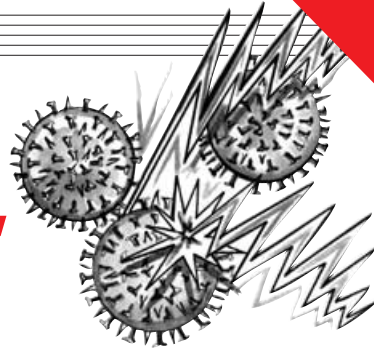


Special Supplement

THE END TO ALL DISEASE



AUBREY SCOON

Can disease be cured electronically? A story involving electronics, blackmail, intimidation, government conspiracies, arson, vandalism, theft, bribery and murder!

NOBODY can deny that today's doctors know more than ever about the nature and effects of disease, but as technology advances, many people are all too aware that the results often pose more questions than they answer. The fact is, the more we know, the more obvious it becomes that there is even more that we don't know.

The growing migration to "alternative" therapies underlines this all too well. Nowadays an increasing number of people are turning to all kinds of seemingly strange therapies where the deficiencies of traditional medicine are all too obvious.

One area that has seen a revival in recent years is electrotherapy – the idea that disease can be cured through the application of electric, magnetic or electromagnetic fields. There are numerous weird and wonderful devices both on the market and in use today. Some are described in this article, but also, as will become clear, this is far from a new area and is simply a continuation of a trend that started in the late 1700s.

In the 18th century, static electricity was well known. Nobody knows who first proposed experiments to use it as therapy but it was not uncommon for major medical schools in Europe to conduct electric experiments on patients, particularly the poorer ones! This continued well into the 19th century and became all the more prevalent following Faraday's publication of his discovery of electromagnetic induction.

FRANKENSTEIN'S LAB

The early "therapies" in most cases were little more than applied electric shocks. Numerous interesting, novel and in some cases hilarious ways were found to generate and apply electric potentials, both static and alternating, which were applied seemingly haphazardly to patients.

The results were unpredictable to say the least. Many experiments failed badly, and in some cases the "therapy" was more successful at removing the patient permanently than the disease! However, there was at the same time a growing body of evidence that indicated that some of these

"quack" cures actually did seem to improve the condition of seriously ill patients who had not responded to the traditional treatments.

The discovery of radioactivity, X-rays and Tesla coils only served to fuel this trend. There was a general perception that if something was mysterious, used hidden rays or energies and involved high technology (or even big sparks!) then, in true Frankenstein style, it had to be good. An attitude which is not entirely absent today! Hence it became almost common practice to expose patients to radiation, electric shocks and magnetic fields.

In Fig.1 is shown a 19th century sketch of a Clarke Machine, a typical generator which would apply a strong voltage to anyone holding two rods shown in the foreground. The operator would crank the machine while the patient held the rods – ouch!

MYSTERIOUS ENERGY

Vendors of "mysterious energy" devices had a field day with these machines. They came up with more and more bizarre gadgets, belts that gave the wearer electric shocks to relieve back pain, weird Tesla and Oudin coil contraptions that bathed people in showers of high frequency sparks, magnetic and electric jewellery and so on. A simple internet search will show that this kind of weirdness thrives as much today as it did then!

It was only a matter of time before it became obvious to anyone other than hard core fanatics that these kind of devices were at best useless and in most cases seriously dangerous. Amidst ever mounting calls for regulation, the medical establishment started to firmly entrench itself against this kind of quackery and eventually succeeded in slowing the sale and development of these devices. Unfortunately this was achieved more through suppression and intimidation rather than education.

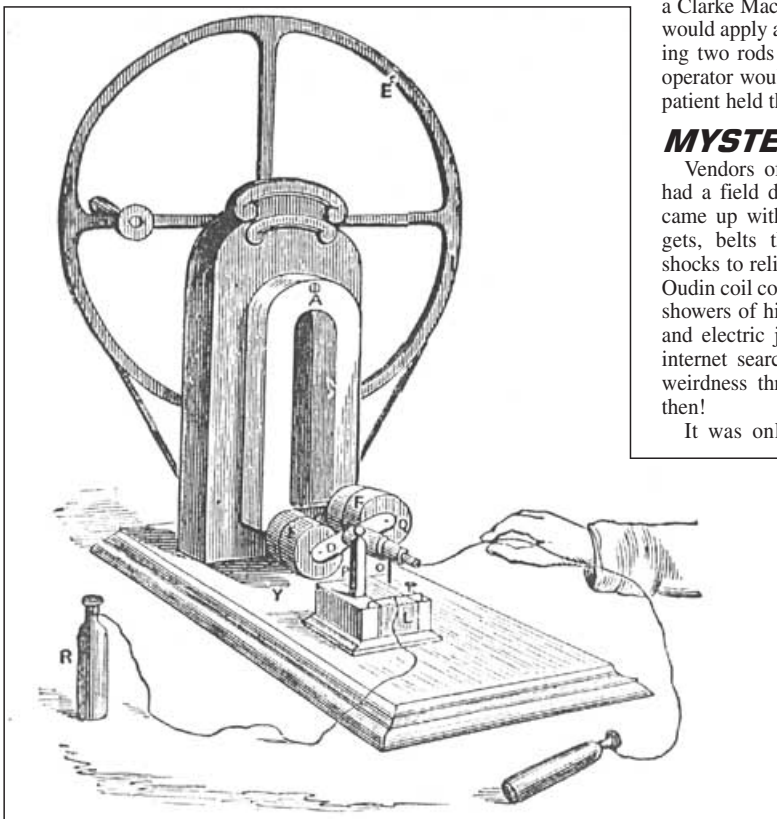


Fig.1. A 19th century sketch of a Clarke Machine, an electric generator which applied a strong voltage to anyone holding the two foreground rods.

NEW AGE OR OLD AGE?

Although there was a steady background trade in electrotherapy devices that continued, most people were unaware of it, and it was only in the 1960s when "new age" solutions to everything appeared that it took off again. Ironically, the "new" age material is far from new!

But the excesses of the late 19th and early 20th century had taken their toll. The medical establishment was now more vigilant than ever and ruthlessly determined to stamp out quackery. Unfortunately, this literal counter-reaction had the effect of reinforcing the idea that conventional medical techniques were the only ones worthy of consideration and that any mainstream qualified doctor knew better than anybody else, resulting in its own semi-fanatical mentality. And nobody can deny that many doctors today still show signs of this kind of attitude and are quick to condemn any alternative therapy that they know nothing about.

SUPPRESSION

The worst side effect of this attitude was the suppression of serious research into these therapies whilst many serious theories of the time appear ridiculous in the light of present day knowledge, at the time they deserved a better reception than they got. And, of course, the very real and compelling results obtained by many serious researchers were also ignored.

One or two of the old therapies have actually crept back into medical favour. But only after being introduced slowly and cautiously by conservative researchers who followed the proper protocols of placating the medical establishment.

What is more startling, however, and widely unknown, is that amongst all the snake oil and quackery of the old electrotherapies were a few gems that did not just seem to have a sound medical basis or benefit to them, but might potentially surpass the achievements of the best modern therapies in curing major diseases.

This article concentrates on one of them, a fascinating story about a potential cure for nearly all diseases that is a scientific detective story in itself, including, if it is to be believed, blackmail, intimidation, government conspiracies, arson, vandalism, theft, bribery and murder. It would make a great X-files plot but is truth really stranger than fiction?

A QUICK DISCLAIMER

Whilst I have tried to verify everything in this article that I can, the lack of objective material has meant that I have had to rely on second hand sources for a lot of material. I have not personally witnessed some of the effects claimed and present them here solely as a matter of interest.

ROYAL RAYMOND RIFE

Our story starts with a man called Royal Raymond Rife, pictured in Fig.2 (1960). Rife was not the first to experiment in this field, but his alleged results remain the most intriguing.

His history is sketchy at best, and is mainly reconstructed from his own notes, newspaper reports and anecdotes of his associates. Rife was born on 16 May 1888 in Elkhorn, Nebraska USA. No records remain of his early history (as far as I am aware) but his work became widely known around 1929.

In 1913 Rife was in Germany and was awarded an honorary PhD by the University of Heidelberg. During the course of the next seven years he supposedly spent further time in Europe performing work for the US

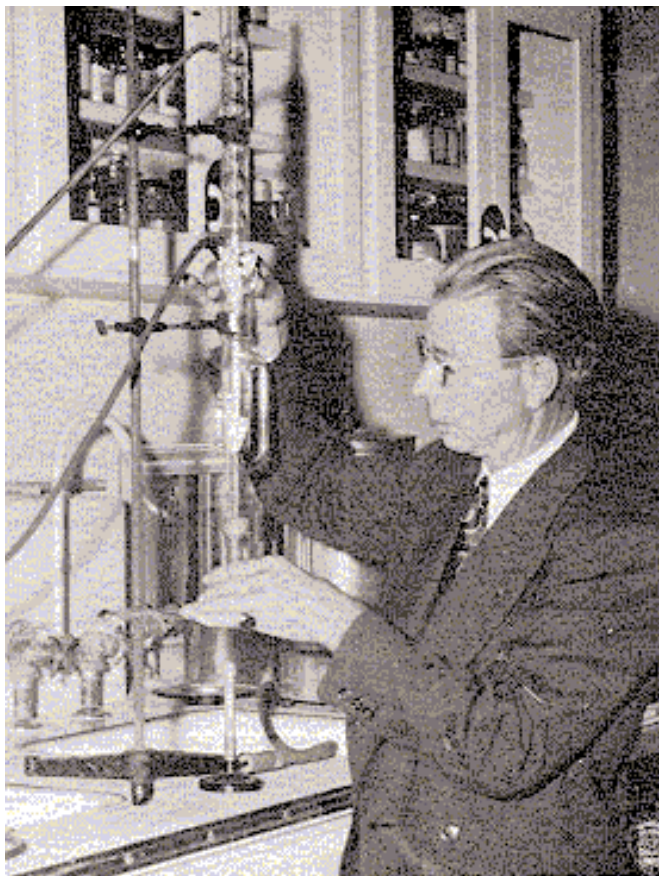


Fig.2. Royal Raymond Rife in his laboratory, 1960.

Government and during this period he worked for a time for the Zeiss optical company. It is claimed that he was trained by Carl Zeiss himself. He later became famous for his development of advanced optical microscopes. By 1920, he ended up living in San Diego, California.

From his own lectures, Rife says that around 1920 he first became interested in the biological effects of electromagnetic fields and their possible therapeutic effect and from that point developed the microscopes to observe the effects of electric phenomena on bacteria. Rife had certainly been influenced by earlier theories and machines. However, the microscopes were the key to his later research and so make a good starting point.

THE MICROSCOPES

Rife was determined to develop an optical microscope with unprecedented magnification and resolution. He proceeded to look

at the problems associated with high magnification microscopy from a unique angle. There are quite a few problems associated with building a high resolution microscope, one of the most important being the light itself.

Purely theoretical work of the time indicated that optical resolutions beyond about 20,000 times were impossible because of limitations imposed by the wavelengths of the light itself and effects such as diffraction etc. Also the amount of light that could be focused into an objective at high magnification was limited i.e., the area being looked at is so small there isn't much room for the light to get in!

Vibration was another problem, even modern electron microscopes suffer badly under ambient vibrations, because an otherwise imperceptible movement becomes all too obvious at high magnification, as anyone who has used a modern zoom camera lens will know. Finally, there is the question of how one is to stain the specimen to make it visible.

To expand on that last point, it is usually necessary to apply some sort of stain to any (optical) microscopical specimen, because many microscopic cells etc., are basically transparent at high magnifications and very little detail can be seen. A stain, however, is just a chemical dye of some sort, and unfortunately since its uptake cannot be precisely controlled, the stain may not properly penetrate the specimen and may even collect in clumps. So under a high enough magnification the stain itself appears as a series of lumps or spots that do not reveal anything much about the specimen. Furthermore, the stain itself, being a chemical, may kill the organism under study.

POLARISATION

Rife decided therefore that he had to dispense with the stain. But how can one see the specimen without a stain? The first obvious answer lay in polarised light.

The theory of polarisation is quite simple. Light is an electromagnetic wave, it consists of an oscillating electric field in one plane, with a corresponding oscillating magnetic field in another plane at right angles to the first.

Normal light consists of a mixture of such waves all travelling with their electric and magnetic fields oriented at arbitrary angles relative to each other. Polarised light on the other hand is light in which all the waves have their electric and magnetic fields in the same planes.

Fortunately, polarised light (or any electromagnetic wave) is easy to produce. All you need is some sort of fine grating in which the spacing of the rails is less than the wavelength of the light itself. The waves that have their electric fields lined up with the spaces of the grating pass through, the ones with

their electric fields at an angle are blocked by the grating in proportion to the angle, at 90° all light is blocked. This is the principle of polarising film and sunglasses, which are simply fine gratings of this type.

Polarised light is useful, because if you pass it into a compound or specimen, chemicals, stresses or density changes in the specimen itself cause the rotation of the incident plane of polarisation. By comparing the variably rotated output from the specimen with a fixed polarising filter, different rotations appear as different shades, and in this way you can see the density changes, stresses or different chemical structures as shades of light.

Incidentally, this technique has been used for many years to identify specific chemical compounds and is the basis of the designations given to amino acids and complex organic molecules i.e. when you see something like L-arginine or D-tryptophan (both amino acids), the L and the D refer to Levorotatory and Dextro-rotatory respectively, polarising molecules that twist light to the left (levo) or right (dextro).

FLUORESCENCE

Rife took the reasoning still further. Not only did he decide to use polarised light, but he also wanted to avoid the limitations of backlighting a tiny object. It was much better if the object could be made to fluoresce in its own light or reflect the incident light. Most biological specimens would fluoresce or reflect, but only in ultra-violet or other invisible light ranges. And this depends on their chemical structure.

So he hit upon the idea of illuminating the object with two polarised beams of monochromatic light in the UV range that would heterodyne each other and the result of which would be fluorescence or reflection in a visible range. It would be the differences in the wavelengths of two or more illuminating sources that would determine the output.

By means of a complex set of polarisers and rotating prisms, Rife developed a way of making any biological sample fluoresce in such a way that its internal structure was clearly visible. He didn't need a stain, the light itself became the stain. So in this way one type of bacteria, for example, would appear a specific shade of blue, another red, and so on. The actual colour of the resulting "light stain" itself gave a lot of information about the chemical structure of the specimen under study and the polarisation helped distinguish fine structural differences.

After a lot of development work, around 1929, Rife finally produced a prototype of what was later to become known as the "Universal Microscope" which used the above principle. Not much is known about the early prototypes but they reportedly succeeded in producing unprecedented magnifications, supposedly up to 60,000 times in some cases. This kind of magnification is comparable to a

modern day electron microscope. The photograph in Fig.3 is of one of the later Universal Microscopes and shows just how complex these instruments were.

These optical microscopes had one major advantage over the modern electron microscopes. They allowed the study of live specimens. An electron microscope operates in a vacuum and bombards the specimen with high energy electrons; not much can survive that!

BEAM RAY MACHINE

Now that Rife could clearly see bacteria and cells using his microscope he began experiments in which he exposed the samples to various electric and magnetic fields. He then discovered that he could make bacteria and single-celled organisms react to the fields.

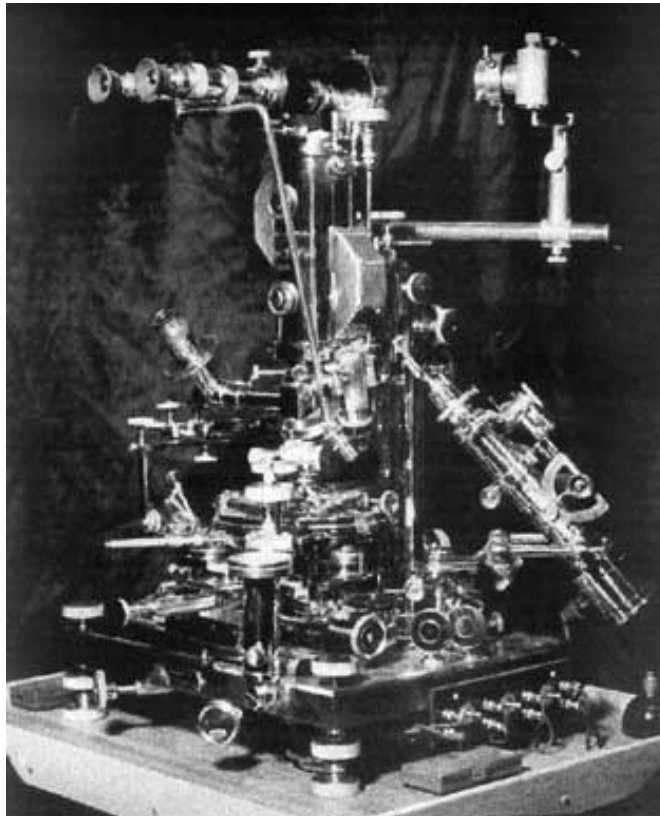


Fig.3. One of Rife's "Universal Microscopes".

Curiously, static fields had little obvious effect, but alternating or pulsed fields caused dramatic changes depending on the frequency he applied. Each different type of bacteria etc., appeared to respond to one specific frequency, and in particular, that frequency ultimately caused the destruction of the organism.

The effect, which modern researchers have duplicated, is very interesting. Supposedly, as you approach the critical frequency of a bacterium for example, it appears under the microscope to have what might be best described as a "seizure". The bacterium changes shape or becomes agitated. A typical example (reported by a modern researcher) is where a rod-like bacterium "seizes" into a "C" shape as the critical frequency is approached.

The frequency range of the effect varies with the specimen and the intensity of the field seems to become pronounced within five or six Hertz of the critical frequency. If

you give the specimen a short burst of electromagnetic energy near the critical frequency it seizes and then usually recovers after a few seconds. If, however, you proceed to expose it to the critical frequency, it literally explodes.

SELECTIVE DESTRUCTION

Rife repeated his experiments with thousands of samples and reproduced the same effect every time. What was even more interesting, however, was that he was unable to find any frequency that would cause human (or other mammalian) tissue cells to explode in the same way.

The implications were profound. He had seemingly found a way to selectively destroy bacteria and other pathogens without damaging human cells. If this method could be applied to a live human patient he could potentially eliminate a specific species of invading bacteria and thereby cure whatever disease that bacterium caused in the patient.

His first task was to catalogue the critical frequencies that destroyed specific bacteria. He reasoned that the effect worked through simple resonance and that the bacteria were shattered by a specific frequency much like a wineglass when it is exposed to a specific high pitched sound. So he started compiling a list of what he called the Mortal Oscillatory Rates of specific pathogens (MORs for short).

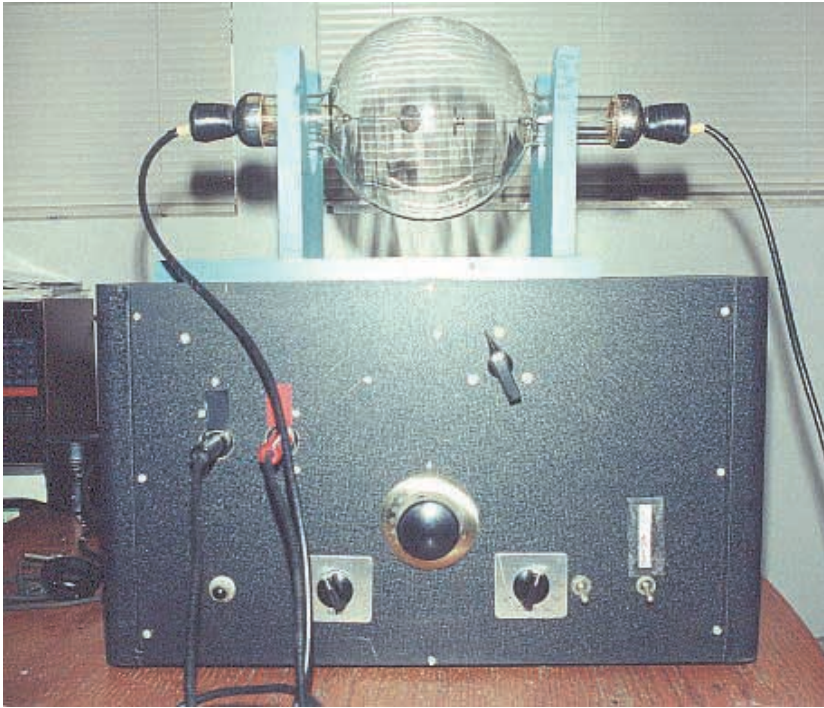
MODULATED EMISSIONS

At the same time he wanted to refine his equipment to produce the requisite electromagnetic fields. He commissioned engineers to build a device that would emit a field he could tune. He was convinced that light was an important factor and so he wanted the tuneable device to produce light as well as other forms of radiation.

The development of the device unfortunately is not documented. But the result was that the engineers ended up with an X-ray tube which was filled with low pressure helium gas (a normal X-ray tube has a vacuum) driven by a powerful radio frequency transmitter that caused the gas to ionise and conduct current. The MOR was then created by quenching the carrier at a lower modulating frequency. So the original MORs actually consisted of two parameters, a carrier frequency and a modulating wavelength. The end product became known as the "Rife Beam Ray Device". It allowed Rife to expand upon his experiments.

Rife started conducting lab tests using live animals. Most of his notes were later destroyed and very few remain. But he clearly documented that he was able to apparently cure the animals of specific infections with only short exposures to the beam ray device.

We may never know exactly how many experiments he performed, or all of what he found due to the destruction of his notes. But his associates later told of literally tens of



An original Rife Machine, manufactured in San Diego, California, for an unknown doctor. Exactly how this unit operates is at present not known.

thousands of experiments he performed and that he became obsessed with his work, spending days at a time without sleep, tuning the device and cataloguing effects. His surviving research papers also show evidence of meticulous work.

A CURE FOR CANCER?

Rife became obsessed with the idea of curing cancer. He found from his experiments that cancerous tumours in animals shrank and even disappeared at certain frequencies. But his observations showed that the tumour cells did not explode like the bacteria. Something was killing the tumour cells, but in a different way.

He then turned his attention to viruses. At that time little was known about viruses. The word virus itself is derived from one of their properties, "filter passing". A virus by definition was some infective agent that was so small that it could pass through a filter that would block bacteria and other pathogens.

After thousands of further experiments, Rife finally announced that he had isolated the "filter passing form" of an infective agent that would reliably induce cancer in any animal it was injected into. His conclusion was simple: cancer is caused by a virus and the machine could destroy viruses as effectively as bacteria, ergo, he could cure cancer.

At this point it is worth mentioning that although Rife isolated the cancer pathogen, there were other researchers in the 1920s, notably Thomas Glover and M. J. Scott who had also done so, and probably earlier than Rife – although Rife was probably the first to actually see the agent with his super microscopes.

In the light of this revelation the tumour cell results became clear. The machine did not directly kill tumour cells. It killed the virus that was infecting the tumour cell, and when the virus died it decomposed into a mixture of chemical poisons that effectively poisoned and killed the host cell. The dead tumour cells were subsequently reabsorbed

and digested by the host animal's immune system.

INTERMEDIATE SIDE EFFECTS

There was a further implication to this. Rife had noted that when he "cured" animals of various infective agents they often became more ill for a short time after exposure to the beam ray but rapidly recovered. He reasoned that the destruction of the infective pathogens always released poisons (which were normally inside the infecting organism) into the animal's body and blood stream and that the illness was caused by the effect of these poisons.

Since these poisons are often the very same chemicals that are responsible for the symptoms of a particular illness in the first place, it was therefore not unusual to see a worsening of symptoms after exposure that

rapidly improved as the body disposed of the toxins. This effect is well known in medicine today, it is known as the Jarisch-Herxheimer reaction and it was originally recorded in the antibiotic treatment of syphilis.

Ultimately, Rife succeeded in identifying two different viral agents that caused cancers. One that caused carcinomas (cancers of covering and lining membranes) and one that caused sarcomas (cancers in bone, connective tissue or muscle). He called these two agents the BX and the BY cancer viruses respectively.

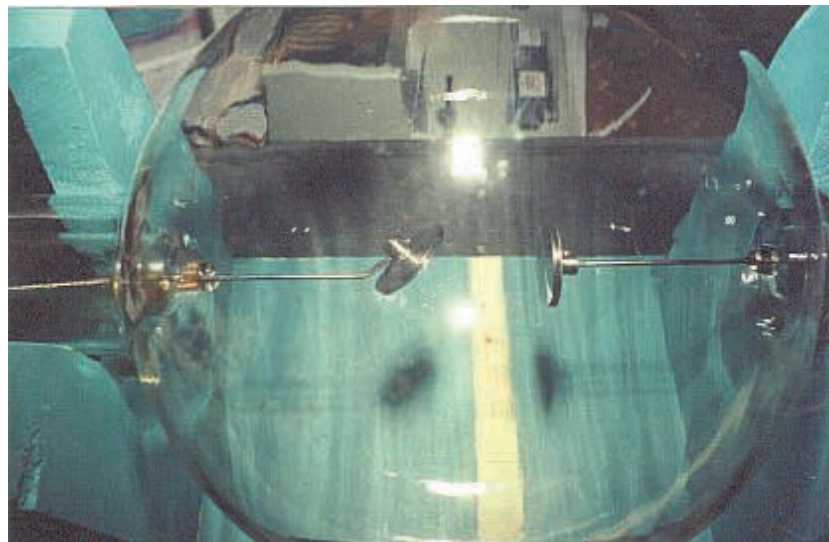
PLEOMORPHISM

Rife also found direct evidence of pleomorphism. Ever since the theory was proposed by Antoine Béchamp (the forerunner of Pasteur and probably the true discoverer of microbial infection) in the 19th century, it had been the subject of much controversy. To put it simplistically, it stated that every pathogen had multiple developmental cycles with different forms in each cycle i.e. a simple bacterium can transform itself literally into a viral equivalent (or vice versa).

Rife insisted that he had observed that each bacterial pathogen had a corresponding viral form, and, depending on the mixture of proteins that the bacterium digested, it could transform reversibly into its viral form and back to bacterial form. He mentioned this in various research papers and concluded that there were only about 10 different classes of pathogens that were responsible for nearly all diseases, and even that it was possible for any pathogen in one class to transform into another pathogen of the same class.

For example, Rife believed that E. Coli, a common bacterium found in most water supplies, was the bacterial form of one cancer causing effects in a weakened organism with a specific chemical balance that made it revert to viral form. Whilst discredited at the time, modern researchers are finding increasing evidence that supports the theory of pleomorphism.

It is certainly accepted today that some cancers are caused by viral agents, a theory that was resisted in the 1920s. The "discoverer" of the first officially recognised cancer virus in the late 1940s, Virginia Livingston, had worked with Rife and already knew of



The large tube for the Rife Machine was made in Los Angeles

his results, as well as those of Glover and Scott. As far as I know she gave some credit to the "Glover's theory" but Rife is never mentioned.

THE END TO ALL DISEASE

During this time Rife had periodically released information to the press about his work. He had described and demonstrated his microscopes several times and had received enthusiastic reviews from doctors and researchers who had been allowed to use them. On 3 November 1929 his work was featured on the front page of the *San Diego Union* newspaper, as an article about his microscopes.

Numerous other articles followed around this time, including at least two articles in the *L.A. Times*. He had also mentioned his work on electromagnetic effects and that he hoped one day to be able to cure diseases like cancer, although it is clear that most of the reporters didn't understand the implications of what he was saying.

By 1931, Rife had announced his results to various doctors and university medical departments. He was visited by a stream of eminent doctors and researchers, most of whom enthusiastically endorsed his work. One of Rife's supporters was Dr Millbank Johnson, president of the Southern California branch of the American Medical Association and one of the board of directors of Pasadena Hospital. Another was Dr Arthur Kendall, Director of Medical Research at Northwestern Medical School in Illinois.

On 20 November 1931, Johnson arranged a banquet for Rife at his estate in Pasadena California, which was attended by 44 of the most eminent medical personnel of the day and at which they honoured him as the man who had found "The End to All Diseases".

From this point on the story takes a twist. Many incidents referred to are documented and historically verifiable but are the subject of great controversy. Also the chronology is occasionally confused.

A CLINICAL TRIAL

In early 1934, Johnson rented premises in San Diego for Rife to begin clinical treatments. Under his instructions, the University of Southern California arranged formal clinical trials of the Rife Beam Ray device. They appointed a special committee of top doctors to oversee the project including, apart from Johnson and Kendall: Dr Rufus Klein-Schmidt (President, University of Southern California), Dr Edward Kopps (Metabolic Clinic, La Jolla, California), Dr George Fisher (Children's Hospital, NY), Dr Karl Meyer (Hooper Foundation, San Francisco, California), Dr Whalen Morrison (Chief Surgeon, Santa Fe Railway), Dr George Dock and Dr Alvin G. Foord, a pathologist.

Sixteen cancer patients from the Pasadena County Hospital volunteered to be treated with the machine. The brief was for the patients to be treated at Rife's clinic in San Diego and after three months the doctors would perform an in-depth examination of any of the surviving patients at that time. Rife reportedly treated the patients with three minute exposures to the beam ray device at the cancer frequencies once every three days.

Initial daily treatments were suspended due to extreme Jarisch-Herxheimer reactions. At the end of three months, however, all the patients were still alive and were examined.



Interior of the 1947 Rife Machine

The doctors were amazed to pronounce that 14 of the 16 showed no signs of cancer and were pronounced clinically cured. The remaining two went for further treatments.

Rife reasoned that maybe they were infected with a mutated form of the cancer virus and made some slight frequency adjustments. Four weeks later the remaining two patients were examined and also pronounced clinically cured. The results were stunning, it was a major breakthrough.

There is some discrepancy in the accounts of what happened next, but the most likely explanation is that the members agreed to do further work before publicising the results.

CONFLICT BEGINS

Johnson then introduced Rife to Dr Mildred Schram of the International Cancer Foundation in Philadelphia. However, on hearing of the work, Schram allegedly made demands for experiments that Rife insisted would not and could not work. Following much argument, he eventually refused to have anything further to do with the foundation. Schram supposedly admitted years later that Rife had been right.

In the meantime (1935) Johnson had set up a clinic in Los Angeles to treat people using the beam ray device and Kendall and others were continuing experiments and treating people with it. In 1937, the medical committee who oversaw the clinical trials ended up arguing over when and how they should release the results with no actual decision ever being reached. By now they had plenty of evidence to support Rife's claims but they found themselves pressured by the medical authorities and feared that they would not be believed.

A press release went ahead, however, and on Friday 6 May 1938, the *San Diego Evening Tribune* published a front page article entitled "Dread Disease Germs Destroyed by Rays, Claim of S.D. Scientist". However, the clinical trials were not mentioned and Rife was cautious not to claim that the device represented an absolute cure for cancer.

CONSPIRACY THEORY

During this time, a new player emerged. Dr Morris Fishbein was editor of the *Journal of the American Medical Association* between 1924 and 1949. However, Fishbein was a very rich and powerful man who by

that time owned all the stock of the AMA and had extremely powerful political connections. Fishbein approached Rife with an offer to buy the exclusive rights to the beam ray technology. Rife refused.

The details of the offer are unknown but Fishbein had made similar offers to other inventors of medical technologies claimed to cure cancer. In one case Fishbein made an offer to the creator of a herbal cancer cure called Harry Hoxey in which Fishbein would receive all profits from the invention for nine years and thereafter, at Fishbein's discretion, he would pay 10 per cent of future profits to Hoxey. When Hoxey refused, Fishbein effectively destroyed him. Hoxey was allegedly arrested 125 times in 16 months at Fishbein's instigation. The charges never stuck but Hoxey was ruined.

Fishbein then did the same to Rife. AMA officials started visiting doctors who were using Rife's machines and informed them they would be struck from the medical register if they did not stop immediately. Many gave in and surrendered the machines to AMA investigators or allowed the machines to be destroyed. Others held out and refused. Many were arrested or had equipment and notes seized and destroyed by FDA (Federal Food and Drug Administration) agents.

Fishbein refused to allow publication of any reference to Rife's work in the AMA journals and also supposedly pressured other medical journals insisting that they should not publish anything about Rife's work because it was all a fraud. A number of doctors actively opposed this, including Johnson. But many of the doctors who had attended Johnson's banquet for Rife in 1931, fearing the loss of their medical licenses, started denying that they had ever heard of Rife, even though many had been photographed with him at the banquet.

BEAM RAY CORPORATION

By this time, Rife had established his own company to market the device. The corporation became known as Beam Rays Inc. However, in 1939, an engineer called Philip Hoyland, an employee of the company, brought a lawsuit against Beam Rays Inc., claiming that he and not Rife had invented the machine and that he had developed the initial theory that was now claimed by Rife.

Despite the fact that he had only joined Rife around 1937 and Rife had published details long before that.

Another factor that emerged at this time was that there was some difference between Rife's original machine and newer Hoyland variants that the company had been shipping. Rife's original machine created the MOR frequency using a variable carrier wave which was then modulated with a super-regeneration wave at other frequencies (ranges of 15kHz to 11MHz appear in Rife's lab notes). Table 1 gives carrier frequencies in kilohertz and super regeneration wavelengths in metres, compiled from his original lab notes.

Table 1. Rife's Original Carrier Frequencies and Super Regeneration Wavelengths.

Pathogen	Carrier (kHz)	SRW (m)
B. Coli	8,581	27
Bubonic Plague	160	585
Cancer (BX)	11,780	17.6
Typhoid	900	345
Anthrax	900	1,100
Catarrh	1,800	175
Diphtheria	800	275
Syphilis	900	108
Tetanus	700	19,000
Tuberculosis	583	554
Actinomycosis	678	1,607
Gonorrhoea	600	1,990
Glanders	986	407
Influenza	1,674	154
Leprosy	743	1,190
Pneumonia	1,200	785

The MOR frequencies studied by Rife were mostly in the hundreds of kilohertz to megahertz range. The details of the difference between the original Rife and Hoyland machines are unclear, but Rife complains in a letter of 14 May 1939 to Dr Gonin, head of the London School of Tropical Medicine about Hoyland's machines:

"I spoke only Friday Evening to a Mr. John Chanblin, a radio man now connected with Beam Rays inc., about the redesign and building of a device according to the old original Rife Ray principles; as the present instrument has been so deviated away from that old principle that it is nowhere near the same.

"I know nothing about the experimental machines you have, as I was never even asked

to see them or to pass on them in any way before they were shipped to you. But Henry stated in one of his last letters that he had tried one of them on a culture of his bacteria and it had failed to do the work. I would consider from that, that those devices which you have are merely working on a harmonic and not a true frequency; and in our research on electronics, we definitely know that there is no possible way of controlling electrical harmonics of a frequency."

Nobody knows why Hoyland started a lawsuit he couldn't possibly win, or why he produced non-working Rife machine variants, except that it is alleged that Hoyland's legal costs were funded by the owner of a major pharmaceutical company. Rife's invention was potentially lethal to the multi-billion dollar pharmaceutical industry. Rife eventually won the lawsuit but the costs bankrupted Beam Rays Inc., putting it out of business. And Rife's reputation had been damaged by inferior machines that had been shipped out by Hoyland using Rife's name. After this, Rife started drinking heavily and became depressed and discouraged.

VANDALISM AND ARSON

Around this same time Rife's laboratory was subject to a spate of thefts, his microscopes vandalised and finally, it was burned to the ground (and most of his notes destroyed) in an arson attack. Nobody was ever caught or prosecuted for it. Another doctor, a Dr Nemes who had set up an independent laboratory and confirmed some of Rife's results was killed in a laboratory fire and all his notes and research lost. A third laboratory working on confirming Rife's work, the Burnett Laboratory, also mysteriously caught fire and burned to the ground with all research destroyed.

In 1940, two other doctors who had supported Rife, Cooperson and Clayton were raided by Federal officers who confiscated their equipment and notes. Later each was found dead, supposedly having committed suicide by poison.

In 1944, Johnson arranged a press conference and let it slip that he would announce publicly the clinical results and that the cure for cancer had been found. There are allegations that Johnson had already been approached by "representatives of the phar-

maceutical industry" who offered him money to suppress information about Rife's work. Supposedly he refused. He had also certainly been pressured by Fishbein.

The night before the press conference, however, Johnson died suddenly and mysteriously and all his notes were pronounced as "lost" by the executors of his estate. His death was recorded as "accidental death" although I have no details. There are claims that his body was later exhumed by FBI investigators who concluded that he had been murdered by poison.

Dr Arthur Kendall, one of Rife's most prestigious and influential supporters suddenly accepted an unprecedented pension of \$250,000 to retire to Mexico and effectively disappeared from the scene. George Dock, another of Rife's clinical team, and also highly respected and influential, also took a huge and unprecedented gratuity to retire early.

Many of Rife's supporters were convinced this was the work of drug companies who were anxious to suppress a technology that would make virtually all drug treatments obsolete.

Rife was hounded by the FDA and the AMA. He was unable to practice without official intervention and continued a steady decline into alcoholism. This didn't stop him, however, trying to continue his research. In the early 1950s Rife teamed up with a man called John Crane under the auspices of a new company (owned by Crane) called Life Labs Inc.

LIFE LABS INC

Here the record becomes confused again. Crane worked on the development of several new machines. One in particular was quite different, it used a pad which had to be placed in contact with the body. Crane claimed that he and Rife had developed the machine together, and Rife was certainly associated with the company because he wrote letters on its behalf. But apart from Crane's statement there is no direct evidence to suggest that Rife developed or endorsed the pad machine. Because of this there is some confusion as to what constitutes a real "Rife Machine" because some people (particularly those selling such devices) claim the former and others the latter.

Users claim both are effective, but the original plasma device has the advantage that it can be used to treat the whole body (or even several bodies at once!) since it has an effective operating radius of around 20 to 30 feet (6m to 9m) depending on power level and does not require any body contact.

Modern researchers who made contact with Crane studied circuit diagrams that Crane gave them and concluded that not only could the circuits not work as they were, but Crane did not seem to know very much about electronics. However, some of the circuits did work with minor modifications, indicating that Crane had probably taken the diagrams from prototype notes of other engineers who had worked for him.

Crane's involvement led to a second source of confusion. Crane published lists of MOR frequencies which were all in the low audio range. Clearly there was a big difference between Crane's frequencies and Rife's. A popular list of frequencies (Table 2) which was obtained from Dr Robert P. Stafford MD, who is claimed to have used a "Rife machine" (probably a "Crane machine") for clinical trials between 1957 and 1963 and which is often advertised as Rife's original



Front panel of the 1947 Rife Machine. The knob on the left changes the frequency band and the knob on the right changes the amplitude or power.

frequency list, is in fact a copy of a document he received from Crane.

Table 2. Crane's List of MOR Frequencies

Microorganism	Frequency (Hz)
Tetanus	120
Treponema	660
Gonorrhoea	712
Staphylococci	728
Pneumococci	776
Streptothrix (fungus)	784
Streptococci	880
Typhoid Bacteria	712
Typhoid Virus	1862
Bacillus Coli Rod Form	800
Bacillus Coli Virus	1552
Tuberculosis Rod Form	803
Tuberculosis Virus	1552
	(same as B-Coli)
Sarcoma (all forms)	2008
Carcinoma (all forms)	2128

Interestingly, these frequencies have been claimed to be effective for Rife type plasma machines by modern researchers, but they are obviously not Rife's original frequencies.

In 1971 Rife was admitted to hospital, details are unclear, but I've seen accounts that attributed it either to a car accident or an alcoholic binge. Either way it is reported that he died following accidental injection of a massive overdose of Valium.

THE LOST TECHNOLOGY

Following his death, Rife's work was forgotten. Most of his original notes had been lost in the fires and/or supposedly destroyed by AMA/FDA agents. But some of his associates remained alive, particularly Crane who wrote a book about the work (supposedly very long winded and not very technically accurate according to those who have read it). Crane was arrested numerous times for promoting Rife's work and spent three years in prison for it. And there were still a few old doctors who claimed to have been successfully using the device for treatments (mostly in secret) over the years and still had working machines.

Even Rife's microscopes were forgotten except for odd articles of historic interest. For example, a 1944 report from the board of the Smithsonian Museum stating basically that the microscope worked and that Rife's results had been validated. The author, Dr Raymond Seidel reportedly survived a subsequent assassination attempt in 1945, after which he refused to mention Rife ever again.

An original Rife microscope (which, however, had probably been tampered with by Hoyland) resides today in the Science Museum in London, unfortunately broken and not on display. The microscope was formerly used at the London School of Tropical Medicine, but following a dispute between Dr Gonin, the British doctor who used it and Beam Rays Inc., (probably Hoyland), the machine was supposedly smashed by a mysterious man who arrived from America. It was later donated to the Science Museum by Dr Gonin's family after his death.

Even the newspaper reports were hard to come by. Some of the newspapers told researchers that they had lost the specific editions with reports of Rife's work, *note only those editions*. Luckily there were people who did still have copies.

MODERN REVIVAL

The whole matter was revived suddenly around 1986. As far as I know, the recent efforts appeared after a book about Rife called *The Cancer Cure that Worked* was written by an author called Barry Lynes. Whatever the cause, several modern researchers tried to build duplicates of the original beam ray devices, most of them succeeding in producing allegedly bio-active machines, but none of them truly original.

Eventually these modern researchers managed to make contact with the few surviving doctors who had worked with Rife and his machine and slowly the details began to emerge.

Although Rife had used a variable carrier wave in his original prototype machine, later models of the machine used by other doctors used fixed carriers with amplitude modulation. It is not known whether these machines were Rife's, Hoyland's or Crane's. The modulation was a square wave pulse with fast rise time. Calibration and measurement of dial settings on the old machines revealed that the active frequencies of modulation were all in the low audio range corresponding to the lists published by Crane.

One explanation of the discrepancy between Rife's original notes and the derived frequencies may be explained in terms of harmonics. The higher harmonics of a square wave pulse represent odd multiples of the fundamental frequency (Fourier's theorem) and so the square wave produces a range of different (higher) frequencies for any given fundamental frequency.

Another theory is that the microorganisms have more than one mortal frequency. There is some support for the latter idea in letters written by Johnson which indicate that at one stage, he and Rife stumbled on to a "super-frequency" which would kill almost any microorganism. Unfortunately this frequency was never recorded.

The modern researchers took various approaches to reproducing the machine. Some used old X-ray tubes filled with low pressure helium or argon, others had tubes made, and some even made them themselves.

BARE MACHINE

One of the most popular recent incarnations of the Rife machine was developed by a Dr James Bare. Bare took a minimalist approach to the problem and modified a CB transmitter and power amplifier to increase the bandwidth and to drive the tube at a carrier frequency around 27MHz. Using the audio input of the transmitter to introduce the modulating pulses, he then proceeded to perform experiments to verify Rife's work.

I don't know exactly which experiments he did (I haven't read his book) but he claims that the device worked just as Rife described and he has had photomicrographs taken which allegedly show the device destroying single-celled organisms like *Blepharisma*. You can download a Windows AVI video file showing the process via the internet (addresses at the end of the article). Bare also sells videos of other experiments.

The book of Lynes, and the work of Bare and others caused a virtual explosion of activity in this field. Today, it is estimated that nearly 5000 people have Rife machines (or at least modern equivalents) in active use

and an enormous amount of anecdotal data has been compiled through amateur efforts to cure specific diseases. Although many of the anecdotes are purely subjective, a great many claim to have been verified by doctors and some contain considerable clinical detail.

It is not unusual to see comments in which users have stated definite biometric measurements of their own diseases both before and after treatment with the device. One thing is overwhelmingly clear a large number of people are convinced that the device works. Fantastic as it may seem, many people claim to have experienced improvements in cases of the most dire diseases, such as cancer and even AIDS.

What is even more interesting is the number of people who have reported relief from the symptoms of diseases that are not known to have any viral or bacterial component, or the cause of which is still officially unknown. The devices have also allegedly been widely and successfully employed in veterinary practice as well, implying that the results are not simply due to the placebo effect.

FREQUENCY LISTS

As a result of all these efforts, there now exist a number of frequency lists (all freely available on the internet) which give specific treatment frequencies for just about every disease imaginable. Others are classified by the microorganism species. Another interesting point worthy of note is that whilst Rife's original work only concentrated on MORs for bacteria and viruses (he knew it affected yeasts etc., as well), the modern researchers claim to have found MORs for yeasts and moulds, various protozoa-like amoebas, worms and parasites like flukes and even some insects.

The consensus seems to be that low frequencies are deadly to simple organisms. The more complex organisms like mammals (at first sight, see comments later) seem to be immune to these frequencies.

SIDE EFFECTS

Advocates of the machine are very keen to point out that there do not appear to be any negative side effects (apart from the inevitable Jarisch-Herxheimer reactions) and so far nobody claims to have identified any bad or dangerous frequencies. My own feeling is that this is not strictly true and there is ample evidence of possibly bad frequencies. However, to someone dying of a terminal cancer the risk is worth the potential reward.

HOW IT WORKS

By now you are no doubt longing to know how does it work? The answer is that nobody knows for certain. Although there are many clues to be found in modern research into the effects of electric and magnetic fields on biological systems. Unfortunately, this whole area of research still appears to be vehemently opposed by the mainstream medical establishment and very little (compared to other fields of medical research) serious and rigorous research is being done.

At first sight it appears that the electromagnetic waves emitted by the plasma tube of the device are inducing fields or currents into body cells. However, many researchers are quick to point out that putting the device inside a Faraday Cage (which will block all electromagnetic waves) does not impair its effectiveness. Nor will a simple aerial produce the same effect.

PLASMA WAVES?

Some have speculated that the light from the tube is involved, but once again the device appears to work well with covered tubes. I have seen various theories that claim the existence of a mysterious new type of energy called a plasma wave, but my personal feeling is that this is too fanciful and there is a simpler explanation.

PATENTED HIV CURE

At this point I would like to digress to look at some other machines of a similar nature that may throw some more light on the puzzle before returning to the question of what is actually happening.

On 14 March 1991, two researchers, William Lyman and Steven Kaali, at the Albert Einstein School of Medicine, announced to the *First International Symposium on Combination Therapies* that they had found they were able to inactivate the HIV virus in blood samples, by passing a tiny electric current (less than 100 microamps) through the blood itself. A similar paper was published around the same time by a team in Japan. The interesting thing here was that they didn't kill the virus, they just made it inert.

The virus reportedly was unable to penetrate and infect body cells after exposure. Either way, the result was more or less the same, it provided a clue to a potential cure. The Einstein team were quick to file a patent (US Patent 5,139,684) in which they described a hypothetical device which could be connected to the patient's circulatory system and in which the blood would pass through a set of electrodes which would in turn pass a current through the blood, the "deactivated" blood being returned to the patient's body. Other researchers were also quick to confirm that the effect wasn't just limited to HIV, it worked just as well with other bacteria and viruses as well.

NEW AGE DEVICES?

This led to more amateur experimentation. A host of "new" machines emerged from various experimenters. I qualify the word "new" because all of them are just modern rehashes of the old 19th century electrotherapy machines. They basically fall into two main classes: those that pass a low voltage alternating current through the body (ideally across some major artery) and supposedly purify the blood according to the Lyman/Kaali principle, and others that produce intense magnetic field pulses.

People who claimed to have tried these devices for the most part reported that they provided an amazingly rapid relief from symptoms. Of further interest was the fact that many people reported a consequent Jarisch-Herxheimer reaction. To put it simply, if you kill enough microbes you get a Jarisch-Herxheimer reaction.

SNAKE OIL AND SNAKE BITES

Vendors (the snake oil and quackery industry is still healthy!), claim that these machines (which typically produce about 28 volts peak-to-peak a.c. square waves across the skin for the electric machines), and magnetic pulsers which work by discharging capacitors charged up to a few kilovolts into a magnetic coil, have no deleterious side effects and are completely safe to use.

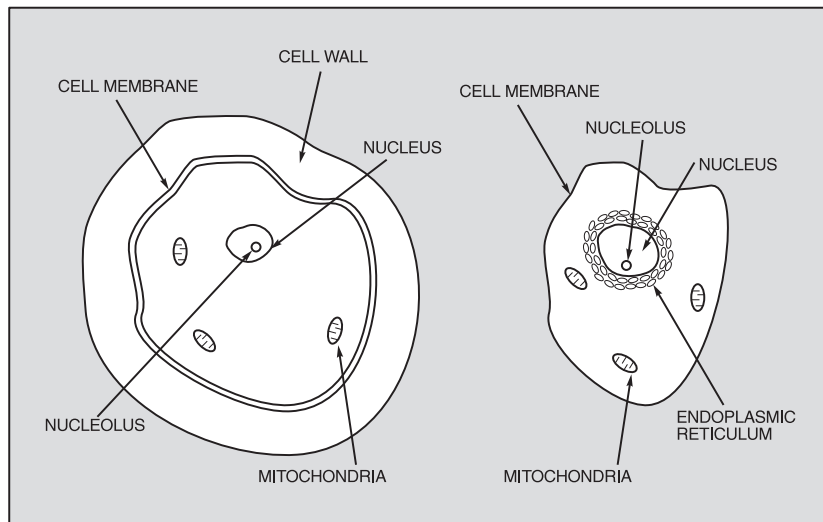


Fig.4. A bacterial/mould/plant cell (left) and (right) an animal cell.

I am personally sceptical about most of the claims made for these devices and very much so about the safety of some of them. I believe that they do provide some of the symptomatic relief that they claim and not simply through a placebo effect. However, the long term effect of using these machines has never been properly studied.

Some of these devices are supposed to be frequency dependent, others not. Although as far as I can tell, the Rife machine still remains the clear winner.

None of these devices have been accepted by the mainstream medical establishment. However, many hospitals today use pulsed magnetic field therapy to speed up the healing of broken bones. This highlights the hypocrisy of some medical people who on one hand declare that there is no possible benefit to these kind of therapies, yet happily use them to heal fractures.

As an interesting aside, there is a modern item of "bush-lore" widely accepted and used by travellers in certain parts of the world, and even endorsed by many doctors, that an excellent therapy for venomous snake bites is to apply a strong electric shock to the site of the bite which apparently somehow neutralises most snake venoms.

You can get manuals on how to perform an instant bush cure using the ignition coil of a car. It's supposed to work great for Rattlesnake bites, although I must admit I haven't found this to be much of a problem in Berkshire!

ELECTROPORATION

Returning to the question of what is happening. I have frequently seen it suggested that electroporation, or voltage dependent gating, may account for the effects of electric and magnetic fields on bacteria. I don't believe this to be the case and I think these ideas arise from an inadequate understanding of cell structure. To explain, let's start by looking at cells.

Bacterial, plant and yeast cells are very different from the kind of cells found in the human (or other animal) body. Pathogens like the ones listed earlier tend to have a thick cell wall and an internal cell membrane that encloses them. There is a major distinction between the cell wall and the cell membrane. The cell wall is typically about 200nm thick, and the cell membrane usually consists of a

layer of two protein molecules bonded together and is about 5nm to 10nm thick, depending on which protein is involved.

A typical body cell does not have the cell wall, it only has the cell membrane. Simply put, a bacterium or fungal cell has a coating many times thicker and stronger than a body cell. See Fig.4.

Electroporation, an effect often used by genetic engineers to introduce DNA strands into cells, occurs in cell membranes. Cell membranes have natural pores due to the statistical movement of the molecules that they are made of. The molecules move about leaving momentary holes. If the movement of the molecules is increased by electrical stimulation, they tend to leave bigger (sometimes permanent) holes and the cell membrane becomes more porous. A large enough hole will destroy the cell.

VOLTAGE DEPENDENT GATING

Voltage Dependent Gating (VDG) is a different effect in which a protein molecule just a bit longer than the width of a cell membrane, typically helical in shape, tends to burrow its way through the cell membrane literally like a corkscrew. This creates what is known as an ion bridge and under the influence of an electric potential the ion bridge turns on like a switch and carries ions across the cell membrane. This mechanism occurs in many biological subsystems, most noticeably nerve cells.

The theory I have seen advanced for the operation of the Rife machine is that one or both of these effects results in an ion imbalance in the bacterial cell (but not the body cell) which results in an osmotic pressure differential that ultimately causes the bacterium to blow up like a balloon and then explode.

BALLOONS Vs FOOTBALLS

But the two effects above both operate on cell membranes (I don't know if they operate on cell walls) and so it follows logically that they are much more likely to damage a normal body cell than a pathogen.

To put it more simply, imagine a bacterial cell to be rather like a football, and a body cell to be rather like a child's balloon. If you blow air into both the football and the balloon at the same rate, the balloon is going to

explode much more easily and much sooner than the football, because the football is thicker and stronger.

So this explanation is unlikely because observation supposedly shows the opposite to be happening.

NEW THEORY

If the reports are to be believed, the real explanation must lie in some electrochemical property that cell walls have that cell membranes don't.

The answer may lie in what are known as ion exchange membranes (IEMs for short). The full technical explanation is too long and complex to reproduce here, but to simplify, a cell wall acts like an IEM, a cell membrane doesn't. An IEM promotes the exchange of ions either side of it when an electric potential is applied.

Simplistically speaking, I personally believe that the electric potential induced across a cell wall by an external magnetic field (or local electric current) causes ion exchange across the cell wall, which results in profound changes in the chemical environment of the cell, for example pH (acidity).

Under the influence of such changes, the proteins that hold together both the cell walls and the cell membranes denature, depolarise or lose their hydrogen bonding i.e. they change shape from nice regular helixes into random strands. As such, they firstly lose their ability to properly participate in the chemical reactions that keep the cell alive and, secondly, result in the weakening of the cell wall which eventually ruptures and disintegrates.

This would explain both the Rife exploding bacteria effect and the Lyman/Kaali bacterial inactivation.

Mild denaturing of the cellular proteins will inactivate the pathogen's ability to bond to other cells or participate in chemical exchanges with body cells, a more pronounced denaturing will destroy the pathogen's cell wall.

I have greatly oversimplified this explanation because molecular electrochemistry is not an easy subject to master. I hope, however that I have conveyed a simplistic picture of what may be happening and why I have doubts about the more conventional explanations.

A CAUTIONARY NOTE

Having said all that, I must urge caution. Whilst the mechanism of these electrotherapy devices may have a greater effect on bacteria etc., than normal body cells, it would be a great mistake to assume that body cells are never damaged by these effects. Any body cell relies on an extremely complex system of electrochemical reactions to operate.

Clearly an electric, magnetic or electromagnetic field applied close to the body will induce electrical potentials across cell membranes (and those of organelles) and will inevitably disrupt normal body cellular electrochemical processes as well as those of bacteria.

Two real questions remain: firstly whether these devices have any beneficial effect at all and secondly whether the gentler devices like the Rife beam ray machine (as opposed to something like the magnetic discharge machines) are really completely safe.

Of course, a degree of "collateral damage" (to borrow a military term!) may well be acceptable when you are treating a serious

disease such as cancer. Undoubtedly existing traditional radiation and chemotherapy techniques which are commonly used to treat cancer (and even in some cases antibiotics) do cause serious "collateral damage" to normal body cells.

Another point to consider is that if you can kill a tumour cell by exploding a virus inside it, it follows that you can kill a normal cell the same way.

Up to this point I've been relating stories and theories secondhand. Now I'd like to just mention some experiments that I've done in this field. I would like to stress that I am giving this information for completeness and because it is interesting. *I am not suggesting that anyone else should try this, it might be dangerous.*

SUBJECTIVE EXPERIMENT

As an experiment, I decided to try making a simple machine. Basically I designed a very simple magnetic pulse generator. I made a simple driver circuit that accepts square wave pulses from a TTL input and drives them at about 36 volts with a current capacity of up to four amps into a 35mH magnetic coil. The resulting magnetic field is quite intense.

I then hooked the machine up to a signal generator and tuned it to various known Crane MOR frequencies for common pathogens that most people have and held the coil near to my body in various places.

Interestingly, I felt nothing at most frequencies but got a noticeable reaction when I tuned to certain frequencies, for example 464Hz, which turns out to be the MOR for *Candida Albicans* (a parasitic yeast that just about everybody has in some degree). I was suffering from a gastric ulcer i.e., gnawing pain under the ribs when my stomach was empty, bleeding etc. I also have a hiatus hernia (weak stomach valve) which for many years has caused almost continuous indigestion and acid burning.

I normally have to take antacids every couple of hours and certainly after every meal. Having had no results from any conventional therapy in the past, I figured I had nothing to lose by trying the machine. I tried setting the machine to 676Hz, the modern MOR frequency for *Helicobacter Pylori*, which is the usual cause of ulcers.

After about three minutes exposure at 676Hz I felt a bit dizzy. About an hour later I had a particularly bad attack of acid and pain which lasted for about two hours. But next morning when I woke up, the usual pain under the ribs was much less. Later that day I tried again, this time two six-minute exposures, one at 676Hz and the other at 464Hz (the *Candida* frequency).

I discovered that 676Hz makes me feel dizzy and 464Hz gives me stomach gas. This time I got a much smaller attack of pain but also this time I got a spate of red blotches on the skin followed by itching all over, again lasting for about two hours. I figured the first was a Jarisch-Herxheimer reaction to the 676Hz and the second the reaction to the 464Hz.

The next day, I woke up again with hardly any pain at all. During the whole day I only had to take one antacid tablet which is unprecedented. After four days of similar treatments all pain had gone and I was getting no detectable reaction at all to either of the frequencies. What is more I had no indigestion for the first time in years and there was

no more bleeding. I stopped the treatments at that point.

At the time of writing it is now nearly three months since I performed this experiment. I have had no pain, no bleeding and feel better than I have done in years.

A few weeks ago, I got the symptoms of a mild cold for a couple of days. The indigestion returned for a day, although not as badly as before. I tried the machine again, tuning randomly through various frequencies and looking for reactions. I got strong reactions at frequencies which I later discovered were known MORs for Adenovirus (a common respiratory infection) and also Chlamydia Pneumonia (also a respiratory pathogen). Two days treatment as before at the new frequencies has once again removed all symptoms and the indigestion is gone.

PLACEBO EFFECT?

It's not very scientific but I'm convinced it works. If anything it has convinced me that this whole field is too important to ignore and the more serious research and experimentation that is done the better.

Sceptics will, of course, argue that this is a classic placebo effect, but having tried various remedies over the years without anything like these results, I believe otherwise.

I also tried a further experiment with moulds. I took a piece of bread, dampened it and left it out overnight. I then broke the bread into two similar pieces and put each piece in a separate, sealed, sterile container. I took one container and exposed it to a range of different anti-mould frequencies of the magnetic pulser. The first container was left untouched.

After four days, the containers were compared. The first, untouched container was full of mould, the second was completely clear. Since the only difference between the two was the exposure to the magnetic pulser I concluded that the magnetic pulser had killed all the mould spores in the second container.

PULSER CIRCUIT

For anyone interested in doing further experiments, the circuit diagram of a second, very simple prototype of my pulser is shown in (Fig.5). The input is a simple TTL square wave at the frequency of interest. The circuit consists of two simple buffer/inverter stages, around transistors TR1 and TR2, to translate the TTL signal into a larger voltage swing to drive the two parallel MOSFETs in the output stage, shown combined as TR3, into hard conduction.

The MOSFETs are wired in parallel to increase their current capability and mounted on a big heatsink, although they have a very low on-resistance and so the dissipation of the circuit is low. The 20V Zener diode, D1, wired from the drain to gate of the MOSFETs prevents inductive voltage overshoot and gives the MOSFETs a very hard switch off edge, which is supposed to be ideal for bioactive effect.

The power supply is a simple 21 volt unregulated supply (a rectified 15V a.c. transformer with a 4700µF smoothing capacitor) but which needs to have a high surge capacity as the transients generated by the coil can overload the transformer and rectifier.

The second prototype uses a 200VA transformer and 10A rectifier which works well. My first prototype used only a 100VA transformer and died suddenly in a cloud of smoke!

The coil, L1, consists of approx 333 turns of 22swg enamelled wire wound on a plastic former of about 13cm diameter (a standard plastic waste pipe coupler) in eight layers, across a span of about 25mm. The turns of the coil need to be tightly wound and well varnished into place to prevent oscillation and heating in operation. The prototype coil gets mildly warm in normal use, about 40°C.

DO NOT TRY THIS AT HOME!

Again I urge everyone to take care. I only experiment on myself; the cardinal rule for me is don't try to treat anybody else. I am aware of the risks I take and accept them, other people may not be. I also don't encourage anyone to try this on themselves, but only to perform proper experiments with microorganism samples with due precautions under scientific conditions. There is still too much that is not properly understood about this technology.

I personally believe that the Rife type plasma machine is the safer option. However, these machines are difficult to obtain and very overpriced (ready-built). I have asked a few manufacturers for specs but I've found that many are unwilling to give proper specifications, and in some cases the advertising claims are simply untrue.

If there are any decent r.f. engineers out there (high power r.f. design is not my speciality) I for one would be interested in a modern design for a Rife plasma device built from the ground up and optimised, not just based on modified CB radios. It should also work with lower carrier frequencies as there is some evidence that carriers in the range of 3MHz to 11MHz are more effective than the 27MHz CB range.

Currently, I am working on the design of a high accuracy digital frequency synthesizer that I intend to use for further experiments.

I must add that, despite my opinions, I am not specifically endorsing any of these devices in any way. I am only presenting this information as a matter of interest.

OTHER EVIDENCE

Amongst the scientific literature I have discovered there is a wealth of information as yet not properly compiled together, and usually buried in incomprehensible technical gibberish. I have seen research reports which indicate that weak magnetic field pulses at 16-7Hz can stimulate the body into increased production of T-lymphocytes. I have seen other reports that indicate that other frequencies inhibit the same lymphocytes.

There are also reports that claim similar effects at various frequencies that inhibit cancer cell growth and ones that stimulate it. Most of the current research, however, has focused on the effect of power line frequencies i.e. 50/60Hz. Most reports indicate that these frequencies are dangerous, I have not seen any evidence of any beneficial effects

reported at these frequencies.

One thing that does seem to be confirmed repeatedly by research is that weak electric and particularly magnetic fields have a most profound effect on growing cells. The faster the rate of cell growth, the more pronounced the effect. This implies that any low frequency magnetic field may be particularly dangerous to children, and especially to unborn children. Also prolonged exposure to any low frequency magnetic field may cause VDG and/or electroporation and consequent cellular damage.

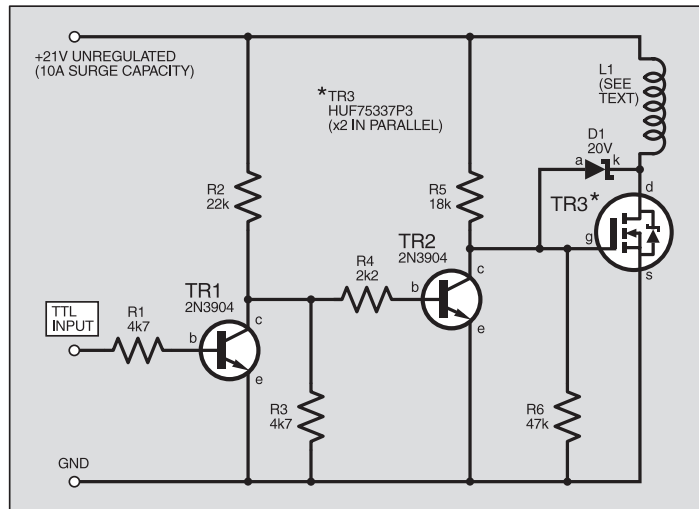


Fig.5. the author's experimental pulser circuit.

It is now widely accepted by many researchers that any field in excess of 150nT is likely to have an immediate bioactive effect on cellular metabolism and much weaker fields may have effects after a longer exposure.

OFFICIAL RECOMMENDATIONS

Despite numerous well founded and intensive research studies on the bioactive effects of l.f. electric and magnetic fields, both the UK NRPB (National Radiological Protection Board) and the US NCRP (National Committee on Radiation Protection) insist that their official position is that there is no proven risk of adverse health effects from l.f. fields.

Many informed observers believe that this is a short sighted view motivated by political considerations, for example, both authorities have close ties to power generation companies that obviously would be reluctant to admit that their product might be dangerous to consumers.

In the United States at least, this has led to conflict between various government agencies, for example the NCRP and the EPA (Environmental Protection Agency). The EPA has allegedly petitioned various US government authorities to classify l.f. radiation as "a possible human carcinogen", but has met with concerted resistance from the power companies and their lobbyists. In addition, numerous lawsuits have been filed by consumers and environmental groups against power generation companies, citing research and statistical studies that supposedly show a strong correlation between childhood leukemia and proximity to power lines emitting l.f. electric and magnetic fields.

The fact remains, that whilst these authorities insist that there is no proven risk from

l.f. fields, they are talking in the context of normal domestic power lines, and on the basis of projected field strengths and exposures in normal use. Neither authority is actively denying that l.f. fields have bioactive effects *per se*, although there is controversy over the field strengths that might have an effect, and whether or not the effects are temporary or permanent.

The NRPB in the UK has published reports in which it admits that some strong l.f. fields might have temporary bioactive effects. The NCRP is also at the centre of a controversy over a "leaked" internal draft recommendation of 1995 by its own research teams which makes various recommendations, citing specific bioactive effects of low intensity l.f. fields and which concludes:

Based on available evidence, the committee concludes that it is desirable to reduce human exposure to electric and particularly to magnetic fields over the frequency range from near-zero to 3kHz. This may be accomplished, particularly in areas with frequent and prolonged human occupancy, by recommending an exposure standard, or a set of safety guidelines; or by recommendations that fall short of establishing either a standard or guideline, but offer guidance to limit exposure.

FOOD PRESERVATION

Perhaps the most interesting twist to the whole story comes in the form of two new reports by the US FDA, the very organisation that tried to shut down Rife. These latest two reports consider the use of pulsed electric and magnetic fields for food preservation on the basis that accepted research shows that pulsed electric and magnetic fields can kill bacteria, viruses and other pathogens.

These two reports (which are available on the Internet, addresses later) cite impressive figures for kill rates of specific bacteria at specific pulse rates of a strong magnetic field. But the conclusion of the reports is that pulsed fields do not qualify for approval as a method of food preservation because the mechanism of action is unknown, and also because of inconsistent results, in some cases the fields appear to enhance the action of bacteria, in others they kill them and some appear to have no effect at all.

The interesting conclusion the FDA draws from this is that the effect is obviously frequency dependent and also is influenced by field strength, exposure time and the nature of the material exposed. This is almost exactly what Rife was saying in the first place.

MAGNETIC FIELD REPORT

Here is an extract from the FDA magnetic field report:

Exposure to a magnetic field may stimulate or inhibit the growth and reproduction of microorganisms. A single pulse of intensity of 5T to 50T and frequency of 5kHz to 500kHz generally reduces the number of microorganisms by at least 2-log cycles

(Hoffman 1985). High intensity magnetic fields can affect membrane fluidity and other properties of cells (Frankel and Liburdy 1995). Inconsistent results of other inactivation studies, however, make it impossible to clearly state the microbial inactivation efficiency of magnetic field or to make any predictions about its effects on microbial populations.

FINALLY

I have deliberately tried to keep this article simple, trying to find a balance between completeness, common sense and scientific overkill! I hope that I have at least stimulated some readers to research this fascinating subject themselves.

ACKNOWLEDGEMENT

Photographs of the 1947 Rife Machine were downloaded from <http://www.rt66.com/~rifetech/rife.html> and reproduced by kind permission of James Bare.

REFERENCES

Ions, Electrodes and Membranes. J. Koryta. 1992. John Wiley and Sons, ISBN 0-471-93080-6. A good introductory book on cellular electrochemistry.
<http://www.lvstrings.com/quack.htm>. Jeff Behary's Turn of the Century Electrotherapy Museum. A wonderful site with descriptions and many photos of the plethora of extremely weird, wonderful and hilarious early electrotherapy devices.
<http://www.mtn.org/~quack/>. Another wonderful on-line "quackery" museum with links to many sites.
<http://www.rife.org/>. Site of the Rife Plasma Digest, a very good site with scanned copies of numerous original Rife documents and correspondence.
<http://www.rt66.com/~rifetech/>. James Bare's web site, lots of information and great links. Check out the AVI video of the exploding Blepharisma!
<http://www.rife.de/>. The Rife Information Forum Europe, useful links and information about clinical trials.
http://patent.womplex.ibm.com/details?patent_number=5139684. A link with details of the Einstein team's patent for their proposed HIV treatment with details of numerous subsequent similar patents.
<http://vm.cfsan.fda.gov/~comm/ift-omf.html>. FDA Report (2000) on use of pulsed magnetic fields for food preservation.
<http://vm.cfsan.fda.gov/~comm/ift-pef.html>. FDA Report (2000) on use of pulsed electric fields for food preservation.
<http://www.nrpb.org.uk>. The official web page of the UK National Radiological Protection Board (NRPB)
<http://www.ncrp.com>. The official web page of the US National Committee on Radiological Protection (NCRP).
<http://www.microwavenews.com/ncrp.html>. A link to a copy of the "leaked" 1995 NCRP Draft recommendations for l.f. field exposures.

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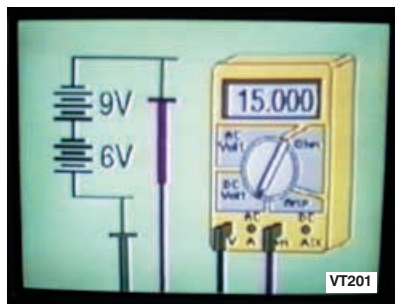
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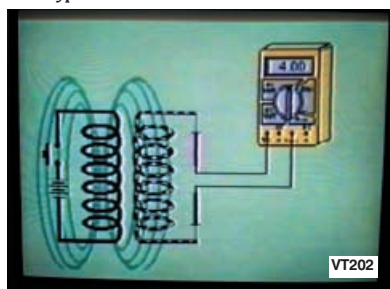
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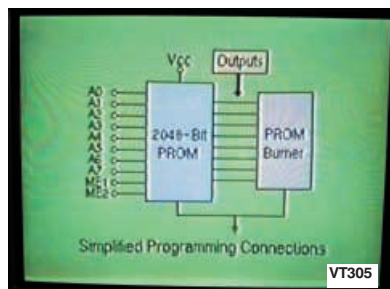


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