular and atomic structure of matter. From this effort first developed an electrical, then an electronic, and finally a vibratory, or wave concept, of life and the activities carried out by the living subject.

Some of the most well-known researchers in this field were Dr. Georges Lakhovsky, Professor Jacques d'Arsonval (the discoverer of the meter movement that goes under his name), Dr. George W. Crile, Dr. Albert Abrams, Nicola Tesla and Ivan G. McDaniel (who advanced this theory into the psychological, mental, and spiritual spheres of human activity).

In Dr. Lakhovsky's book, *The Secret of Life*, (Lakhovsky, Georges *The Secret of Life*. Rustington, Sussex, England. True Health Publishing Co..1963.) the basic theories of the vibratory nature of cellular activity is clearly and thoroughly documented. Lakhovsky hypothesized that every living bit of protoplasm emits radiations. He taught that each cell in the human body emits electromagnetic radiations similar to those from a radio station and that these radiations are of different frequencies, which act and interact, producing the normal functioning of the human body. Disease, on the other hand, was held to be something that interferes or changes these radiations. To overcome disease, therefore, it is only necessary to upgrade or bring these radiations back to their normal pattern. Abrams, although approaching the subject from a different point of view, arrives at almost an identical conclusion.

Dr. George Crile, in his book *A Bipolar Theory of Living Processes*, (Crile, George W.: *A Bipolar Theory of Living Processes*. New York, Mac Millan, 1926.) approached this subject from yet another point of view. The similarity between his conclusions and those of the other researchers in this field, however, is startling. For instance, Crile wrote, "It is clear that cellular radiation produces the electric current which operates adaptively the organism as a whole, producing memory, reason, imagination, emotion, special senses, secretions, muscular action, response to infection, normal growth and the growth of benign tumors and cancers-all of which are governed adaptively by the electrical charges that are generated by the short wave or ionizing radiation in the protoplasm."

In *Lamp of the Soul*, (McDaniel, Ivan G.: *The Lamp of the Soul*. Quakertown, Pa., Philosophical Publishing Co.1942.) Ivan G. McDaniel speaks of biologic wave systems that are vibratory interconnecting systems, that tend to hold a part or organ together for a specific functioning purpose. All this is based on the principle that the cell is an electromagnetic radiating entity. Concerning life on earth McDaniel says, "We may therefore picture life on earth as beginning with simple spores, or cells, which were built up by organizing wave systems when earth's conditions were suitable for life to express in that manner. As conditions changed, the fertilized genes were incorporated into the cells, bringing physical and mental growth. When a new gene and its corresponding wave system is introduced into an organism, we would expect to find the new biological wave competing with the older wave for the same cell material, and this may explain the peculiar combination of plant and animal sometimes found in the earlier species. The balance of the activating hormone between the old and the new biological wave systems may flow back and forth

until one gains control and eliminates the effect of the other by absorbing all the vitality.”

I've gone into this somewhat extensive background because one must understand the basic theory of cellular vibratory activity before the different treating modalities discussed here can be properly understood. Because the nature of this work is somewhat revolutionary, I didn't want my readers to assume that any part of this theory was original, or that the treatment devices I am about to describe are based on fanciful dreams. Also, I have described the scientific character of cellular radiation because of the attitude of many in the Food and Drug Administration. This bureau, a useful watchdog at times, has among its administrators many who seem to be adherents of the chemical theories of human existence, probably stemming from their drug company-oriented and subsidized educations. Whatever the cause, they have been unsympathetic to any type of therapy that purports to function at the level of cellular electrical activity. I therefore wanted to give reasonable evidence about the scientific soundness of the discussion to follow.

Electromagnetic Theory of Cellular Activity

The human cell, as all matter in the universe, is composed of oscillating components known as atoms, which in turn are composed of particles called protons, electrons, neutrons, and positrons, among others. All these particles are in constant movement. The movement of the electron is especially great, as it rapidly circles this central mass of the atom in various bands, or orbits. The atomic structure is analogous to our own solar system, in which the sun represents the central nuclear mass and the various planets the encircling electrons.

Any motion tends to produce pressures in a circulating fluid around a moving object, producing effects known as compression and rarefaction. The effect of such compression and rarefaction is to set up wave motions similar to the waves produced when a ball on the end of a string is whirled around one's head. The whistling sound given off by the ball is due to sound waves produced by this movement. If we make our ball move faster, if we use a smaller or larger ball, or if we add more balls, the pitch of the whistling would change. Any variation in the compression/rarefaction pattern in the air changes the nature of the sound waves emitted. Thus, matter of all kinds gives off a vibratory wave that is specific to itself. Because the combination of atoms in any matter is unique, this combination produces a wave structure that is unique, which could in turn be differentiated from all other forms of matter if we had apparatus sufficiently delicate enough to measure the wave or vibratory rates. Such apparatus has been constructed, though its practical usefulness is still debatable.

Because all matter is made up of atoms, the world is nothing more than a mass of structures vibrating at different frequencies and intensities.

Lakhovsky and Crile expanded on this idea in their work on the living cell. Lakhovsky hypothesized that the nucleus of the living cell is so constructed that it acts as an oscillating electrical circuit, giving off not only atomic vibrations, but also waves of electromagnetic origin, similar to those generated by a radio or TV station.

Owing to the minute dimensions of the cells, the frequency of these waves is very high. He stated that the electromagnetic waves given off by the various organs are separate and distinctive, and it is the nature of these waves that enables the differentiation of fetal tissues. Each specific gene in the fertilizing cells has a characteristic wave pattern, and as growth and maturity take place, this electromagnetic pattern is gradually developed until the organ and/or personality trait is completed, somewhat like a tape-recorded program that is broadcast over the ether from a radio station.

Not only is growth under the control of these electromagnetic wave patterns, but also tissue repair. Therefore, as long as the vibratory rates in the cells remain normal, there should be no disease. If, however, these electromagnetic waves are altered, the cellular structure and its basic functioning must then subtly change and disease, of one form or another, can begin in the system. This state Lakhovsky used to refer to as oscillatory disequilibrium. Many factors can produce this oscillatory disequilibrium and it was experimentally shown by Lakhovsky, and others, that the disease producing effects of poor diet, bacterial invasions, overindulgence in alcohol or other toxic substances, stress, anxiety, lack of sleep, and similar assaults on the system can be shown to produce their effects by producing oscillatory disequilibrium.

Lakhovsky believed that what we know as infection was but a vying of the various electromagnetic oscillatory rates between the human cell and the bacterium for dominance. He theorized that the electromagnetic wave structure of the pathologic bacterium tends to interfere with the normal wave patterns of the infected organ or part and that if the body is successful in overcoming the infection, it indicates that the body's wave mechanism is sufficiently powerful to overcome that of the bacterium. If the opposite is the case, it is a sign that the bacterial vibratory patterns are sufficient to so disorient those of the body that the body cells can't function as a unit any longer and that death must ensue.

The work of these men is highly documented and very extensive. Although books on this specific matter haven't been published recently, there have been a couple of very interesting correlated researches. One is entitled *The Secret Life of Plants* by Peter Tompkins and Christopher Bird, (Tompkins, Peter. and Bird, Christopher: *The Secret Life of Plants*. New York. Harper & Row. 1973.) in which the authors describe the various effects of human thought waves and emotions on plant structure. They discuss experiments showing that plants respond very adversely to human anger, hatred and condemnation. If these emotions are only feigned, there is no response whatsoever on the part of the plant. In this fascinating and authoritative work, we find further support for the vibratory theory of cellular life. To me these experiments show that the electromagnetic wave energy put out by human feelings and emotions can radiate for some distance, affecting the vibratory structures of other living organisms. That feigned hatred and anger had no effect on these plants shows that it is neither the sound nor fury that produces these effects, but the effect of electromagnetic vibrations produced only by the factual and not contrived emotions.

A new type of photography called Kirlian photography has been used recently to demonstrate strange emanations that come from living matter, both animal and plant. These emanations seem to me to be a visualization of the electromagnetic waves that are a part of all living structures.

Therapeutic Devices Based on These Principles

Because of the complicated nature of this subject, I suggest you read and even re-read the previous section carefully before attempting to understand the following therapies.

In considering the following therapeutic devices, two questions must be asked. First, is the theory on which the modality is based sound? Second, is the specific instrument capable of delivering the benefits of the espoused theoretical method? Specifically we are asking, "Is the cellular electromagnetic wave principle of health and disease practical and does the instrument we're using perform according to the theory and to the benefit of the patients?"

My own experience in healing has constantly confirmed the validity of the electromagnetic theory of life. Whether all the specific details described by Crile, Abrams and Lakhovsky are correct doesn't particularly interest me. It isn't essential to know exactly how these wave

structures are produced or specifically interact to help a patient. Future research may somewhat modify exact findings of the early work done on this subject, but I'd be surprised if future investigation were able to invalidate the fundamental hypothesis involved. Therefore, in my own mind, treatment by electromagnetic means resolves itself down to one fundamental question. Does the instrument I am using help to normalize the electromagnetic structures of the body and to overcome the oscillatory disequilibrium, which we call disease?

Abrams' Radionic Treating Devices and the Depolar Ray

Abrams, in his work on cellular radiation, developed two types of instruments to test his theoretical work. One was a diagnostic instrument designed to detect and classify the normal electromagnetic vibrations of tissues and of the different disease entities in the body. Due to lack of sufficiently sensitive detectors, this instrument could function only through the use of the human nerve reflex and thus its true scientific nature was difficult to verify, since the effectiveness varied with each operator. Such diagnostic instruments were tested at our Center in years past but the results were not consistent. Attempts are now being made to utilize new sensitive electronic means to determine the electromagnetic waves structures of the different organs and tissues. Until these attempts are successful, we feel, this piece of apparatus must remain only a curiosity.

The other type of instrument produced by Abrams was for treating and it used very low-power oscillating currents to produce electromagnetic waves similar to those of the human cells. The last machines of this sort, to my knowledge, were produced by the now defunct Electro-medical Company of San Francisco, headed by Fred Hart. These instruments produced various wavelengths to treat different conditions; in some, these wavelengths were applied one after the other in succession to the treating organs. This last pattern was similar to a circuit known as the Knight circuit, which was somewhat similar to Lakhovsky's multiple wave oscillator, though his instrument was based on the spark-gap principle rather than on the wave production of the triode tube used in the Knight circuit.

The energy from the Abrams machines was applied by a variety of electrodes, generally four, which were placed over various parts of the body to produce the desired effects in specific diseases. These treating machines flourished for a time in the 30's and 40's, but today, it is our understanding that they are being produced only in England for the home market.

The Fred Hart Company also produced an instrument called the Depolar Ray, which wasn't much more than a large coil of copper wire through which an alternating electrical current circulated. The basic circuit was identical to that of a "degaussing agent," an instrument used to demagnetize objects inadvertently magnetized. In the opinion of the Fred Hart Company, this alternating electromagnetic unit helped overcome problems present in congested tissue. It was originally recommended for a variety of athletic injuries, though I find the usual ice pack treatment superior. The Depolar Ray did have a valid use, however, in the benign prostatic enlargements of middle-aged men and in simple cases of hemorrhoids.

There were other types of machines based on the Abrams theories, but in general they were all variations of those just described. I know of none manufactured today in our country and more research and scientific evaluation is needed before this type of instrument is manufactured in the United States again.

The Diapulse and Magnatherm

Some time after the work of Abrams, Lakhovsky, and Crile, Dr. Goldberg of New York City

observed what he considered unusual effects on patients under treatment with orthodox diathermy apparatus. The diathermy machine uses a form of electromagnetic energy to radiate heat deep into the tissues. As the electromagnetic energy from the diathermy machine passes through the tissues of the body, a combination effect of hysteresis and eddy currents is produced causing thermal activity in the tissues proportional to their density and the magnitude of the electromagnetic wave. In other words, as the diathermy wave passes through the body, a sort of electrical friction is set up in the denser tissues that produces heat. The stronger the wave put through the body, the greater the friction formed and the greater the heat produced.

Dr. Goldberg detected benefits, that his patients attributed to the diathermy treatment he was giving, that couldn't be accounted for from the use of internal heat alone. Goldberg eventually assumed that another form of energy besides heat was imparted to the tissues by the electromagnetic wave of the diathermy machine. Further investigation led him to believe that the aptitude (strength) of the electromagnetic wave in the standard diathermy was too weak for the investigation he had in mind, so, to further examine his new effect, he had built a machine that had a much greater power than those then available. Unfortunately, the increased strength of the electromagnetic wave also increased the heat in the tissues. Because this heat was already at the maximum allowable without injuring the patient in the standard machine, it was necessary for Goldberg to find a way of increasing the strength of the electromagnetic energy without increasing the heat. To do this, he designed a machine that later became known as the Diapulse machine. The electromagnetic waves in this instrument were pulsed instead of constant. Because of this pulsing, heat did not build up in the tissues; thus, a much greater electromagnetic force could be applied than before. Goldberg could thus concentrate on the pure electromagnetic effects of the diathermy energy and his results were published in many professional journals.

The Diapulse machine was eventually produced commercially as an auxiliary aid in many diseases. It was used in many hospitals and by physicians of all the health professions. It was originally produced by Sperry Remington Rand Company and later by the Diapulse Company of America, which claimed it was useful in approximately 150 conditions. The FDA took the company to court to see if it could prove these claims. The final decision of the court was that the company could prove approximately half the claims, but the court didn't think the other half were adequately proven and they therefore could not be listed in the company's literature. Later, the FDA thought the company was still making claims that hadn't been substantiated and sought and obtained an order stopping the interstate sale of the machines. A later decision by an FDA administrator (not a court of law as we understand it) stated that the machines, in his opinion, were worthless, and he therefore ordered their destruction or confiscation. The Clymer Health Clinic was using five Diapulse machines at this time and we believed that such a completely arbitrary and unlawful decision was entirely counter to our Constitutional rights and so we did what we could to prevent confiscation and destruction of our machines. However, it is usually impossible to fight government agencies over such confiscation, and finally all our Diapulse machines were subsequently unceremoniously destroyed. (This was the status of this matter when I wrote the first edition of this book. However, in the ensuing years the Diapulse Corporation took the government to court and finally won their case. They are now allowed to sell the Diapulse once again. Now that it was determined that the FDA had destroyed tens of thousands of dollars of our Clinic's equipment without legal cause, you might think that the government would be forced to reimburse us for the loss. That did not happen. We did not even get a "We're sorry.")

A pulsed electromagnetic generator such as the Diapulse is basically little different from the orthodox diathermy machine. If the pulses are fast enough and the power great enough, it will produce tissue heat similar to that encountered in ordinary diathermy. Therefore, it would be possible for a manufacturer to produce an instrument based on the principles of

the Diapulse that could put out sufficient heat energy to function as a diathermy machine. If such a machine were produced without any claims other than those made for normal short-wave diathermy, it should not rouse the ire of the FDA.

The International Medical Electronics Company of Kansas City has produced such an instrument-the Magnatherm. Besides being a much more sophisticated instrument than the original Diapulse, the Magnatherm has also been especially helpful in our busy Centers because each unit has two separate

treating heads, rather than the single one on the Diapulse. Because of this, we are able to treat our patients in half the time required for a Diapulse treatment. The Magnatherm is truly a space-age instrument. Its controls are all digital read out modular units and it even has a built-in oscilloscope so that the rate and aptitude of the wave being administered can be visually analyzed. We have several of these instruments in heavy use at both Woodlands Medical Center and the Healing Research Center, and as far as I know, we are the only establishment with such an array anywhere in the country.

The use of the Diapulse, and now the Magnatherm, has been one of the backbones of the healing methods used at the Centers. Our patients well know the high regard we have for these instruments. However, it is not the Diapulse, Magnatherm, or any other such instrument that makes the patient well. These instruments are but the tools of our physicians. The tool doesn't produce the final product; only the skill of the physician can do that. We could perform our cures without the Diapulse or Magnatherm, but it would be a slower and more arduous task. These machines have proven to be fine, but not indispensable, tools.

What the Magnatherm Does

(This discussion is not based on generally accepted medical opinion. Anything I say here concerning the Magnatherm must be taken as my own opinion, arrived at from my own extensive clinical work with this method of therapy and I don't want to imply that the manufacturer of the Magnatherm in any way substantiates my opinions or conclusions.)

The electromagnetic wave pulses produced by the Magnatherm machine are used in our Centers to regenerate various organs or systems of the body directly at the cellular level. In acute conditions-those of an infectious or an inflammatory nature-the energy is used to hasten and support the body's reactive ability. In combination with other forms of natural treatment, this therapy has proven most efficacious. Experience has shown me that when properly used the Magnatherm activates the reticuloendothelial system of the body, thereby hastening healing in acute disorders.

Treatment of Chronic Diseases

It is in chronic conditions that the Magnatherm plays its major role at our Centers; in these conditions, natural therapy easily outshines its competition. To understand the reason for this success, one must first understand the nature of a chronic condition.

All acute conditions are self-limiting in that the patient either recovers and returns to his normal state, or he dies. Colds, flu, boils and pneumonia are all examples of such acute conditions.

In chronic conditions, the healing process of the body is not sufficient to cast off the offending problem, nor is the afflicting ailment strong enough or of such a nature as to destroy the vital functions of the body. We thus have a stalemate in which neither the

disease nor the body defenses conquer one another. The patient thus continues to suffer until he either dies or by some means the body is finally able to overcome the disease.

Orthodox medical science has been relatively successful in the last fifty to sixty years in overcoming many acute disorders. They have, however, made little headway in dispelling chronic disease. Although some of the symptoms of these disorders may be relieved by drugs, at least temporarily, little curative help is offered for these increasingly common disorders.

The usual chronic condition must be overcome from within, not from without. The general therapeutic method most useful to us at our Centers is that which stimulates and revitalizes the body repair mechanisms so that this innate system can overcome the chronic ailment. To do this, we generally apply the following five techniques:

1. All known toxic substances are removed from the patient's internal and external environment. For instance, if a patient is working, we check his job environment for any form of poisonous or toxic substances he may be breathing, ingesting, or in any way contacting during his employment. His foods are also carefully selected to reduce additives and pesticide residues. His home environment is investigated to find and correct any factors that may be causing toxic reactions.
2. The patient is placed on a diet carefully adapted to him with which we hope to supply a good balance of the elements generally needed and an abundance of the elements particularly important to his specific disorder.
3. Every effort is made to establish a constructive, optimistic mental and emotional attitude to prevent the adverse effects of antagonistic vibrations that result from negative and destructive emotions .
4. Specific nutrient substances designed to act as builders of normal cell functioning are prescribed. These are carefully chosen after tests indicate the special needs of the patient.
5. Electromagnetic treatments are given to mildly stimulate the parts of the system that have become sluggish and inactive and that thereby may have enhanced the disease. In regard to this last technique, one may consider the person with a chronic ailment as someone in whom there is disorder and general sluggishness in some of the organ structures. If we can mildly stimulate these organs to aid in their regeneration, we can gradually direct their activity toward more normal function. To accomplish this fully, however, it is usually necessary to see that our first four techniques of the treatment of chronic disorders are also met.

In our own Clinic, we use electromagnetic energy in chronic disorders in both a specific and general fashion. When we are striving for a general encouragement and regeneration of glandular and body function, we treat the liver, spleen, pancreas and adrenals. Where some specific organ is involved other than the kidneys, which will receive the electromagnetic radiation on the adrenal setting, a separate setting is also made on this part. For more specific treatment, the Magnatherm may be placed directly over the offending part, such as the knee or hips in osteoarthritis, or over the face in sinusitis.

Great care must be used in the beginning treatment of chronic cases. An old professor from medical school used to say, "You can't take these old chronic cases and try to push them to health. You must take them by the hand, and very gently lead them to health." His words have repeatedly come to mind over the years and without exception his advice has proven

sound. The worse a case is, the gentler we must proceed.

The electromagnetic energy of the Magnatherm, or of the regular diathermy machine, has a potent stimulating effect on cellular activity and must be carefully used if the desired result is to be obtained. Almost any form of electromagnetic or vibratory therapy can have vastly different effects on the treated part, depending on its intensity, character and the length of time applied. For instance, if we take an electromagnetic wave and apply it at a low rate and intensity for a reasonably short time, we can produce a relaxing effect on a nerve. If we take this same electromagnetic energy, increase its frequency, or increase its strength or time, that same nerve may be stimulated. If we continue to increase the frequency aptitude and time, it is eventually possible to reach a point at which the nerve is destroyed. This is done, for instance, when the short-wave diathermy is used as a cautery unit. It is easy to see why I have stressed the physician's skill and not the machine's ability in overcoming disease. If a nerve needs to be relaxed but the practitioner operates his instrument so that a stimulative treatment is given, the patient will certainly not exhibit the desired effect. On the other hand, if a relaxing treatment is given in chronic ailments where a stimulative effect is needed to start body healing, the patient may feel somewhat better for a short time but his condition never will be structurally improved. The competent therapist must use his machines as a musician plays his instrument. He must be able to evoke in the cells and organs of the patient the exact effect needed at the time of treatment.

Almost any form of body dysfunction can be helped by a careful and judicious use of the electro-magnetic force. It is really not a mysterious treating method but simply a way to produce on specific organs or other parts of the system relaxing or stimulative effects needed at that point in the progress of the disorder. This is no more irrational or mystical than the medical practitioner who gives a diuretic to stimulate the kidneys, digitalis to stimulate the heart, or belladonna to inhibit alimentary canal muscles. One is a chemical stimulation-inhibition method; the other is electromagnetic. It is our experience that the electromagnetic method is somewhat weaker, but much safer and without the side effects all too common to chemotherapy.

In many of the disorders for which we use electromagnetic therapy, there are no generally recognized acceptable chemical alternatives. When the disease is of long duration, the treatment may seem to be overly long, leading some patients to complain that while natural methods are safe, they take longer than orthodox medical methods. Actually, the opposite is true. Because most medical treatment of chronic disorders with drugs is only palliative (symptoms are controlled, but no cure takes place), little time is involved, but if we attempt to cure, much time and effort must be expended. The true cure of a chronic disease is effected more rapidly through natural therapy than by any other means .

In summary, many accomplished physicians and scientists believe the cells of the body can produce and are affected by specific electromagnetic waves. Methods have been developed to measure and categorize these waves in both sickness and disease, but there is as yet no conclusive scientific evidence that these methods are entirely accurate or repeatable. Many treating modalities have been developed to make use of changing the disease wave forms into healthy tissue wave forms by electromagnetic means. Owing to the nature of the machines and of the diseases they purport to treat, it is difficult to assess these devices on an impartial, scientific basis. We have sufficient interest in several, however, to use them in research projects at our Clinic. The machines we have in daily use are generally available to the medical profession and are fully authorized by the FDA. It is the manner in which these machines are used by us that produces our desired effect and not some mysterious characteristic of the instrument itself.

MWO



Multiple Wave Oscillator