

Eric Dollard Collected Articles

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UNDERSTANDING THE ROTATING MAGNETIC FIELD

by ERIC P. DOLLARD
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TESLA, PHYSICS AND ELECTRICITY

Research into the works of Nikola Tesla reveals electric phenomena that behave contrary to the theory of electricity in present use. Explanation of Tesla's inventions has been given from the standpoint of physics, yielding many misconceptions. The science of physics is based on phenomena surrounding particles and mass, which finds little application in the study of electric phenomena.

The explanation of Tesla's discoveries are to be found in the science of electricity rather than the science of physics. The science of electricity has been dormant since the days (1900) of Steinmetz, Tesla and Heaviside. This is primarily due to the vested interests which we may call the "Edison Effect".

Charles Proteus Steinmetz

To assist in the understanding of Nikola Tesla's discoveries, thereby putting his inventions to work, a theory of electric phenomena applicable to these discoveries must be developed.

A starting point of such a theory has been developed by C.P. Steinmetz. Steinmetz was employed by the Edison/Morgan Company, General Electric, to decipher the Tesla patents, thereby evading these patents. With unlimited funds for research and a keen insight into electric phenomena, Steinmetz is a most significant contributor to the knowledge of electricity. His work is presented in three volumes:

- I) "Theory and Calculation of Alternating Current Phenomena", third edition, 1900, McGraw-Hill, New York.
- II) "Theory and Calculation of Transient Electric Phenomena and Oscillations", third edition, 1920, McGraw-Hill, N. Y.
- III) "Electric Waves, Discharges and Impulses", second edition, 1914, McGraw-Hill, N.Y.

These serve as an introduction to the theoretical understanding required.

INTENT OF PAPER

This paper serves as a preface to a theoretical investigation of N. Tesla's discoveries by the examination of the rotating magnetic field and high frequency transformer. It is assumed that the reader is acquainted with the commonly available material on Tesla, and possesses a basic knowledge of mechanics and electricity.

THE ROTATING MAGNETIC FIELD

THE GENERALIZED ELECTROMECHANICAL TRANSFORMER

In the general electromechanical transformer energy is exchanged between mechanical and electric form. Such an apparatus typically employs a system of moving inductance coils and field magnets.

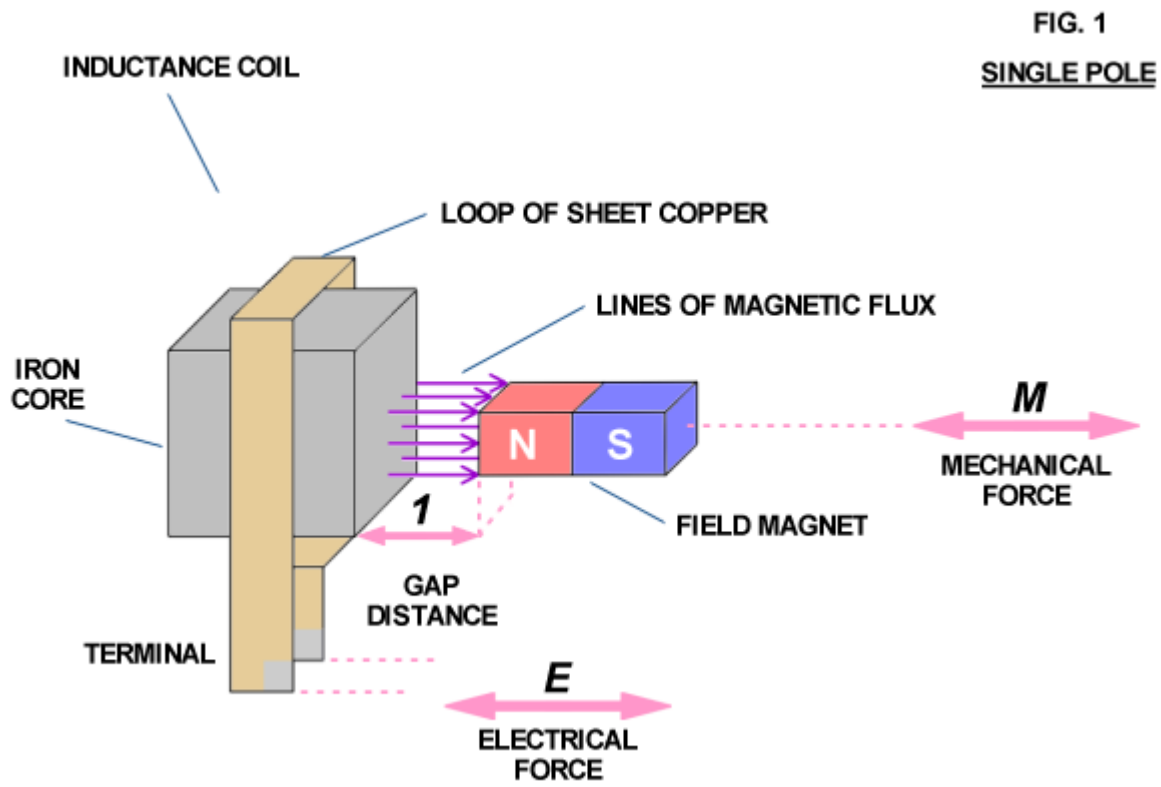
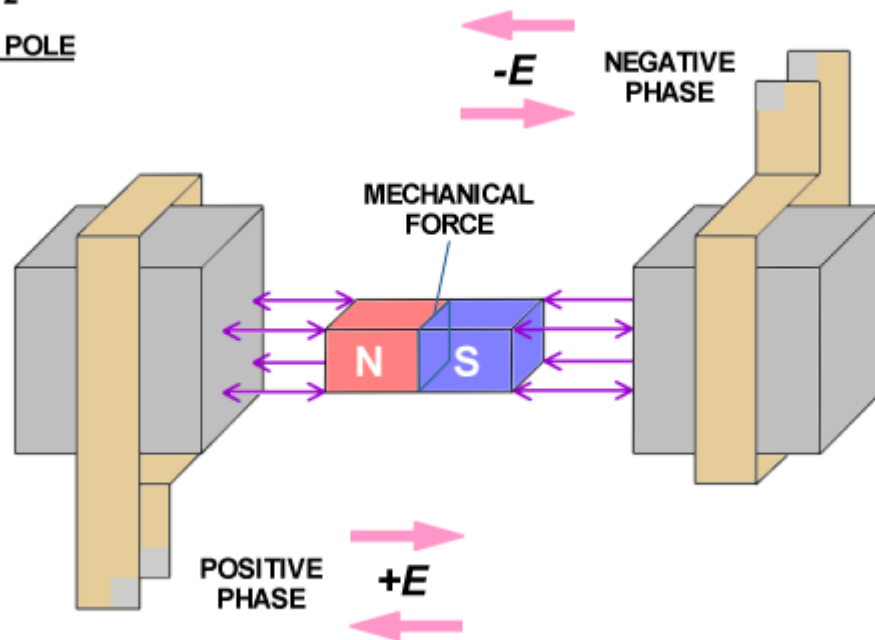


FIG. 2
DOUBLE POLE



It is desirable that the mechanical energy produced or consumed be of rotational form in order to operate pumps, engines, turbines, etc. The method of producing rotary force, without the use of mechanical rectifiers known as commutators, was discovered by Nikola Tesla in the late 1800s and is known as the rotating magnetic field.

ELEMENTAL PRINCIPLES

An examination of the rudimentary interaction between inductance coils and field magnets will provide some insight into the principles behind the rotary magnetic field.

Consider a simple electromechanical device consisting of a piece of iron with a copper loop winding around it along with a small bar magnet (Fig. 1). Any variation in the distance (1) between the pole faces of the inductance coil and magnet produces an electromotive force (voltage) at the terminals of the copper loop resulting from the field magnet's lines of force passing through the iron core of the inductance coil. The magnitude of this E.M.F. is directly proportional to the speed at which the distance (1) is varied and the quantity of magnetism issuing from the field magnet pole face.

Conversely, if an electromotive force is applied to the inductance coil terminals, the distance (1) varies at a speed directly proportional to the strength of the E.M.F. and the quantity of magnetism issuing from the field magnet pole face. Thus electrical force and mechanical force are combined in this device.

If a flow of electrical energy (watts) is taken from the coil terminals and delivered to a load mechanical resistancy (friction) appears at the field magnet as a result of magnetic attraction and repulsion between the magnet and iron core. Mechanical force applied to the field magnet in order to move it results in power flow out of the coil. This flow of power generates an oppositional or counter electromotive force which repels the field magnet against the mechanical force. This results in work having to be expended in order to move the magnet. However this work is not lost but is delivered to the electric load.

Conversely, if the field magnet is to deliver mechanical energy to a load, with an externally applied E.M.F. to the coil terminals, the field magnet tends to be held stationary by the resistancy of the connected mechanical load. Since the field magnet is not in motion it cannot develop a counter E.M.F. in the coil to meet the externally applied E.M.F. Thus electrical energy flows into the coil and is delivered to the field magnet as work via magnetic actions, causing it to move and perform work on the load.

Hence, mechanical energy and electrical energy are rendered one and the same by this electromechanical apparatus. Connecting this apparatus to a source of reciprocating mechanical energy produces an alternating electromotive force at the coil terminals, thus a linear or longitudinal A.C. generator. Connecting this apparatus to a source of alternating electric energy produces a reciprocating mechanical force at the field magnet, thus a linear A.C. motor. In either mode of operation the field magnet reciprocates in a manner not unlike the piston of the internal combustion engine. Rotary motion is not possible without the use of a crankshaft and flywheel.

FIG. 3

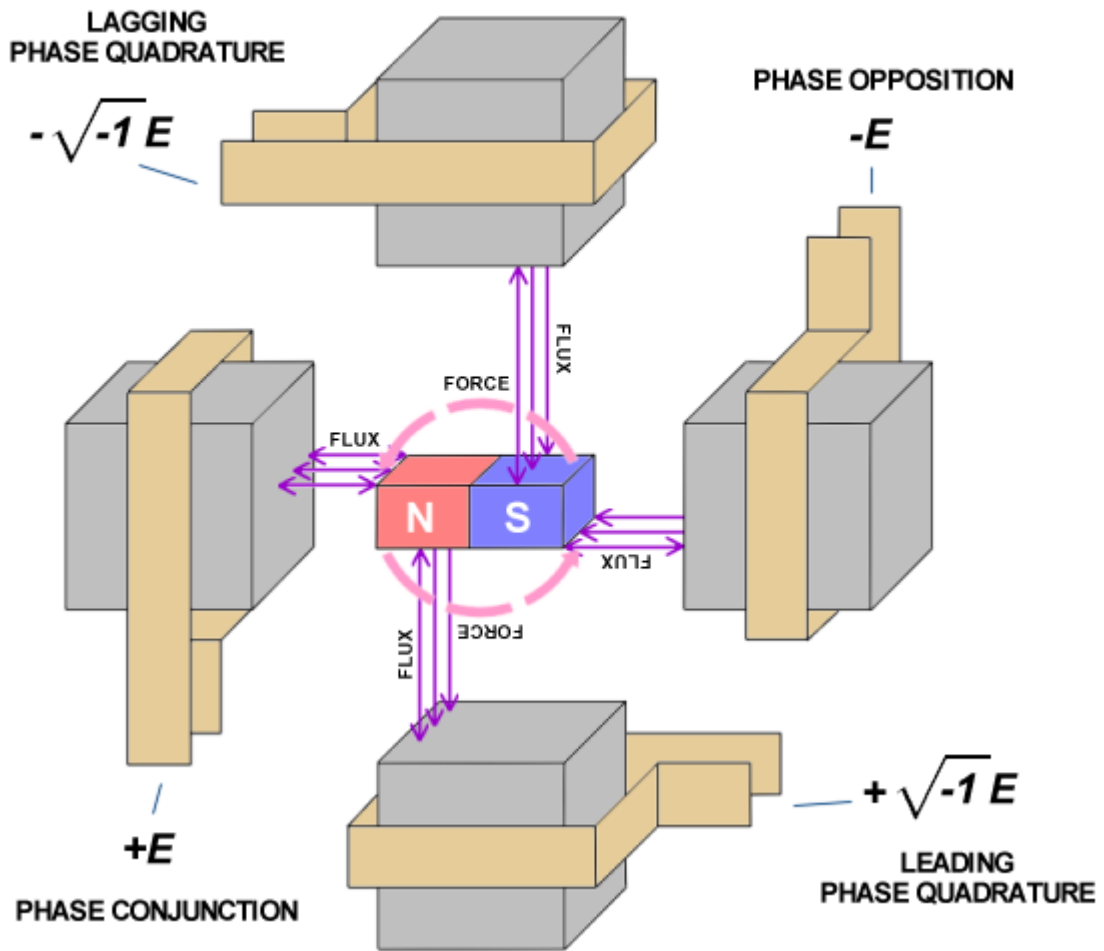
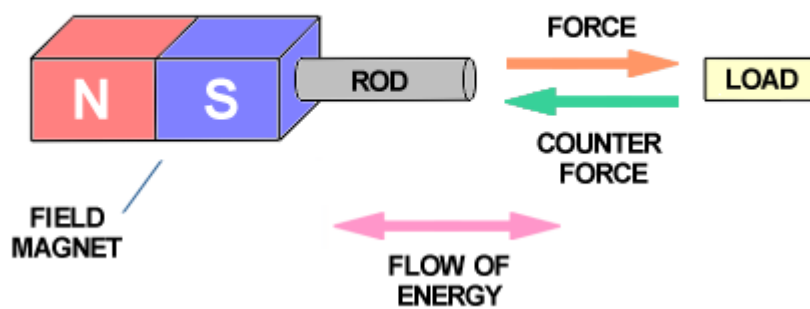


FIG. 4



Arranging two inductance coils in a line as shown in Fig. 2 and connecting these coils to a pair of alternating E.M.F.s that are out of step by $\frac{1}{2}$ of an alternating cycle with respect to each other results in the mechanical force being directed inwardly into the molecular spaces (inner space) within the field magnet. The field magnet is alternately stretched and compressed by magnetic action and no external force is evident except as vibration and heat. However, arranging two of the pairs shown in Fig. 2 at right angles to each other, connecting each pair of alternating E.M.F.s that are out of phase or step by one quarter cycle (quadrature) with respect to each other produces a rotating travelling wave of magnetism, that is, a whirling virtual magnetic pole. This virtual pole travels from one pole face to the next during the time interval of one quarter cycle, thus making one complete revolution around all the pole faces for each cycle of alternation of the E.M.F.s. The field magnet aligns with the virtual pole, locking in with the rotary magnetic wave, thereby producing rotational force.

An analogy may assist in understanding this phenomena. Consider that the sun appears to revolve around the earth. Imagine the sun as a large magnetic pole and your mind's view of it as the field magnet. As the sun sets off in the distant horizon, it seemingly disappears. However, the sun is not gone but it is high noon 90 degrees, or one quarter, the way around the planet. Now imagine moving with the sun around the planet, always keeping up with it so as to maintain the constant appearance of high noon. Thusly, one would be carried round and round the planet, just as the field magnet is carried round and round by the virtual pole. In this condition the sun would appear stationary in the sky, with the earth flying backwards underfoot. Inspired to thinking of this relation by the poet Goethe, Tesla perceived the entire theory and application of alternating electric energy, principally the rotating magnetic wave.

"The glow retreats, done is the day of toil;
it yonder hastes, new fields of life exploring;
Ah, that no wing can lift me from the soil,
upon its track to follow, follow soaring..."

ROTATIONAL WAVES

The fundamental principle behind the production of the rotary magnetic field serves as the principle behind all periodic electric waves. It is therefore of interest to investigate the discovery a little further.

The apparatus shown in Fig. 1 develops mechanical force along the axis of the field magnet as shown in Fig. 4. Likewise, mechanical counterforce is applied along the axis of the field magnet. Hence, if work is to be drawn or supplied respectively to the field magnet from an external apparatus, a connecting rod is required between the two machines. The flow of energy is along the axis of the rod and thus is in line (space conjunction) with the forces involved. A simple analogy is a hammer and nail. The hammer supplies mechanical force to the nail, the nail transmitting the force into the wood. The counterforce tends to make the hammer bounce off the nail. However, the wood is soft and cannot reflect a strong counterforce back up the nail and into the hammer. Thus the nail slides into the wood absorbing mechanical energy from the hammer which is dissipated into the wood.

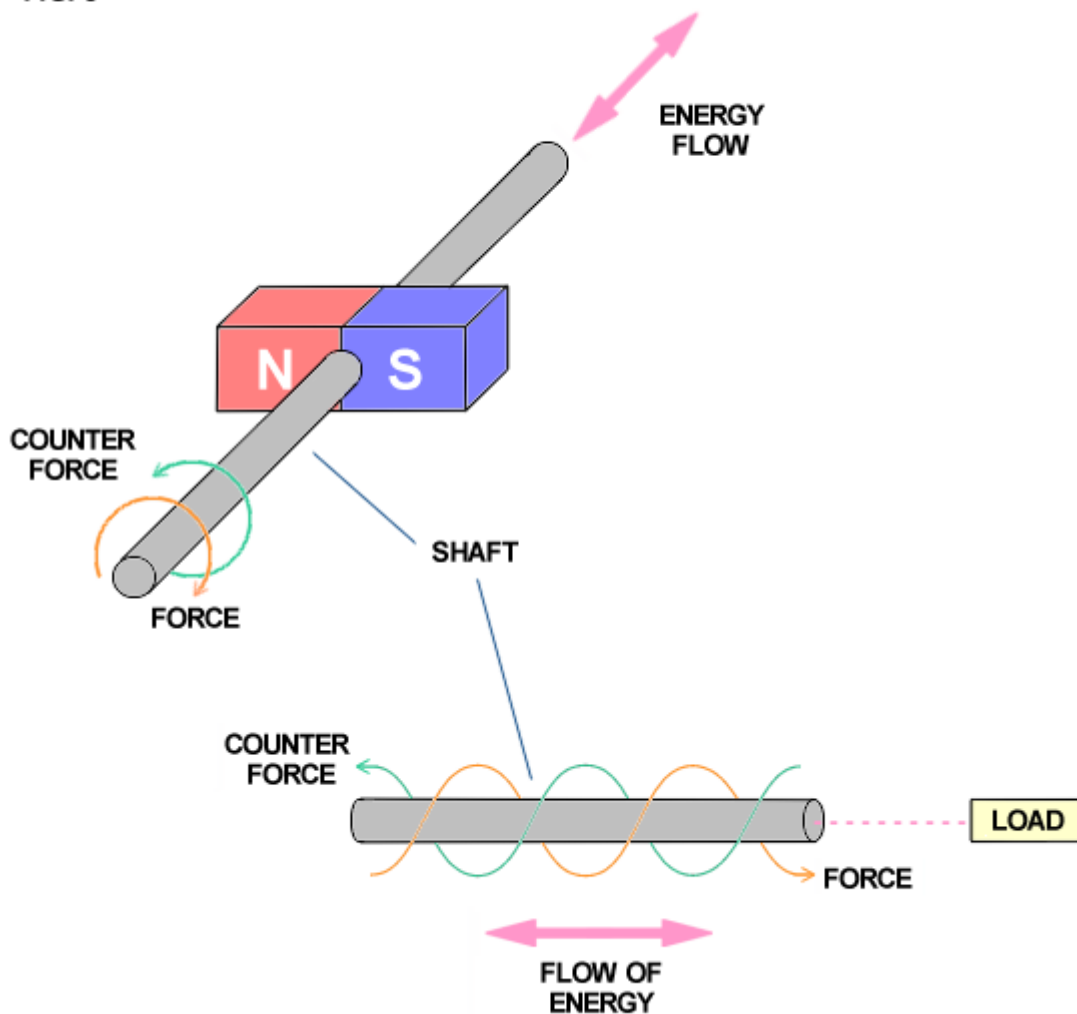
The apparatus of Fig. 2 develops mechanical force axially also, but it is entirely concentrated within the molecular space. Any counterforce must push back along the same axis. Thus the work is also along axis like Fig. 4 and is delivered to the molecular structure. The analogy is two hammers striking a steel block from opposite sides, pounding the block and producing heat and vibration within it.

The apparatus of Fig. 3 produces a quite different wave form (Fig. 5). The mechanical force delivered to the shaft is applied at a right angle to the axis in clockwise direction. The counterforce is applied in the opposite rotational sense or counter-clockwise direction at a right angle to the axis. The flow of mechanical energy is still along the shaft as in Fig. 4, however, it no longer pulsates in magnitude with the cycle but it continues, quite like the flow of electric energy in a direct current circuit.

An analogy is a screw and screwdriver. The screwdriver is forced rotationally clockwise by the hand or other motive force. The counterforce appears in opposition, that is counter-clockwise, thereby arresting the rotation of the screwdriver. However, the wood is soft and cannot reflect the counterforce back into the screwdriver. Thus the screw travels longitudinally into the wood, perpendicular to the rotation of the screwdriver.

The form of this wave has been of great interest to a wide variety of fields of endeavor. It has been called the Caduceus coil, spinning wave, double helix, solar cross, and of course the rotating magnetic field. Applications are as wide ranging, from sewage treatment plants and guided missiles all the way to the Van Tassel Integratron and astrology.

FIG. 5



FUNCTIONAL THINKING: An Interview With Eric Dollard
by Tom Brown

Eric P. Dollard, Wireless Engineer, is a scientist who bases his work on observation of phenomenon and practical experimentation. He is the Vice-President of BSRF and the author of five published papers on electrical phenomena: CONDENSED INTRO TO TESLA TRANSFORMERS, DIELECTRIC AND MAGNETIC DISCHARGES IN ELECTRICAL WINDINGS, SYMBOLIC REPRESENTATION OF ALTERNATING WAVES, SYMBOLIC REPRESENTATION OF THE GENERALIZED ELECTRIC WAVE (IN TIME), and THE THEORY OF WIRELESS POWER. In the course of Eric's research he has investigated the works of Nikola Tesla, Charles Proteus Steinmetz, Philo Taylor Farnsworth II, Johann Sebastian Bach, Wilhelm Reich and other true Scientists of our era. I have personally witnessed the propagation of electricity without wires, the phenomenon of drawing several inch sparks off insulators and mysterious living forms in plasma gas bulbs connected to Eric's Tesla apparatus. Eric speaks a knowledge gained by hands on experience. This interview will certainly change your point of view about the Borderlands of Science and will certainly shatter any preconceived notions you once had about Tesla, Free Energy, ELF, The American Dream, etc...

Tom: What first interested you in the works of Nikola Tesla and electrical engineering in general?

Eric: I've always been interested in the subject. Years ago someone gave me a copy of Co-Evolution Quarterly that had an article on Tesla, Philo Farnsworth and Edwin Armstrong. That got me thinking about what was going on as I had basically reinvented the Tesla coil as a teenager using equipment given to me by RCA. Things started to connect at that point. Then I read PRODIGAL GENIUS (by John O'Neill) and it was like I was hit with a bolt of lightning. That book shocked me into action.

T: What do you think that Tesla was trying to attempt in his work?

E: It's hard to sum that all up in one phrase.

T: Would the culmination be the transmission of electrical energy without wires?

E: That was part of his projects, using what could be called true single phase electricity, or monopolar electricity. That's the key to his transmission of electrical and mechanical energy - to convert it to a single phase form.

T: Would you say that monopolar electricity is electromagnetic?

E: No, it's anti-electromagnetic.

T: You mentioned Philo Farnsworth, what type of work was he doing?

E: Farnsworth built the multipactor tube, a secondary emission, negative resistance tube. It tends to take off when connected to apparatus such as a Tesla coil and exhibit electrical oscillations.

T: So, to use a catch-word of the day, it was a free energy device?

E: Yes, probably the only real free energy device that anyone ever demonstrated which can be reproduced.

T: Was there any relationship between the work of Tesla and that of Farnsworth?

E: They are really in totally opposite directions. Farnsworth was the high master of electronics...he was electronics. No one knew more about the electron than Farnsworth. Tesla was dealing with ether type forces that don't involve material or atomic particles, they involve something a little finer than that.

T: You have worked extensively with Tesla coils and we have published your books on the subject. What do you feel is the actual use of these apparatus?

E: As a transmitter-receiver device, for transmitting energy without transmission towers or large arrays of dipoles, or equivalent.

T: What is the medium for the transmission of energy if wires are not used?

E: Whatever the general media is around us, call it the ether, or air or you can transmit it through the ground. Basically it just flows. The Tesla system is designed to transmit through the ground. There's a lot of talk about propagating through the earth-ionosphere wave guide, which Tesla, in no way, shape or form envisioned. Most of his apparatus are for transmission through a common conducting medium and the earth is the best conducting medium available. The devices are one conductor electrical generators - just connect one terminal to the common conducting medium and all the other one terminal devices will receive the energy. There's no pairs of wires or wave guides to bound the energy. These are what are called unbounded waves. The Tesla Magnifying Transmitter is a converter which converts electromagnetic energy into what is called magneto-dielectric energy.

T: What exactly is the dielectric side of electricity?

E: The side of electricity that represents the faster than light phenomenon.

T: How does the dielectric relate to Reich's orgone energy?

E: Reich found that the orgone and the dielectric field are basically one and the same. If a dielectric field has the proper pulsations then you could almost call it the orgone energy. An example of this is the orgone accumulator, which is alternating layers of dielectric and reflecting material, like a capacitor. The reflecting is usually called the conducting in electrical engineering work but this is based on misconceptions from the 18th and 19th century with regards to how electricity flows. It's well known that electricity doesn't flow through wires, but that's the conception that most people carry around in their heads. Of course people used to think the earth was flat, too. Reich's dogma assumed that the insulating or dielectric material had to be organic, but of course he was using glass wool and it's stretching the term organic by applying it to glass wool. You could say the glass wool is organic because the silicone dioxide has two atoms of oxygen, but that's not really true.

T: Have you found any evidence in your research relating the dielectric field to orgone energy?

E: Yes, the cosmic superimposition effect. If you take a low pressure gas (in a bulb) and place it in two superimposed dielectric fields then you get spiral formations such as Reich wrote about in his book COSMIC SUPERIMPOSITION. These formations appear as spheres, galaxies and other cosmic forms.

T: So the high voltage terminal of a properly built Tesla transmitter puts out a dielectric field?

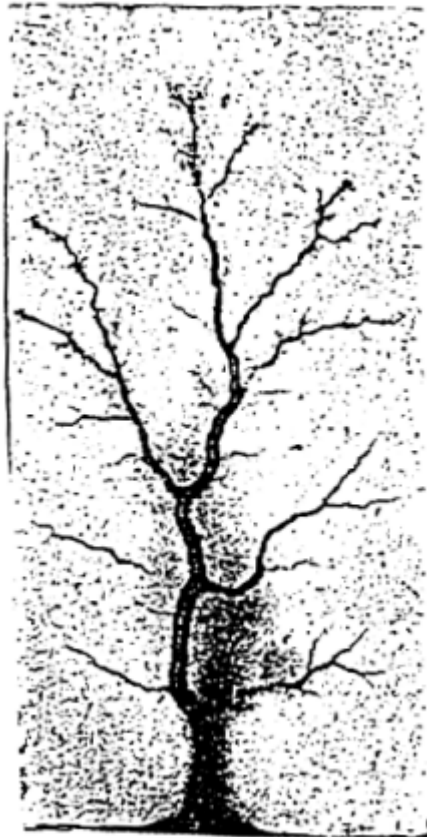
E: Right - a dielectric current - a current of many amperes flowing through free space without any

electrons. This is a true electrical current.

T: Is this as you've demonstrated to me where you can draw a several inch spark off the insulator, which of course isn't supposed to happen?

E: Right, an insulator isn't supposed to conduct electricity so how can you draw a spark off of it? (laughter)

T: One thing I've noticed in these discharges is that they look like plants, like something organic, unlike regular discharges which look erratic and sparky. What explanation do you have for this?



Golden Ratio Discharge

E: Their shape is basically the Golden Ratio spiral. The log periodic spiral projecting out into space with all angles determined by the Golden Ratio. Now this is also the same shape that living objects form and you find that all discharges, in general, of potential energy will try to form this shape. You can see it in water patterns in sand and patterns in clouds in the sky. The patterns appear over and over and over again, just like the organic patterns burned into wood by the discharge of my Tesla coil. This is connected with the orgone right there. This type of monopolar electricity is in such a form that it will grow into organic patterns, a prelife pattern from the ether itself. Any type of energy like this such as a stream flowing down the side of a mountain, a crack in a piece of window glass, or fresh water percolating up through the sand on a beach all make these organic patterns based on the Golden Ratio. Any time you have energy discharging you find this type of pattern. Of course this ties in directly with what Viktor Schauberger was saying. His work is actual proof of it. You can say there is a shape in space which is the log periodic spiral. It doesn't exist in a tangible form because it is something that grows and decays. Its size fits the wavelength and frequency of the amount of energy to be discharged. Its not like you can map space to see this particular spiral, but if you release energy into space then the spiral will appear.

T: I've heard that Tesla made references in his work to using a TMT for bringing in storms. Do you feel that there is any relationship between what Tesla was doing and what Reich was doing with his cloudbuster?

E: I haven't read too much information which indicates that Tesla was trying to control the weather. He makes scant references here and there about how weather-like phenomena appear, such as fog appearing in his laboratory, but that wasn't Tesla's particular aim, where Reich's particular aim was in dealing directly with the actual forces. We have to remember that Tesla was a mechanistic, Victorian personality and he was trying to build machines that related to horsepower hours and BTUs and things everybody was concerned with at the time, and turn the globe into a giant amusement park.

T: Such as his plan to light up the atmosphere at night?

E: Right, you would never be able to see the stars, you'd just have the sound of electrical apparatus roaring everywhere. People weren't ready for Nikola Tesla.

T: I get the feeling that you don't approve of Tesla's final vision for the earth.

E: Not the way he represented the ideas, but what's interesting about the technology he made available, when used in perspective, is actually quite healthy for the planet. Then you're dealing with energies that take on organic shapes and you're one step closer to the type of energy that Reich theorized and made some actual physical discoveries of.

T: There's some popular literature on the market today claiming that the strange weather patterns the earth has been experiencing over the last ten years or so are being caused by Soviet use of Tesla apparatus. Have you done any research which would confirm or deny such claims?

E: The claims are basically groundless. I did a four year research project at Sonoma State University (California) involving the relationship between the planets in general, the sun and the weather on this planet, and the effects of solar flares on the weather, the effects of planetary alignments on solar flares, the effects of these things on radio propagation, earthquake activity, and tried to tie the geometries of all these energy patterns together. I found the weather patterns were very tightly coupled to the solar flare cycles, the Russians really don't have anything to do with this. Any effect the Russian Woodpecker signal would seem to have on it would be purely incidental because during these periods of intense solar flares signals like the woodpecker would be sounding louder and propagating better. Maybe it's an advantageous point for the Russians to utilize the signal. This seems to be the case. But to think that the woodpecker is making solar flares on the sun and controlling the times at which the planets align is absolutely absurd! As far as all these geometric patterns being seen in the sky, the Indians and other ancients knew about these patterns and they look like the patterns generated by mundane forces such as water and dielectricity.

T: What do you feel the woodpecker is and what is its use?

E: It's a non-Hertzian, shortwave signal which could be used for one of two things. Either it's used for sounding and exploring the electrical system of the planet or more likely it's a cryptographic signal utilizing the spread spectrum technology of frequency hopping and direct sequencing modulation. It is not an ELF signal!

T: Then the cloud patterns are the indicators of cosmic flux?

E: Exactly. A well trained observer can look at the sky and it serves as a metering of the intensity of the cosmic energy which exists at a particular point in space and time. I've utilized this during periods of heavy solar flares to get an idea of the flare's more subtle characteristics by watching the geometries they produce in space, particularly at the intervals when the solar flares have stopped and all the earth is receiving the discharge from the flares. These discharges produce very profound cloud patterns and of course heavy rain. So the heavy rain cycles were produced by the enormous flares of solar cycle 21, which were cranked out between 1978 and 1982. The flares were most intense around 1978 and as the flares died down we got an upward cycle of precipitation. Now we're at the point where the energy has mostly fizzled out and the weather is fairly indeterminate from the solar-terrestrial physics standpoint.

T: In January we've received reports that the coldest temperatures on record have hit England and on the same day we got a report of an abnormally high 46° temperature in Antarctica. Dog sleds have to be run at night because of the heat. My research shows that some of the major contributing factors to the erratic weather patterns have been the mass deforestation of rainforests to produce

toilet paper and newsprint, and also nuclear testing which is also directly related to earthquake and volcanic activity.

E: You have to keep in mind that mass deforestation and large amounts of thermodynamic and nuclear energy are going to have a much stronger effect than the subtle energies coming from the planets and the sun. Deforestation and nuclear energy are definitely going to be dominant influences. Being that the size of the earth and the scope of the phenomena are so large, and the frequency of events is slow, its going to take a while to see exactly what effect all these destructive actions are going have. It seems as though everyone intuitively knows that life is going to thoroughly disrupt and things are going to get pretty bad. You just can't keep whacking on the earth and expect things not to start changing.

T: There has been a lot of varying literature on the polar shift appearing over the last 30-40 years. One aspect which I've pursued is the magnetic reversal of the poles. In some of the Native American prophecies they say that the earth will get very hot and then very cold, and then things will balance out again. Does this relate to any electrical phenomena as you understand it?

E: At the point at which the earth's magnetic field equals zero, which happens between maximum positive and maximum negative the planet will cease to be a magnetic energy type of situation and become a dielectric energy type of situation. In most spatial geometry systems which contain electric energy the point of zero magnetic energy is the point of maximum dielectric energy. Interestingly enough, for navigational purposes you wouldn't be able to use iron, or magnetic, permeability type materials anymore. You'd have to start using dielectric permeability materials like ceramic for compasses.

T: Would this be a short lived situation?

E: It would be in balanced proportion to the magnetic and it is probably going on right now, but it is not generally acknowledged due to the lack of measuring instruments. Physicists have focused their attention strictly on magnetism. In a newspaper article I was looking through the other day I saw that the physicists now have an even bigger magnet so they can smash atoms ever harder and find more little tiny fragments to catalog and confuse themselves. What could be quirkier than a quark? (laughter)

T: If this is happening right now and there is a dielectric propagation during the changeover of the magnetic poles could this in some way account for the shifting of orgone streams and be a part of the phenomena of the strange weather we've been having?

E: Yes, it could definitely tie in. You're talking about a whole different spatial geometry emerging as far as how electrical energy is distributed so you're going to have all kinds of effects. The weather is filling in patterns that already exist in space determined by all these fields of force, most of which we don't even know about yet. Tesla was able to open up a door into all these things, but he really didn't explain how to do it . There are other flux fields that can be measured with his apparatus that get more into this dielectric type of situation. Tesla was successful in measuring the amount of charge on the planet, but no one really knows how he did that. That would be an experiment to try. The velocity of light continually changes which changes the capacity of all capacitors and changes the effect of orgone. A fundamental property of an orgone accumulator is that the dielectric material, which Reich called the organic material, serves the purpose of slowing down the velocity of light trying to draw in the orgone energy. Then the metallic layers reflect the electromagnetic part but the dielectric part penetrates through it without even seeing what's going on. The accumulator serves as a magneto-dielectric separator. I don't know if Reich would go along with this . He had his own way of looking at it.

T: In science one has to look at different ways of viewing things if progress is to take place.

E: The important thing about Wilhelm Reich is not so much his apparatus or his theories but his concept of functional thinking. If you know the basic patterns of nature then you have no problem seeing all these phenomena. You have no problem looking up in the sky, knowing what all the cloud patterns mean. You have no problem developing apparatus to work with these energies because you just basically know. The great minds such as Johann Sebastian Bach and Nikola Tesla worked with these types of situations. You could say that all their work is based on archetypal forms. That's what makes their inventions or music so powerful. They were discoverers and not just inventors or composers or whatever kinds of names are put on these types of people. They go beyond that, they have tapped in and can see these fundamental shapes and geometries that everyone else is numb to. Viktor Schauberger is most important for bringing these things down to a practical level. If you make the right shapes then organic energy or water flow becomes easily manageable, that is, engineerable. He only intuitively knew a lot of this so it still wasn't worked in engineering science. If you bring in Tesla, Reich and, interestingly enough, Johann Sebastian Bach (who plays an important part in this) then you begin to find the nature of this basic form. If we take Tesla's three phase electricity, or rotating magnetic field, we find that it is based on the archetypal form known as the Solar cross or by various other names.

T: Mandalas, medicine wheels?

E: Right, these are four quadrant types of forms, a balanced cross as opposed to an unbalanced cross.

T: This is where you get the Four Quadrant Theory of Electricity?

E: Right, electricity has to be viewed from a four quadrant type of situation. The right angle plays an extremely fundamental role in electricity. It is generally a right angle phenomenon.

T: This goes back to what we were discussing earlier about the positions of the planets in relation to solar flares and the weather. How do the quadrature relationships tie in with that?

E: When you take the planets like Mercury and Jupiter, which are the real activity generators, in right angle relationships involving the earth and the sun then you find that radio reception and electrical conditions on the earth tend to be disrupted. RCA used this for a number of years, its called radio astrology. Astronomers refuse to even talk about it, but you have a big company like Radio Corporation of America basing all their circuit predictions on it. They were big time, too. They had the big time circuits. They had the patents on radio and they're using astrology. Many old time RCA employees would talk about how the planets affect people's behavior, its just common knowledge to them because they have meters right there where they see these cosmic disturbances, and of course when they go out on the street or drive home they find that people are also modified by these various waves that were affecting shortwave transmission.

T: Since we re talking about behavioral modification, there is a lot of talk currently claiming that the Soviets are modifying behavior using extremely low frequencies (ELF). This is being attributed to Tesla apparatus. What exactly did Tesla do with ELF?

E: Tesla never did any work in ELF. His work was with the high frequencies, the opposing end of the spectrum. Tesla was the first to break away from the low frequency phenomena and that is what makes his work so important.

T: What about literature claiming that the Russians are using Tesla's ELF transmitters?

E: As far as I can tell , its basically a paranoid fantasy.

T: No direct relationship to any scientific work you've done or any mention by Tesla?

E: No, I've never seen evidence of such things, but I don't want to discredit people's work in that area.

T: Right, I feel that Dr. Robert Beck has done some tremendous and groundbreaking research into how ELF fields affect people's behavior. My question was to find out if any of this research is related to Tesla's work in any way.

E: There's no connection at all to Nikola Tesla. Its my personal opinion that the communists are not attempting anything of the sort.

T: So Tesla's name is being used as a technique to enhance various people's theories?

E: Basically. What's interesting is that these behavioral modification techniques are found on television commercials here in this country. American TV commercials that involve a lot of money use certain images, frequencies, wavelengths and such. This is along the lines of what has been proposed that the Russians are doing, but it all comes through the TV screen. It is not being transmitted through the ground or the ether or the earth-ionosphere wave guide.

T: So you're saying that high tech TV commercials are a form of psychotronic programming?

E: Yes, they're totally psychotronic. People in a sensitized state will react to that stuff pretty heavily, wheras the average person sees it as just something else on the TV.

T: Do you see these psychotronic images, not just on TV, but actually in the products being sold to consumers?

E: Its everywhere. Architecture represents the thought patterns of each era, so now we have an architecture which is sort of the logical conclusion of modernism, or what I refer to at this point as technofascism. The covers of Omni magazine serve as a perfect example of techno-fascistic art . There is sterility and everything is in rectangular x, y, z, coordinates. The images are usually faceless and abstract. Of course architecture and art have a direct influence on people. It gets right down to the inside without having to go through any thinking process or educational process. If we take for example any piece of great music which has been around for a while, for a few hundred years, and people still want to listen to it for some reason. It doesn't matter if they're English or French or Russian, everybody likes it. The same thing with mathematics - it doesn't matter if you're German or Yugoslavian, any equation is still the same, the numbers and letters are still the same. There's no instructions needed, you just go right to work. So the art and architecture now is kind of an engineered thing designed to maximize the efficiency of consumption in the things that are desired in this particular type of techno-fascistic society.

T: How does this relate to automobile styling?

E: Well of course that's architecture again. There's generally three or four architectural patterns produced by all automobile manufacturers and interestingly enough, once you start looking for these things, you notice each automobile manufacturer actually uses the same letters and numbers for the same form of car that all the other companies do. It seems almost as if there is some sort of program, but it seems that now, rather than being a characteristic style of the era, there is a plan behind all of it. Of course its easy to cook up all these conspiracy theories about this, it could be

accidental. It is interesting to study to see what representations exist in the modern era.

T: Its not accidental that the psychotronic programming has filtered into television programming, is it?

E: No. There's strong evidence indicating that its not accidental. The best case of that which I've seen is that of a picket fence I saw in the surf on a TV commercial to give a flash of vertical lines, which is a fundamental geometry used in all high tech TV commercials. Its either an x, y, coordinate grid, or horizontal lines, which are very popular, but very often vertical lines. Its hard to distinguish exactly what determines which one is used. Now I saw a commercial where people were playing on the beach and out in the surf was a small picket fence. Now how many times does a person see a small section of picket fence in the surf? It won't stay there too long anyway. So apparently it was necessary to use it to place the vertical lines. Whether this is an architectural style or whether it has an archetypal meaning still has to be determined.

T: That would be a whole area of research in itself, the deciphering of TV commercials to see what is being put into people's heads.

E: Its the same thing with the food. You go to the store and grab two loaves of bread. You look at one loaf and its ingredients read like a chemical rubber company's handbook on organic chemistry. It tastes like garbage and it doesn't do anything good for you. Its just worthless stuff. If you get a loaf of bread that has none of that stuff in it then it tastes good and makes you feel good. These chemicals don't really prolong the life of the bread, they don't make the food taste any better, yet they're in there. Why are they in there? They don't do anything...why are they in there?

T: It can't be an accident.

E: No, they certainly didn't slip in. They're all precisely measured and metered.

T: There's also a lot of stuff that's not required to be on the label. Take for example the new soft cookies in the stores. They contain plastic, but since plastic is not a food it doesn't appear on the list of ingredients.

E: That reminds me that in the 1930s PCBs were going to be used to extend the life of chewing gum. Shortly afterwards came the phrase - "Better Living Through Chemistry." From an ecological standpoint the chemical destruction of the planet has to be feared more than the nuclear or anything else. We have all these PCBs and everything just floating on the surface of the oceans. What's going to happen when it all soaks in?

T: Well we have the phenomenon of whales beaching themselves, and of course the scientists can't figure it out because they see everything as being disconnected.

E: That one's not too hard to figure out. Take a large naval aircraft carrier. This thing is going to have some heavy duty sonar on it with a peak output power of about 750,000 watts. This is 750,000 watts of sound, which is precisely in the wavelength that the whales communicate on. They can hear their own sounds halfway across the ocean and now the ocean is filled with these incredible shrieking noises that sound like spark gaps, ringing sounds and rapid explosions. It probably sounds like being in a battle zone. Its no wonder why they would want to hop out of the water. Their environment has been turned into a raucous.

T: I've heard that the sound that whales make is a direct transmission of a three dimensional picture. Before the advent of propeller driven boats and sonar and whatever the whales could communicate

around the world in 3-D.

E: Sure, we've screwed ourselves. Nikola Tesla worked in a clean electrical environment to make his various measurements. Now the space is just alive with 60 cycles and its harmonics. You can walk out into the deep desert, and after meditating and calming down for a while, you can feel the air itself hum like a giant induction motor. This pulsating 60 cycles is just roaring in the air. You have to keep in mind that the entire electrical system of the country is operating in phase conjunction. Everything has to move together. Every motor, every transformer, every piece of machinery that produces electromagnetic vibrations is all locked in phase. Everything is moving in unison and whacking on the planet simultaneously and the planet actually hums at 60 cycles.

T: What do you feel are the prospects for a beneficial, technology and who do you think are the sources for actually producing it?

E: It seems to me that the best place to start is with Viktor Schauberger and Wilhelm Reich. There's not really too many people doing anything real these days. There's a lot of people making claims.

T: The only other person I'm in touch with besides yourself who is actually producing something that works is Trevor James Constable. He's really figured something out about how these subtle etheric flows operate on the planet and he can demonstrate it over and over again.

E: Yeah, there aren't too many around like Trevor. The same thing is with the "free energy" thing. Now that I've completely gone through all the various works I've really run across only one person who is really doing anything, and I know he doesn't want his name mentioned in public. This person is not known by anybody. All the people out there making all these claims and hoop-de-doo are frauds. Every single one of them is a fraud! And that leaves out none.

T: So basically the free energy thing is like the ELF stuff, its just a technique for getting people promoted in the public eye?

E: Right, also everyone is trying to accomplish it with bigger and bigger magnets, the favorite toys of the physicists. Free energy will never come out of magnetism unless the magnetism is tricked with hysteresis, and of course very little is understood about that. Free energy will come from the dielectric field where energy grows rather than decays, perhaps orgone energy will be the way.

T: I've been checking into the concepts of the four ethers as presented by Rudolph Steiner and the Anthroposophical schools, and Trevor Constable has shown that the Chemical or Tone ether is related to the water system of the planet and is functionally equivalent to orgone. I've found through looking into your work that this ether is also related to the dielectric field. Electromagnetism doesn't fit in and was considered a corrupted ether along with the nuclear force. These weren't natural forces.

E: In alternating current engineering the magnetic wave is the one that is consumptive and retarded, whereas the dielectric wave is productive and advanced. You could say that electromagnetism is the fundamental geometry of consumptive retardation.

T: That makes a good analogy of our present society.

E: Exactly, because everything always fits together. All of our machines and apparatus and theories are extensions of our own thought patterns. Its all basically an architectural type of situation.

T: It seems as though the true promise for beneficial technology lies in the etheric, organic side, the

side of life. It seems as though when one presents this information on living energy to scientists, rather than looking at it objectively, they react in a rage. Reich called this the emotional plague and his work has suffered from it. What do you think is with these scientists who refuse to face scientific verification of energies such as orgone?

E: The problem is that they are not scientists, they're not following the precepts of science. They're mystics worshipping a nuclear type of destructive energy. My contention about nuclear power plants it's that they're not there to generate energy, they serve as temples to worship this energy of decay and destruction and disease. The high laws are the laws of thermodynamics where everything must diffuse, decay and dissipate. It's quite obvious that they're pretty much worthless for generating electricity because, for one reason, they cost too much. They have to pump billions and billions of dollars into them and they hardly produce enough electricity to justify their existence, let alone break even. So they serve no practical purpose even though they were purported in the late 1950s to be so-called free energy devices. You look at the way things were in the 50s and you find it's basically a death worship. That's one thing that surprises me now is that people want to get back to the 50s and relive those images.

T: So you're saying that the American Dream has turned out to be a nightmare?

E: The American Dream is to destroy the earth. We've succeeded in training everybody else how to do it too, so in case we fail they can take over where we left off.

T: I know what you mean. New Zealand's native forests are being stripped to make disposable chopsticks for the Japanese. Eric, in closing do you have any final message?

E: Tell everyone to quit their jobs and smash their televisions.



TRANSMISSION OF ELECTRICITY

Eric P. Dollard

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Part I – Electro-Magnetic Energy

A) When electro-magnetic energy is conveyed from one point in space to another point in space a closed loop is required to connect the point of generation with the point of utilization. This closed loop is called the electric circuit and consists of a boundary formed by what have become known as electric conductors. This boundary encloses a definite quantity of space.

When electro-magnetic energy flows through the space enclosed by the electric circuit phenomena take place inside the circuit material as well as the space outside this material.

Within the circuit conductor material, during the passage of electro-magnetic energy, this energy is continuously being consumed within the molecular space and converted into thermo-dynamic energy (heat). This may be represented by the passing electro-magnetic wave dragging into the electric circuit material. This drag is analogous to frictional losses and is called the resistance of the electrical circuit, R.

In the space outside the circuit conductor material, during the passage of electro-magnetic energy, a condition of aetheric stress exists, which is called the electric field of the electric circuit. The energy contained by the electric field is continuously being transferred through this space from the point of generation which supplies energy to the electric field to the point of utilization which abstracts energy from the electric field.

The electric field of the circuit exerts physical magnetic and dielectric actions. The magnetic action is orientated parallel to the surface of the conductor material (in its immediate vicinity). That is, a needle shaped magnetic body tends to set itself in a direction parallel to the surface of the conductor material.

The dielectric action is orientated perpendicular to the surface of the conductor material (in its immediate vicinity). That is, a needle shaped dielectric body tends to set itself in a direction perpendicular to the surface of the conductor material.

Thus, the electric field of the circuit, over which passes the flow of electro-magnetic energy, has three fundamental axes which are at right angles with each other:

The dielectric axis, perpendicular to the conductor surface,

The magnetic axis, parallel to the conductor surface,

The electro-magnetic axis, co-axial with the direction of the electric circuit.

The space outside of the conductor material, bounded by the electric circuit, has the property of propagating a wavefront of light at a definite velocity, C. This velocity is a characteristic property of the aether in which the electric circuit exists. The inverse square of this velocity is called the capacitance of the electric circuit.

$$C = \frac{1}{c^2} \quad (4\pi 10^{-9} \text{p})^{-1} \text{ farads}$$

The capacitance is a measure of the ability to store energy in the dielectric field of induction, of the electric circuit.

The quantity of space enclosed by the bounding electric circuit is proportional to the total length of the electric circuit, l_1 , multiplied by the distance between the bounding conductors, l_2 .

$$l_1 l_2 = l_0^2 \quad (\text{centimetre})^2$$

and has the dimensions of an area. This area in square centimeters defines what is called the inductance of the electric circuit.

$$l_0^2 = L \quad 4\pi 10^{-9} \text{p Henrys}$$

The inductance is a measure of the ability to store energy in the magnetic field of induction of the electric circuit.

Together, the capacitance and the inductance representing the dielectric and magnetic fields of induction of the electric circuit, serve as a measure of the propagation characteristics of the electric circuit for the transmission of electro-magnetic energy.

$$-LC = t_0^2 \quad , \text{ natural period}$$

$$-\frac{L}{C} = Z_0^2 \quad , \text{ natural impedance}$$

B) The popular conception of electro-magnetic energy transmission as it exists today is; energy is transmitted through the interior of the conductor material, that is, electricity flows through wires like water flows through pipes. This transmission is said to involve the flow of charged sub-atomic particles called electrons.

According to this theory the materials possessing the most "free electrons" serve as the best conductors of electro-magnetic energy. Conversely, the materials possessing the least "free electrons" serve as the poorest conductors of electro-magnetic energy. These materials are called insulators. Insulators are said to block the passage of electricity.

The conclusion drawn is that electricity is the flow of electrons and that the space outside of the conductor material is empty and dead. It follows that a superconductor is that material which offers no opposition to the flow of electrons and hence no opposition to the flow of electricity. Conversely, free space devoid of matter offers total opposition to the flow of electricity. Nothing could be further from the truth, yet this is the concept of electricity propounded by the scientist of today.

The real actions of the conducting material presents itself when it is in the so-called superconducting state. If a section of a superconducting material is suspended in space, free to move, and a magnetic field of induction is made to approach this material, it is found that the material is repelled by the approach of the field. If the material is indeed superconducting it will maintain a definite distance, l , for an indefinite period of time $t \rightarrow \infty$, from the source of magnetic induction. Any tendency for the material to sink into the magnetic field, $l \rightarrow 0$, indicates that the material is not perfectly superconducting but has a finite resistance R .

It may be concluded that the so-called conducting material does not so much conduct as it

does repel or reflect magnetism, or electro-magnetic energy in general.

If an electric circuit is conveying electro-magnetic energy as previously discussed it is found that a force or pressure is exerted upon the circuit material. This pressure tends to repel opposing parts of the circuit material and cause the circuit to expand. The quantity of this pressure in the space bounded by the circuit is called the magneto-motive force of the circuit.

It can therefore be seen that the conducting materials serve as the walls of a container holding magnetic pressure. If the conducting material is in the so-called superconducting state and the ends of the circuit are shorted the electric circuit will hold this magneto-motive pressure indefinitely, in analogy with compressed air stored in a tank. In order for this to be the result of electron flow requires that this flow be in perpetual motion, an unlikely proposition.

It may be concluded that materials called electric conductors might best be called electric obstructors and serve not to conduct electro-magnetism but serve to reflect it back on itself. The flow of electro-magnetism is conducted by the aetherous space bound by the obstructing material.

The character of this aetherous space is represented by its inductance L and its capacitance C . Since pure space is considered a perfect insulator by atomic theory is it not ironic that it offers the least resistance to the flow of electro-magnetism? Is it then the insulators that are the true conductors of electricity.

THE TRANSMISSION OF ELECTRICITY, Part II

By Eric P. Dollard
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Part I of "The Transmission Of Electricity" (Sept-Oct 1987 JBR) dealt with the nature of electric transmission along space bounded by a set of guiding wires. These wires were found not to be the conductors of electricity, but space itself is the electric conductor. In reality the so-called conductor material of which the wires are made are reflectors of electricity, analogous to the reflective metal coating on the back of glass (dielectric) mirrors.

Because the dimensions of the co-efficient of dielectric induction, or farads, is given by the inverse of the square of the velocity of light,

$$1 / c^2 = t^2 / l^2 \quad \text{sec}^2 \text{ per cm}^2 \quad (4\pi 10^{-9})^{-1} \text{ farads}$$

the notion has occurred that these dimensions establish the propagation velocity of electric transmission, and thereby electricity and light are the same thing. This concept may have become the most significant obstacle to the understanding of electric transmission.

In this part of the study of the transmission of electricity the conduction of electricity of space will be further examined through observation of the characteristics of radio transmission and reception in the medium frequency range, 300-3000 kilocycles per second.

When the distance between the guiding wires of an electric system is significantly increased the electric field that is associated with these wires occupies a large volume of space which extends far beyond the vicinity of the guiding wires. The expanded electric field of induction associated with the spaced apart guiding wires now can combine with the electric fields of induction associated with more distant sets of guiding wires. This sharing of electric fields by two or more remote systems of wires is known as the mutual inductance of the systems. Through the process of mutual inductance electricity may be transmitted through space without the employment of a set of guiding wires to connect the transmitter to the distant receiver. Hence, the "wireless" system of electric transmission through space.

One example of such a system is the A.M. broadcast service in commercial use today (535-1650 Kc/sec). In this form of transmission the guiding wires spread out into a very tall tower (75-300 ft) far into space on one side and a large copper screen buried in the ground on the other side of the system.

The spacing that exists between the uppermost part of the tower and the outermost part of the screen is very large, therefore the electric field of this system extends to great distances as a result of this spacing. As with any system involving an electric field of induction energy is taken up by the field during one portion of the A.C. cycle and returned during the next portion of the A.C. cycle. If measurements are taken on the flow of energy at the terminals of the tower-screen arrangement it is observed that only a small fraction of the energy taken by the electric field is returned during the discharge portion of the A.C. cycle.

This loss of energy is unlike that which occurs in the oscillating energy exchange that takes place with closely spaced guiding wires. For close spacing the loss of energy is very small and that energy which is lost is fully accountable by the equivalent quantity of heat gain in and around the wires. However, for wide spacing the loss of energy is very large but the gain of heat energy is disproportionately small.

This direct observation of the disappearance of electric energy without its reappearance in an equivalent quantity of a differing form such as heat or mechanical activity raises a most important question, that is, where does all this energy go?

Many believe that this lost energy is radiated away from the tower in the same manner as light and heat radiation from a light bulb. While this theory seems plausible, there exists evidence that it may not be the correct interpretation of how the energy is lost. Nikola Tesla, the discoverer of radio, claimed repeatedly that the electromagnetic radiation theory (then known as the Hertzian wave theory) was inimical to the proper understanding of the wireless process as he conceived it.

The electromagnetic theory, or what was known as the Hertzian wave theory in Tesla's era, fails to explain certain observations made in practical radio engineering. According to E.M. theory the propagating velocity of electric induction must be the velocity of light. In the practical world of engineering however, the factor $\pi/2$, or 1.57 times the velocity of light will appear in wave calculations. Is it not coincidental that Tesla claimed that the effective propagation velocity of his wireless system was $\pi/2$ faster than the so-called speed of light?

Also, according to E.M. theory, the propagation of electric induction must be the cross combination of the dielectric induction and the magnetic induction, these two inductions never propagating independently. The work of J.J. Thomson and M. Faraday indicate that these two distinct forms of induction do propagate independently. Wheatstone claimed that the dielectric induction propagated at $\pi/2$ times faster than light.

In the practical world of radio engineering in the A.M. broadcast band it is not feasible to employ electromagnetic antennae at the point of reception. This is because an electromagnetic antenna must support a large fraction of the electromagnetic wavelength, this wavelength being several hundreds of feet. That is, such an antenna must be a tall tower. Since the employment of a tower for every radio receiver is an absurdity other forms of antennae are used. One such antenna is the magnetic permeability antenna found in transistor radios. This antenna responds only to the magnetic field of induction and works on the principle that a ferrite core multiplies the effective value of space a thousand fold and thereby simulates a large structure. This type of antenna is found to be very directional and must be oriented perpendicular to the direction of the transmitting station. Another form of antenna is the electro-static capacity antenna found on automobile radios. This antenna responds only to the dielectric field of induction and works on the principle that a resonant transformer connected to an elevated capacitance counteracts the effects of distance and thereby appears close to the transmitter. This type of antenna is found to be completely non-directional and can be oriented in any fashion.

Neither of the aforementioned antenna operate on the principle of electro-magnetic induction as propounded by Hertzian wave theory, but on distinctly magnetic inductive propagation or dielectric inductive propagation. This is contrary to the notion that the magnetic and dielectric fields of induction are inseparable, that is, they must propagate co-jointly. This distinct separate propagation of these two fields of induction is how electric propagation was conceived by nearly all of the important electrical pioneers.

The question has remained unanswered as to where does all the energy go that the broadcast transmitter must supply to the tower if it is not radiated in a fashion similar to light or heat energy. The answer may be found in the statement of C.P. Steinmetz that it is consumed by the hysteresis of the aether in which the tower is immersed. To quote, "Mr. Kennelly says that air has apparently no hysteresis, and this is the general assumption, too. But nevertheless, in light of modern science we must say that even air has a certain hysteresis, a time-hysteresis. For we know now, that the magnetic stress in air does not appear instantaneously with its source; but we know that magnetic

disturbances are propagated through air with a finite velocity, the velocity of light. Now, if you examine the phenomenon more particularly, you will see, that then, and only then, no energy would be dissipated in space, if the magnetic disturbance set up at any place, were propagated through the whole space instantaneously. But as soon as the propagation of energy through space consumes a finite time, no matter how small this time be, a certain loss of energy must necessarily be connected therewith, and, calling the retardation of the magnetic disturbance behind the magneto-motive force, hysteresis, we must say: even air has hysteresis." (1)

The notion of aetherous hysteresis will be explored in part III of "The Transmission of Electricity".

1. Transactions of the AIEE, Kennelly On Magnetic Reluctance, Oct. 27, 1891.

Radio Archaeology – and the Life and Death of the Marconi Wireless Station

by Eric P. Dollard

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In June of 1997 Bolinas radio station KPH went silent after ninety-four years of service to the maritime industry. KPH was started in 1903 as PH (Palace Hotel) in San Francisco by famous radio experimenter and pioneer Lee DeForest. PH became a successful wireless station and was later absorbed by the American Marconi Co., as were many other stations and wireless patents. By 1913 Marconi had personally selected a new station site thirteen miles north of San Francisco, near the fishing and lumber town of Bolinas. Bolinas was and still is a geo-physical radio anomaly of exceptional power, a fact recognized by the native Miwok Indians centuries before Marconi's arrival. It was at this new site near Bolinas that Marconi engaged in a major engineering effort – the construction of his new wireless facility, at that time one of the world's largest.

American Marconi employed the J.C. White Engineering Co. to construct the powerhouse and related facilities. General Electric, through the efforts of Charles Steinmetz and Ernst Alexanderson, designed and constructed the wireless appliances. A pair of systems were employed by American Marconi, one was the disruptive discharge/oscillation transformer system of Nikola Tesla, the other was the alternator/multiple tuned antenna system of Ernst Alexanderson. Both systems involved transmission into the earth, which necessitated the planting of large bronze plates in the ocean, as well as many miles of wire in the soil surrounding the powerhouse. These are still present to this day, rendering powerful radionic influence to this site. The Tesla system operated at a power level of 300 kilowatts and the Alexanderson system 200 kilowatts, the alternators running at 18 kilocycles per second. This facility represented the leading edge of science and philosophy at that time, and Marconi had brought the wireless principles of Tesla and Steinmetz together in what was now called KPH. Marconi also brought electricity to the town of Bolinas.

At the height of this endeavor, Ernst Alexanderson proclaimed at an engineering convention that wireless will “forever free mankind from political slavery.” Little did he realize that decades later Bolinas would serve as an institute for the perpetuation of political slavery.

In 1919, upon completion of this grand facility, KPH Bolinas, it was seized from American Marconi by the U.S. Navy. In 1920 KPH, along with related facilities on the East Coast, as well as scientist Alexanderson, were turned over to the newly formed Radio Corporation of America (RCA), under the rule of David Sarnoff. Shortly thereafter the wireless equipment, with the exception of the 18 kc alternators, was smashed up and dumped over the ocean cliffs. By 1920 General Electric began the development of the water-cooled pliotron oscillator as the source of high frequency electric currents. The pliotron was a refined version of the DeForest thermionic triode vacuum tube. The pliotron oscillator was much more manageable than previous oscillators, the

noise of which could be heard in the town of Bolinas two miles distant. Pliotrons were silent. Along with the usual bent L aerials, Alexanderson developed new structures known today as colinear-broadside arrays. These arrays remained the principal KPH antennas for the rest of its history.

By 1924, new facilities were completed to accommodate the growing capabilities of KPH. Building "2" was constructed for new transmission equipment and Building "9" was constructed as the power substation control. A parking garage was also erected. General Electric developed new transmitters utilizing the now standard master oscillator-power amplifier configuration. Water-cooled pliotrons called "207's" served as the power amplifiers. The oscillations were derived from a plate cut from a quartz crystal, and then amplified to high power levels through successive intermediate stages using the just developed 860 and 861 tetrode vacuum tubes. These systems were called the "B" sets, operating in the megacycle range with a power output of 20 kilowatts. The Alexanderson infinite propagation velocity principle, used in his 18 kilocycle array, was again applied in a new design for megacycle operation. These were called the Type "A" projectors and had the appearance of fish bones. The "A" was a vertical electro-magnetic broadside array that transferred no electric induction into the ground. Here was the birth of electro-magnetic radio, the radio of today.

At the end of the 1920's and into the 1930's, General Electric developed larger versions of the "B" sets and the "C" sets that followed them. These operated at power levels of 40 kilowatts and began the utilization of crude amplitude modulation. They were called the Type "D" and "E" sets. RCA scientists, Beverage, Carter, and Hansell, developed the electro-magnetic wave antenna. These antennas worked on the traveling wave principle. Large self supporting towers were erected to hold the long wires hundreds of feet in the air. These antennas were called the Type "B" and "C" projectors. Out of these came the Type "D", now known as the rhombic array. The rhombic has remained a principal HF antenna to this day.

A new station now stood with KPH, it was called KET. KPH served as the original ship-to-shore service of DeForest and Marconi, remaining in the Marconi Building, now called Building "1". KET, in the new Building "Z", served as the point-to-point overseas link to the Orient, replacing the Marconi-Alexanderson 18 kilocycle system. While KET served as the principal call letters for the point-to-point operation, many had to be assigned to cover the vast number of channels the station now offered. The Morse code still used by KPH gave way to the Armstrong Frequency Shift System and Teleprinter Operation for KET.

At this point in history, the sun shone upon this system of communication with disfavor, through the dramatic reduction in solar flux. Lowered solar flux weakens the earth's ionosphere, thereby diminishing its ability to propagate the launched electro-magnetic waves. While a major setback for HF radio, RCA forced its way through with higher power and larger antennas. The desire to override the competition, in light of the increased crowding of the HF band, forced the use of even higher power. The water could be heard to sing with the Morse code in the pliotron water jackets. Electro-magnetic radio was forever married to the cycles of the sun, undergoing disruption every eleven years. Later, in 1950, RCA scientist Nelson determined that the cycles of the planets also played a major role in radio propagation, requiring the development of radio astrology.

By 1939 RCA had contracted Westinghouse Electric Corporation to design and build the "F" set. This transmitter differed little from the "D" or "E" set of General Electric (GE), but serves as a point of departure from GE's domination of RCA equipment supply. RCA had already made their own vacuum tubes and condensers for the GE sets, but about this time, began producing complete transmitters. The first RCA designed transmitter for Bolinas was the "S" set. It utilized the new forced air cooled triodes, the 891, and was plate amplitude modulated.

The "S" set was an AM short wave broadcast unit for voice and music, with an output of 20 kilowatts. About the same time, RCA had purchased the "U" sets from the Bunnell Telegraph Company. The "U" sets were more powerful than the "S" sets, but they had a tendency toward instability in the power amplifier. These were high fidelity, amplitude modulated transmitters with

an air cooled plate modulator and a large single water-cooled triode, which required an independent distilled water-cooling system.

At this point in history, World War II was under way and the “U” and “S” sets served in propaganda broadcasting to Japan. The station was surrounded by army soldiers to protect against enemy attack. Bolinas had become a primary U.S. radio communications terminal, making it a likely target. The Japanese had already destroyed the RCA station on the Philippine Islands. The U.S. Navy reentered the scene, reenergizing the old 18 kilocycle wireless alternators and erecting a new Alexanderson multiple loaded antenna network. The Navy still needed Marconi’s wireless technology to communicate with its submarines, as RCA’s electro-magnetic radio was incapable of this task. The Navy also utilized RCA transmitters for surface communication, constructing its own Hertzian Dipole antennas for the task. Several signal corps water cooled triode (129B) transmitters were installed in the Marconi Building. With a power out of 10 kilowatts, these became the new KPH transmitters after the war.

When the war ended, so did wireless – for good. Tesla and Steinmetz were long gone, and Marconi was history. DeForest was still alive, but only Farnsworth was still inventing. Then there was Sarnoff, whose RCA had grown to be one of the most powerful corporations on earth, leaving a trail of dead inventors. The Navy left Bolinas, junking the alternators. Another layer of breakage went over the cliffs to be consumed by clay and salt. The 10 kilowatt signal corps units, called the “V” sets, remained, and there they served KPH until its final years.

In the 1950’s the RCA Global Communication Facility in Bolinas underwent a massive expansion. Building Two had become overcrowded with HF transmitting equipment and obsolete antennas. The rhombic antenna exhibited outstanding performance and became the principal antenna for point-to-point radio communication. The collinear-broadside array remained the KPH ship-to-shore antenna.

The obsolete “A,” “B,” and “C” antennas came down, and fifty rhombics went up over the postwar years, occupying three thousand acres of land. A 50 kilowatt, 500 kilocycle transmitter, called BL-10, was installed in the Marconi Building. It used a single, massive, forced air-cooled triode (the 5671), weighing over 100 pounds. A 315 foot broadcasting tower with an aviation beacon lamp was erected as its antenna. A shack was constructed at its base to house the large tuning coils. A new building was constructed to house a new 750 kilowatt, 4 kilovolt power generating set. Driven by a port engine from a Navy L.S.T. landing ship, this set could power the entire town of Bolinas. A large addition was made to Building Two, called 2A. A 2500 kilowatt electrical system was connected to Pacific Gas and Electric (PG& E.) to meet the growing station load – the electric bill was \$25,000 a month.

By the mid 1950’s, Marconi and KPH had grown into a massive radio facility. The lights in the town of Bolinas dimmed when the telegraph operator pressed his key. RCA Global Communications handled virtually all radio traffic to the Pacific. RCA installed its new 20 and 40 kilowatt transmitters, called the “K” and “L” sets. The “L” sets were amplitude modulated and the “K” sets were frequency shift keying. These were refined units representing RCA’s finest designs. Some of the control equipment, such as the BA-6A limiting amplifier are still in demand to this day. Broadcasting and teleprinter operations were covered by the “K” and “L” sets.

The 1960’s saw the development of a revolutionary new form of modulation called sideband, a process of amplitude modulation that allowed for greater utilization of power and larger channel capacity. Through the use of voice frequency tone group (VFTG) multiplexing the channel capacity per transmitter expanded from two to sixty-four teleprinters. The Telesignal Corp. 101 and 102 VFTG units were purchased by RCA and installed, RCA changing the name tags to the RCA 901 and 902 to make them look like their own. (This was typical of RCA.) RCA scientist Kahn developed his brilliant envelope elimination and reinsertion (EER) exciters for the AM “L” sets, rendering them powerful sideband units with no need for wasteful linear power amplification.

RCA Global continued to grow in Bolinas with numerous radiophoto, broadcast, teleprinter, and telegraph transmissions. The station load had grown to 1000 kilowatts, and the PG&F Alto Line (Mill Valley) following the Dipsea Trail was no longer able to run Bolinas and RCA at the same time. For some reason PG&E had removed the transformers that it had installed for the young RCA of the 1920's on the 60 kilovolt Lakeville Line (Petaluma), and routed it to Woodacre for the water department. PG&E had to run a new 12 kilovolt line back to Bolinas to serve the station. Two lines, the Alto and the Woodacre, along with its 750 kilowatt alternator, rendered the station a major power center. More transmitters were installed, new linear sideband units called the "H" sets. Like the "K" and "L" sets they utilized forced air-cooled tetrodes. The power out was 10 kilowatts average and 20 kilowatts peak. All modulation was performed at low power levels, thus there was no plate modulator, making for a very compact unit. Some 40 transmitters were now in operation, and over 60 antennas had risen to full glory. Its communications capacity pushed to the limit the old lead and paper telephone cable, which was put up by Chinese laborers in the 1920's along what was to become the Pacific Coast Highway.

As the 1960's came to a close, communication technology began its shift toward satellite systems, where 200,000 teleprinter channels were possible. Rumbblings of the closure of KET were in the air. Again the ocean cliffs – two "B" sets, 91313 and 11 BB, went over in large chunks, soon followed by the "S" sets. This time however the clay and salt did not claim another era of Bolinas. A group of young high school science students from the Air Force town of Novato were dragging a piece at a time to their garage laboratories. RCA allowed them to freely enter the station and gather what had not gone over the side. One of these students had reassembled 111313 in his parents two car garage. The next generation of radio development was on its way.

By the early 1970's, things did not fare well for RCA Global in Bolinas – KET started to disintegrate, David Sarnoff was dead, Marconi became small letters in a history book, and Tesla who? RCA had no head and flailed like a chicken. The old employees that worked the wireless were in their graves. A single channel remained to the island of Papete. The crew was down to two in the day shift, Jim Bourne and Ivan Neilson, both old men now. The buildings were empty at night, so a cyclone fence was put around to keep out vandals. The Marconi Hotel stood open to vandalism and its records blew away in the wind.

RCA had decided to junk everything in Buildings 2 and 2A, except the "H", "K", and "L" sets of postwar design. However, the local RCA administration transferred it to the new adult science students. They leased a 3000 square foot warehouse space in San Francisco, known as Project One. These individuals, as well as local Vice President Jim Hepburn, himself an avid and brilliant radio experimenter, felt that new developments were possible in high frequency radio.

The U.S. Navy again reentered, and, through the Coast Guard, constructed station NMC at the Palo Marin edge of the RCA property. This took over the vital functions abandoned by the dying RCA Global. KPH still remained functional and intact, however, being a different branch of RCA called Radiomarine Corporation of America. By 1975 RCA turned the property over to the National Park Service, a branch of the U.S. Department of the interior, for preservation. RCA leased back what it needed to run the marine operation KPH, the ships did not want satellite communications. At this transition point a group calling itself Commonweal gained access to the site through the trust for public land. Commonweal, a political organization, showed no regard for the history of the station, nor for the efforts of those operating and preserving it. In a period of five weeks, Commonweal had destroyed the entire contents of Building Two and sent all historic notes and records into the dumpster – KET vanished to the winds.

At the onset of the 1980's, only little of KPH remained. The "V" sets in the Marconi Building sat dead. BL-10 remained the only active transmitter in that building. KPH operation was transferred to the "H", "K", and "L" sets in Building 2A. These sets were adapted to telegraph operation, something that they were not designed for. Building 2, gutted of its shop and radio equipment, was sealed off by Commonweal and converted into office space and a party hall. Only

one of the science students, who now was a professional radio engineer, remained. He operated a small research laboratory in the Alexanderson room of the Marconi Building, repairing and installing cables for RCA and Commonweal to earn his stay. Eventually he was forced out.

KPH, under the management of Ed Brennen, was allowed to decay rapidly. The aircraft beacon was dark, and rhombics crumbled to the ground. Rigging by unqualified persons caused a major electrical fire that destroyed the 750 kilowatt generator. Radio receivers were thrown from second story windows to assure destruction, despite the mandate to preserve them through science education and study at Sonoma State College.

In the mid 1980's GE returned, this time not to create, but to destroy what RCA and Commonweal had not. The "V" sets were smashed up by locals and dumped in a creek bed, except for a few scraps saved by a local fisherman. The remaining laboratory equipment vanished. A guardian of the old Marconi Building, the BL-10 remained active, electrocuting the last RCA employee, George Gieser, as if in an act of retribution. This was the only person to be electrocuted since BL-10 killed one of the RCA's first employees in 1920.

KPH limped along under GE. With rigged antennas that often caught fire and transmitters that performed poorly, the station could not be heard by its own customers. A glimmer of hope appeared, however, as the up-and-coming Globe Wireless Co., which had grown out of KPH's competitor, KFS of Half Moon Bay, applied to the Federal Communication Commission to takeover the Bolinas site as it had done with so many other sites around the world. The FCC denied Globe Wireless and instead it was turned over to MCI. MCI threw together a low cost system utilizing cheap 4 kilowatt transmitters made by a ham radio outfit called Henry Radio Co. The crumbling mass of rhombics were heaped into a great pile and four of the original Type "B" towers, which stood since 1938 without a spot of rust, were sold to a foreign country. MCI shabbily erected anew set of colinear broadside arrays. These required debugging by the still present, lone radio engineer and experimenter who, after having his new wireless antennas in town destroyed by Marin County sheriffs, now lived in his car in the antenna field. Perhaps his newly found radio theories could now find commercial application under MCI.

Under MCI, KPH traffic dwindled to nothing. KPH could never get business from American ships due to the lingering hatred of David Samoff, the murderer of wireless. MCI announced impending closure, and the remaining customers bailed to Globe Wireless. Station manager Jack Martini courageously rode his ship to the bottom in the maritime tradition.

Finally as Hong Kong fell to China, KPH died, its frequencies sold to Globe Wireless. BL-10 was wrecked by vandals and the Marconi Building stripped of its power source. The building deteriorated rapidly under Commonweal stewardship. Marconi's once great radio facility lay in ruins, and one of the earth's most significant radio hot spots sits silent with the exception of NMC. I, however, am the lone radio experimenter and am far from silent. The underground wires of Alexanderson are still present, waiting to sprout into a new form of wireless.

At present, in 1997-98, wireless transmission is considered a prehistoric technology, replaced by a vastly superior one of electromagnetic radio. But is radio really superior, or is it a mere shadow of a wider reaching science? When one looks back in history, as recently done by Mr. Vassilatos in his compendia, it is found that early wireless systems not only exhibited significantly less propagation loss and deviation, but also required no batteries or power supply. In fact, it can be seen that some exhibited the properties of energy producing rather than energy consuming systems. Such were those of Nikola Tesla. Is this why KPH and similar stations are forced to close and new laws rendering radio illegal are in the making?

It must be remembered that the first wireless detectors involved mechanical force between coils, the welding together of metal chips, or the heating of fine wires, all of which require the reception of substantial quantities of electric energy. There were no batteries. Modernistic radio requires amplification of millions to render the feeble electro-magnetic waves powerful enough to

produce the same result. The amplifier of course requires batteries or some other source of energy. It was found in the early years that direction finding systems utilizing wireless impulses exhibited little or no deviation, whereas those systems utilizing electro-magnetic waves suffered from scatter and propagation disturbances. Wireless impulses obviously travel a more direct path than do the dispersive electromagnetic waves utilized today. It is further found that the emanations from wireless coils and condensers were utilized by medical doctors to abate a variety of diseases, whereas electro-magnetic waves are an acknowledged hazard to health.

It is instructive to examine certain technical distinctions existing between wireless technology and the radio technology of today. It is also instructive to examine the efforts to block the scientific research and experimentation (at locations like KPH Bolinas) required to revive an important technology.

In electric wireless systems there exists a reciprocal relation between the energy of the antenna network in contact with the space and the utility that supplies power to the wireless transformers. Thus the reactance of the antenna network appears as a reactance to the power company, if the wireless system is so adjusted. Therefore, it is theoretically possible for the wireless system to become a supply of electrical energy to the power company without burning fuel. In contrast, the load offered by contemporary radio systems is a pure resistance to direct current, the very archetype of the destruction of electric force – nothing is returned to the power company.

Another distinction is that wireless networks such as the Tesla oscillation transformer, Alexanderson multiple loaded antenna, or the Marconi coaxial antenna, all exhibit frequencies and wavelength of higher order than those of electro-magnetic radio. These factors exist as complex quantities or conjugate pairs. Their propagation involve factors beyond distance and velocity, thus transmission without travel through intervening space. Electro-magnetic radio waves are inexorably tied to the effective velocity of light and the impedance of distance.

Ultimately it must be stated that the distinction between electric wireless and electronic radio is that wireless engineering is a science of the aether and radio engineering is a science of physical matter. Wireless theory considers space to be filled with an all permeating aether, this aether possessing the capacity to store and transfer energy in the form of a pair of conjugate fields of induction. These are called the magnetic field and the dielectric field. An alteration of the field intensity at one location results in an alteration of the field at another location, irrespective of distance. From cosmic forces and not human artifice, wireless networks ultimately are self powering.

In contrast, modernistic electro-magnetic radio theory considers space to be empty and distorted. Propagation is effected by a forced spray of photonic particles, traveling at the aforementioned effective velocity of light. Magnetic and dielectric actions are ignored, and instead the actions of physical particles like electrons serve to store and transfer energy. Distance and velocity are the principal factors, and the continuous consumption of energy is required, supplied by an artifice such as a battery or engine driven generator.

The loss of the aetheric science of wireless and the supplanting of radio can be attributed to a pair of causes, conflict between the various pioneers of wireless and the subjugation of science and philosophy by corporate force. DeForest vs. Fessenden vs. Armstrong vs. Marconi vs. Tesla vs. etc. was the way that wireless developed. Not only did these individuals not completely understand their own discoveries, but a comprehensive science did not exist to unify them. The situation was further compounded by corporate moguls entering the science with capitalistic forces that fueled the conflict, and by institutions that favored dysfunctional theories. Names like Sarnoff, Morgan, and Rockefeller were the principals of this factor, a historic example will serve to illustrate the condition. Long distance cable telephony was set back many years by the British Royal Society's firm denial of the dielectric factors involved in the transmission of impulses through the long undersea cables and telegraph impulses were smeared, thus limiting the speed of transmission to slow rates. The brilliant Scottish theoretician Oliver Heaviside demonstrated in his archetypal telegraph equation

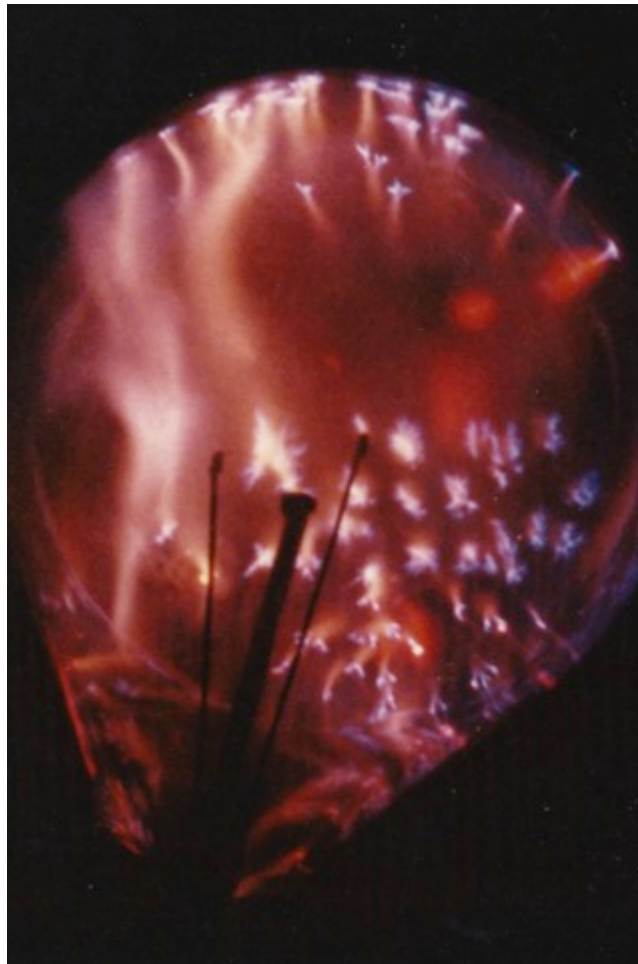
that the dielectric term RC had to be brought into accord with the magnetic term LG to facilitate the undistorted transmission of electric impulses.

The Physics Institute declared Heaviside a fool and forced the cable business to labor under an unbalanced understanding of the electric forces involved. Later electrical scientist Michael Pupin, a contemporary of Tesla and Marconi, developed a physical realization of the Heaviside Theorem known as the "PupinCoil." This development was quickly bought up by the young American Telephone and Telegraph Company (AT&T). AT&T holding patent rights to the Pupin, or loading coil as it became known, gained absolute control over the long distance telephone business. Oliver Heaviside, who can be given credit for establishing the entire ground work for electrical engineering mathematics, died in poverty and was promptly forgotten. AT&T grew into a company of great wealth and power. If not for the effort of Charles "Proteus" Steinmetz, much of Heaviside's work may have been forever lost.

The exact same condition exists today with regard to radio and the more generalized wireless, except with a less favorable outcome. As shown by the Heaviside in his electrical equations and further developed by myself in the tradition of Steinmetz, wireless transmission can be shown to involve a conjugate pair of propagations, the electromagnetic and the magneto-dielectric. Electro-magnetism and the adulteration of its theories by Einstein and the like has become the accepted element of the propagation of electric forces. The conjugate magneto—dielectricity, and the brilliant presentation of its dimensionality by Rudolf Steiner and his followers is denied by the corporate cable institutes. But, as with the cable long distance case, electricity plays no favorites, and radio transmission suffers from analogous distortions. The archetype of conjugate pairs exists everywhere, however, and some examples will illustrate.

A very simple analog is the male and female of a given species. The species can only propagate as a conjugate pair, the male being the dielectric and the female the magnetic. Likewise, the branch and root of a plant work together as a conjugate pair, the sunlit branch as the magnetic and the root in darkness as the dielectric. An excellent example in symbolic representation is the final choral movement of G.F. Handel's Alexanders Feast- "The Power of Music."

The learned doctors' physical science will hear none of this heresy, and continues to labor under the delusive mathematics of chaotic uncertainty. Modernistic music serves analogously with its painful screeches and howling, empty of spiritual content. Popular music is reduced to a computer generated sado-masochistic march. This pathological social condition is brilliantly analyzed in the writings of Wilhelm Reich under titles such as *The Mass Psychology of Fascism* and *The Murder of Christ*. Needless to say Dr. Reich died in a federal prison. Modernism accepts no criticism.



Galactic Life in a light bulb? Cosmic forms appear in plasma discharges inside glass bulb.
Created by Eric Dollard at the old BSRF Laboratories, Santa Barbara, California, 1988.

A final illustration exists right here at Marconi's KPH in Bolinas. In a simple laboratory made from so called obsolete radio equipment salvaged from the hammer and axe of the "lehmed" doctor, a remarkable discovery has been made. Through the application of wireless: principles, cosmic superimposition was effected on the work bench Suns and stars in stunning Galactic form burst forth, creating matter and energy on the spot, yet across the bay at Livermore Lab, with billions of kilowatt-hours and dollars no such thing seems possible, but the kilowatt dollars continue to flow. After all, you pay for it.