

*Harnessing the Wheelwork of Nature*

**Excerpt from**

**Harnessing the Wheelwork of Nature**

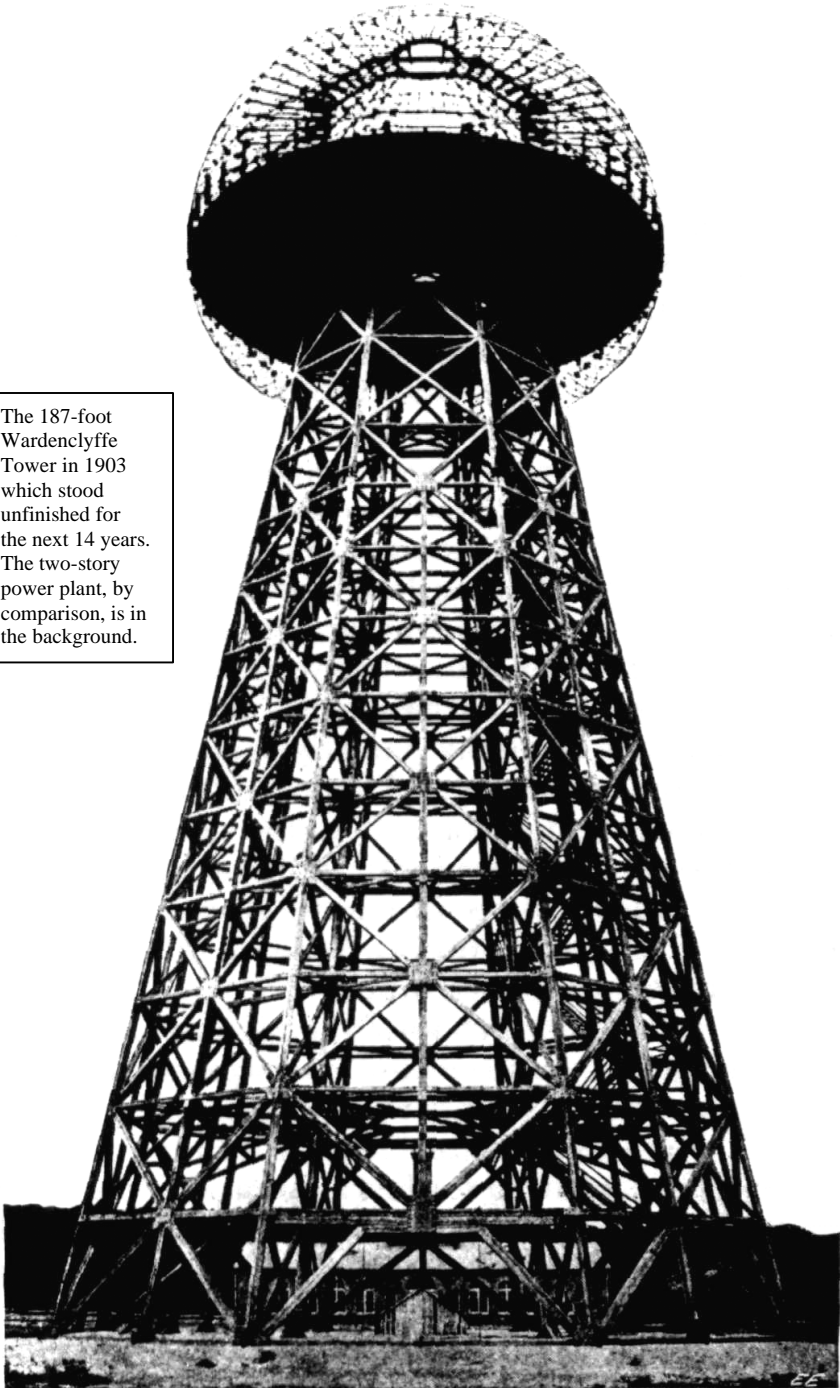
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The 187-foot Wardencllyffe Tower in 1903 which stood unfinished for the next 14 years. The two-story power plant, by comparison, is in the background.



# Introduction to Tesla's Science of Energy

**Thomas Valone, Ph.D., P.E.**

It is a great privilege to present this amazing collection of seminal articles, some of which have never been published before, on Nikola Tesla's science of energy. As I'm finishing my Ph.D. thesis on utilizing zero point energy, I realized that Tesla probably acknowledged the same energy reservoir when he referred to harnessing "the very wheelwork of nature."<sup>1</sup> The visionary scientists who have contributed to this anthology offer a collective argument of what Tesla meant by that phrase. Tesla also recognized that an atmospheric and a terrestrial storage battery exists here on earth, just waiting to be tapped for the good of mankind. Therefore, this is the wheelwork of nature that we want to explore in this book.

The first section of this anthology offers some historical Niagara Falls material and biographical information about the life of Nikola Tesla with the contributions of William Terbo, the grand-nephew of Tesla, Keith Tutt, author of *The Scientist, the Madman, the Thief & Their Light Bulb*, and Dr. Andrija Puharich, whose unpublished biographical manuscript is rich with personal insights. Puharich, a Yugoslavian, also develops with great care, the background and unexpected uses for Tesla's Magnifying Transmitter (TMT). The second section is devoted to Tesla's wireless transmission of electrical power, as distinguished from wireless telegraphy for which he is also famous. It is surprisingly practical, even today, as the brilliant minds in this book prove. Tesla was at least a century ahead of his time, however, so people stole his ideas, left him penniless, and ignored his saintly concern for the human race. I pray that as global community consciousness expands in the 21<sup>st</sup> century, Tesla's ideas about sharing energy with the whole world will be more understood and appreciated. The third and last section has miscellaneous articles about a few of Tesla's less well-known inventions, including the two-rotor belted homopolar generator and an ozone generator.

Today we are faced with the consequences of the fateful decision in 1905 by J. P. Morgan to abandon Tesla's Wardencllyffe Tower project on Long Island, once he learned that it would be designed mainly for wireless transmission of electrical power, rather than telegraphy. He is reported to have complained that he would not be able to collect money from the customer in any feasible way. This mercenary attitude by the world's richest man forced the nation to pay for thousands of miles of transmission line wires, just so an electrical utility meter could be placed on everyone's house. Today the U.S. Energy Association in Washington, DC trains representatives from the former Russian states how to reliably do the same in their countries.

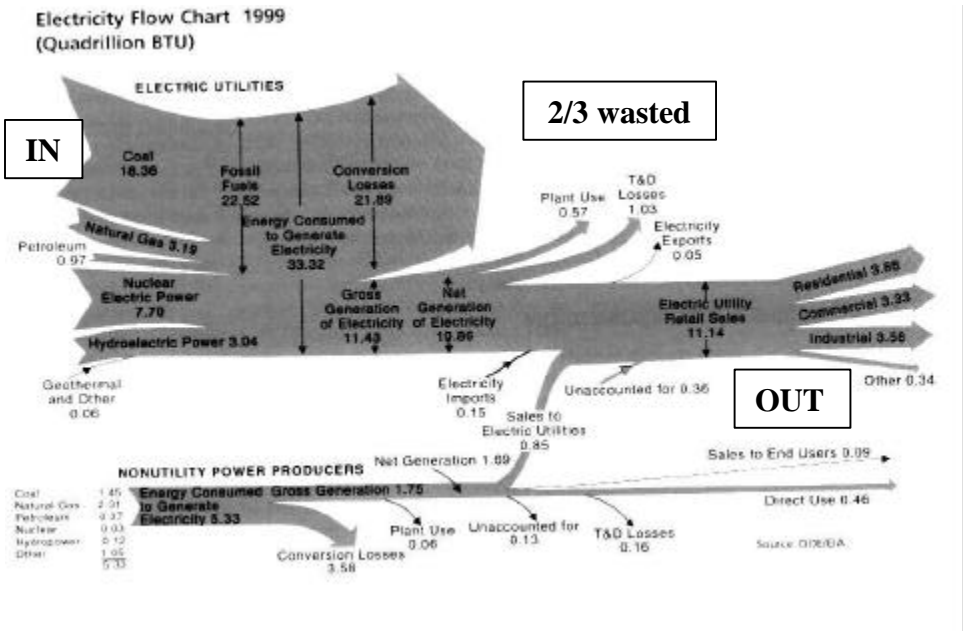
No one, except for the few great physicists like Drs. Rauscher, Corum, Bass, and Van Voorhies found in this book, has realized that Tesla was very practical when he proposed the resonant generation and wireless transmission of useful electrical power, after returning from his experiments at Colorado Springs in 1900. For example, Professor Rauscher shows that the earth's magnetosphere contains sufficient potential energy (at least 3 billion kilowatts) so that the resonant excitation of the earth-ionosphere cavity can reasonably be expected to increase the amplitude of natural "Schumann" frequencies, facilitating the capture of useful electrical power. Tesla knew that the earth could be treated as one big spherical conductor and the ionosphere as another bigger spherical conductor, so that together they have parallel plates and thus, comprise a "spherical capacitor." Dr. Rauscher calculates the capacitance to be about 15,000 microfarads for the complete earth-ionosphere cavity capacitor. W.O. Schumann

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<sup>1</sup> "...it is a mere question of time when men will succeed in attaching their machinery to the very wheelwork of nature." –Tesla addressing the Amer. Inst. of Elec. Eng., 1891

is credited for predicting the "self-oscillations" of the conducting sphere of the earth, surrounded by an air layer and an ionosphere in 1952, without knowing that Tesla had found the earth's fundamental frequency fifty years earlier.<sup>2</sup>

In comparison to the 3 billion kW available from the earth system, it is possible to calculate what the U.S. consumed in electricity. In 2000, about 11 Quads (quadrillion Btu) were actually used by consumers for electrical needs, which is equal to 3.2 trillion kWh. Dividing by the 8760 hours in a year, we find that only 360 million kW are needed on site to power our entire country. This would still leave 2.6 billion kW for the rest of the world! The really shameful U.S. scandal, unknown to the general public, is that out of the total electrical power generated using wire transmission (about 31 Quads), a full 2/3 is totally wasted in "conversion losses."<sup>3</sup> (See the *Electricity Flow Chart 1999*, which contains US DOE/EIA data, updating the Toby Grotz article in this book.) No other energy production system of any kind in the world has so much wastefulness. Instead of trying to build 2 power plants per week (at 300 MW each) for the next 20 years (only to have a total of additional 6 trillion kWh available by 2020), as some U.S. government officials want to do, we simply need to eliminate the 7 trillion kWh of conversion losses in our present electricity generation modality. Tesla's wireless transmission of power accomplishes this goal, better than any distributed generation.



As Tesla himself said,

"In the near future we shall see a great many uses of electricity...we shall be able to disperse fogs by electric force and powerful and penetrative rays...wireless plants will be installed for the purpose of illuminating the oceans...picture transmission by ordinary telegraphic methods will soon be achieved...another valuable novelty will be a typewriter electrically operated by the human voice...we shall have smoke annihilators, dust absorbers,

<sup>2</sup> W.O. Schumann, *Z. Naturforsch.*, 72, p. 149-154 and 250-252, 1952, (in German)

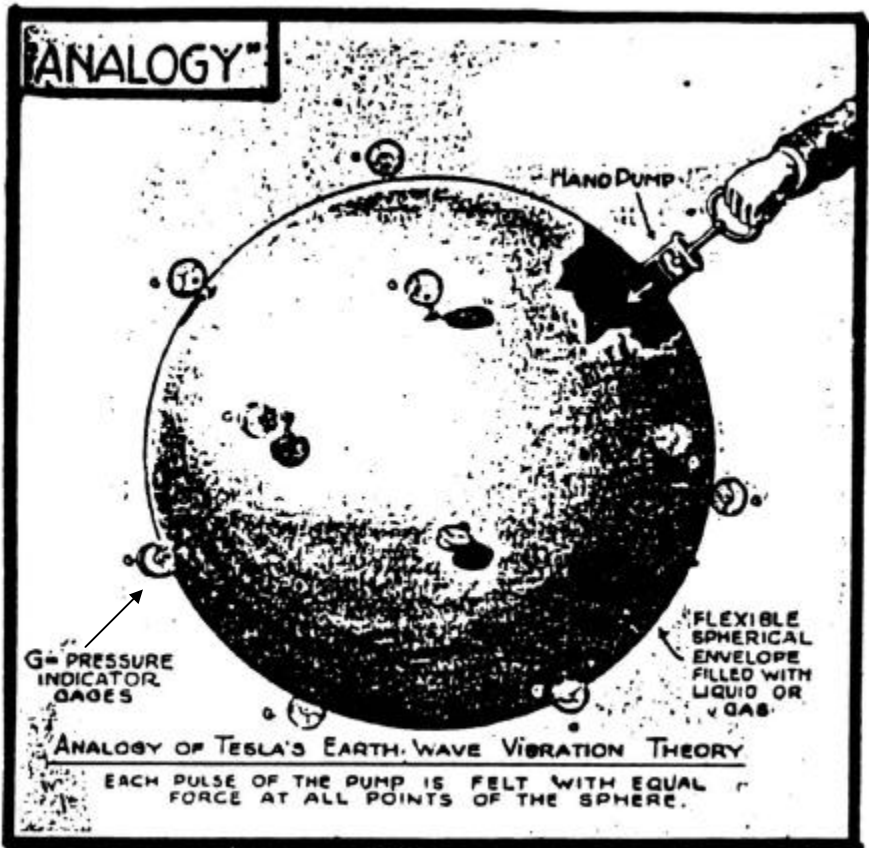
<sup>3</sup> "National Energy Security Post 9/11" U.S. Energy Association, June, 2002, p. 34

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sterilizers of water, air, food and clothing...it will become next to impossible to contract disease germs and country folk will go to town to rest and get well..."

***"If we use fuel to get our power, we are living on our capital and exhausting it rapidly. This method is barbarous and wantonly wasteful and will have to be stopped in the interest of coming generations.*** The inevitable conclusion is that water power is by far our most valuable resource. On this humanity must build its hopes for the future. With its full development and a perfect system of wireless transmission of the energy to any distance, man will be able to solve all the problems of material existence. Distance, which is the chief impediment to human progress, will be completely annihilated in thought, word, and action. Humanity will be united, wars will be made impossible, and peace will reign supreme."<sup>4</sup>

The same article which contains this prophetic quotation from Tesla also notes that his



“World System” was conceptually based on three inventions of his:

1. The Tesla Transformer (Tesla coil)
2. The Magnifying Transmitter (transformer adapted to excite the earth)
3. The Wireless System (economic transmission of electrical energy without wires)

<sup>4</sup> Nikola Tesla, 1900, as quoted in “Great Scientist, Forgotten Genius, Nikola Tesla” by Chris Bird and Oliver Nichelson, *New Age*, #21, Feb. 1977, p. 42

Tesla states, "The first World System power plant can be put in operation in nine months. With this power plant it will be practicable to attain electrical activities up to 10 million horsepower (7.5 billion watts), and it is designed to serve for as many technical achievements as are possible without due expense."<sup>5</sup> (Note that Tesla's calculated power levels are conservatively estimated, compared to Rauscher's calculations.)

The essay by Toby Grotz on the wireless transmission of power is a great introduction to this wireless power system of Tesla. It contains all of the details for a preliminary test of the system. His Figure 5 also illustrates the transmission of a high voltage pulse of electricity equally around the world where it rebounds at the opposite side and returns to its source, repeating the cycle many times. Grotz also worked with Dr. Corum on "Project TESLA," which was a business venture designed to implement the wireless transmission of electricity.

Dr. Corum notes in his introductory article on the ELF (extremely low frequency) oscillator of Tesla's that the tuned circuit of Tesla's magnifying transmitter was the whole earth-ionosphere cavity. His second article presents probably the most complete article on Tesla's magnifying transmitter that has ever been written. He explains in great detail the meaning of magnification as Tesla intended, with examples and equations. Even if not an engineer, I believe the reader will still appreciate the enthusiastic style with which the Corums describe



Tesla's developments regarding the TMT.

There are two diagrams produced at the turn of the century to help explain in simple terms Tesla's wireless transmission of electrical power. The first is a mechanical "Analogy" that is

<sup>5</sup> Ibid., p.74

described in Corum's ELF disclosure article. The second is the "Realization" which illustrates the usefulness of the power transmission concept.

**HARRISBURG TELEGRAPH**

# RADIO SECTION

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HARRISBURG, PA., SATURDAY EVENING, MARCH 22, 1920.

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## Radioed Light, Heat and Power Perfected by Tesla

### INVENTOR ANNOUNCES FINAL SUCCESS OF EXPERIMENTS BEGUN THIRTY YEARS AGO

By James E. Caulfield  
Staff, A. S. S. E.

**DETROIT, Mich.**—The inventor of the wireless system, Nikola Tesla, today announced the final success of his experiments in radioing light, heat and power, which he began thirty years ago.

Tesla's new system is based on the principle of the wireless system, which he first announced in 1890. It is a system of radioing light, heat and power, which he first announced in 1890. It is a system of radioing light, heat and power, which he first announced in 1890.




**NEW HOOD-UPS FOR RADIO FANS**

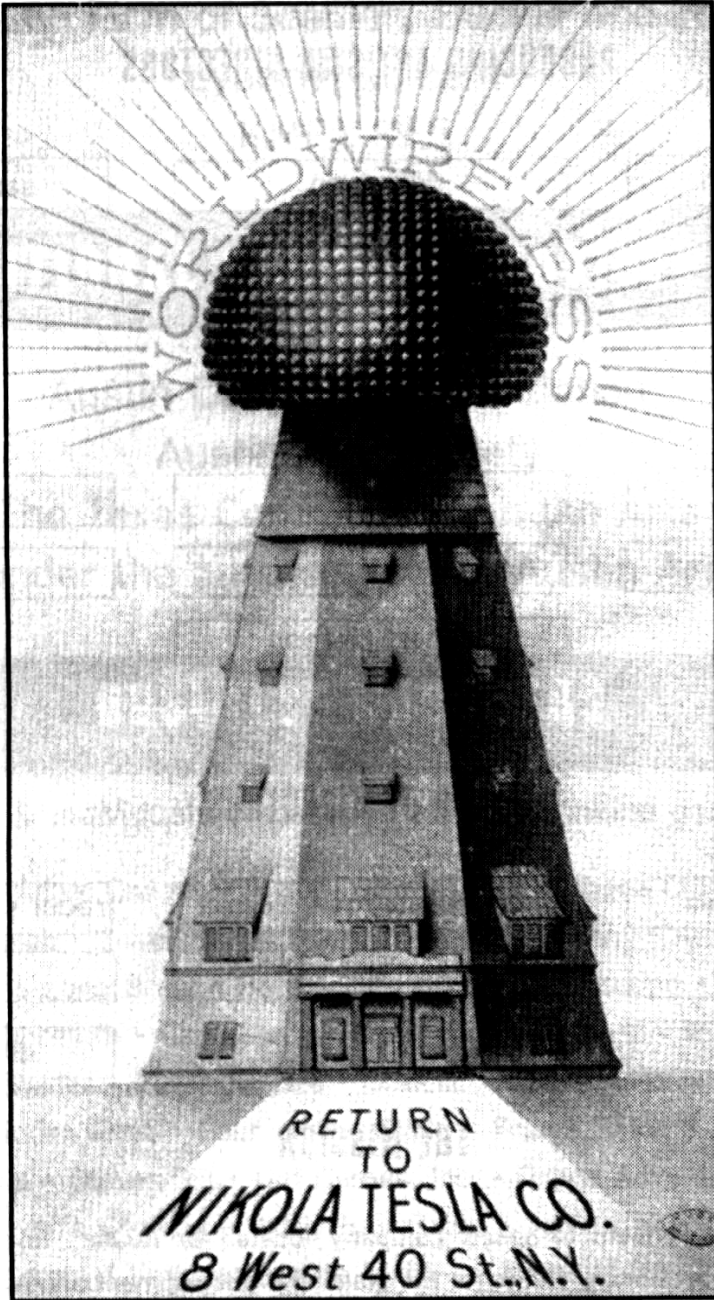
**R**adio fans looking for a new hood-up for their sets, will find a new one in the form of a hood-up for their sets, which is now being marketed by the inventor of the wireless system, Nikola Tesla.

After an interview with Tesla, Tesla in the afternoon of the 21st, announced the final success of his experiments in radioing light, heat and power, which he first announced in 1890. It is a system of radioing light, heat and power, which he first announced in 1890.

When Tesla first announced his system, he was met with a great deal of skepticism. He was met with a great deal of skepticism. He was met with a great deal of skepticism.

He has since then, through the kindness of the people, succeeded in his experiments. He has since then, through the kindness of the people, succeeded in his experiments.

Credit: Metascience Foundation

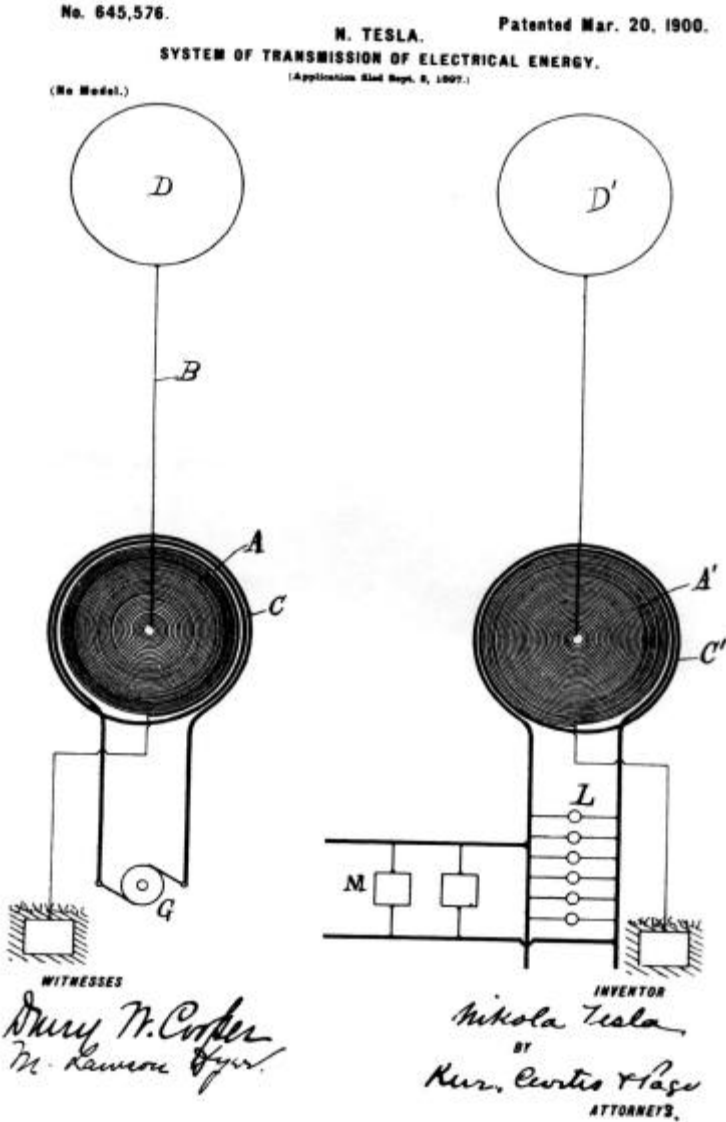


Tesla wrote, "That electrical energy can be economically transmitted without wires to any terrestrial distance, I have unmistakably established in numerous observations, experiments and measurements, qualitative and quantitative. These have demonstrated that it is practicable

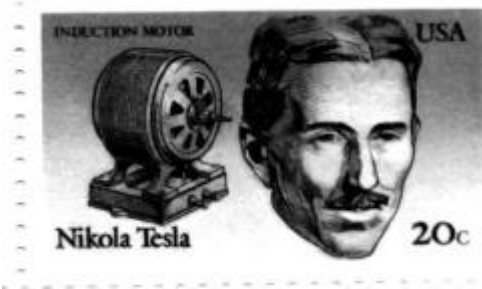


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to distribute power from a central plant in unlimited amounts, with a loss not exceeding a small fraction of one per cent in the transmission, even to the greatest distance, twelve thousand miles – to the opposite end of the globe.”<sup>6</sup>



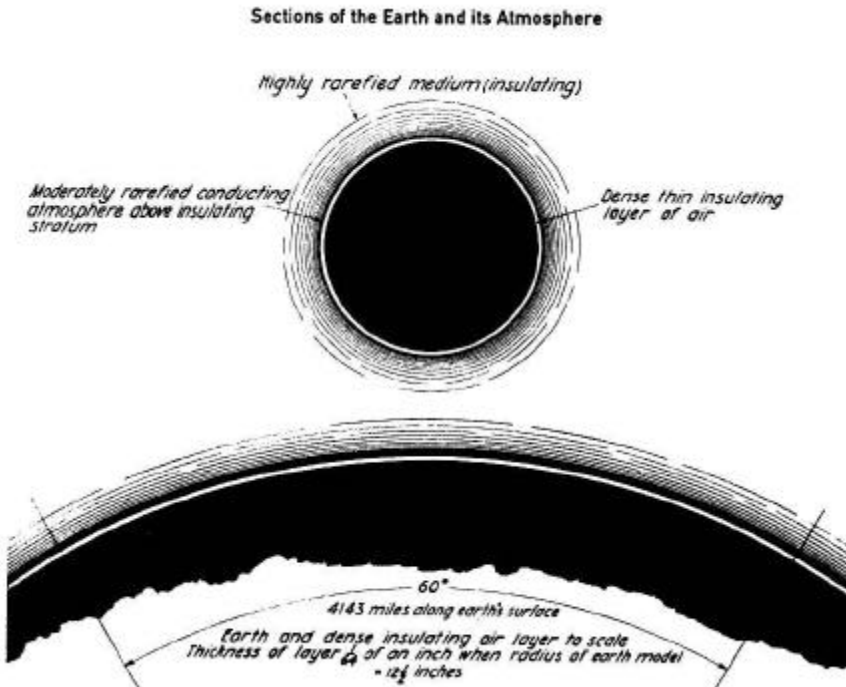
<sup>6</sup> Nikola Tesla, “The Transmission of Electrical Energy Without Wires as a Means for Furthering Peace,” *Electrical World and Engineer*. Jan. 7, 1905, p. 21



As Tesla experimented with a 1.5 MW system in 1899 at Colorado Springs, he was amazed to find that pulses of electricity he sent out passed across the entire globe and returned with "undiminished strength." He said, "It was a result so unbelievable that the revelation at first almost stunned me."<sup>7</sup> This verified the tremendous efficiency of his peculiar method of pumping current into a spherical ball to charge it

up before discharging it as a pulse of electrical energy, a "longitudinal" acoustic-type of compression wave, rather than an electromagnetic Hertzian-type of transverse wave.

It is also understood that Tesla planned to include stationary resonant wave creation as part of the wireless transmission of power. Examining the pair of 1900 patents #645,576 and #649,621 each using the same figure on the first page, we find in the first patent that Tesla has



designed a quarter-wave antenna (50 miles of secondary coil wire for a 200 mile long wavelength). More importantly is the sphere on the top which is supposed to be a conductive surface on a balloon raised high enough to be radiating in "rarefied air." As Tesla states,

"That communication without wires to any point of the globe is practical with such apparatus would need no demonstration, but through a discovery which I made I obtained

<sup>7</sup> Nikola Tesla, "World System of Wireless Transmission of Energy," *Telegraph and Telephone Age*, Oct. 16, 1927, p. 457.

## *Harnessing the Wheelwork of Nature*

absolute certainty. Popularly explained it is exactly this: When we raise the voice and hear an echo in reply, we know that the sound of the voice must have reached a distant wall, or boundary, and must have been reflected from the same. Exactly as the sound, so an electrical wave is reflected, and the same evidence which is afforded by an echo is offered by an electrical phenomena known as a 'stationary' wave – that is, a wave with fixed nodal and ventral regions. Instead of sending sound vibrations toward a distant wall, I have sent electrical vibrations toward the remote boundaries of the earth, and instead of the wall, the earth has replied. In place of an echo, I have obtained a stationary electrical wave, a wave reflected from afar."<sup>8</sup>

It is also worth calling attention to Corum's disclosure article on the operation of an ELF oscillator, he proposes that Tesla's x-ray patents were designed for the switching of high voltages in the charging and discharging of the dome of the Wardenclyffe tower (patent #1,119,732). Dr. Bass' article elaborates on the details of longitudinal waves that would be created by such discharges. They have superior properties of transmission which normal radio and television waves today do not possess. Nikola Tesla was very familiar with their benefits.



Drawing by D. F. Bach

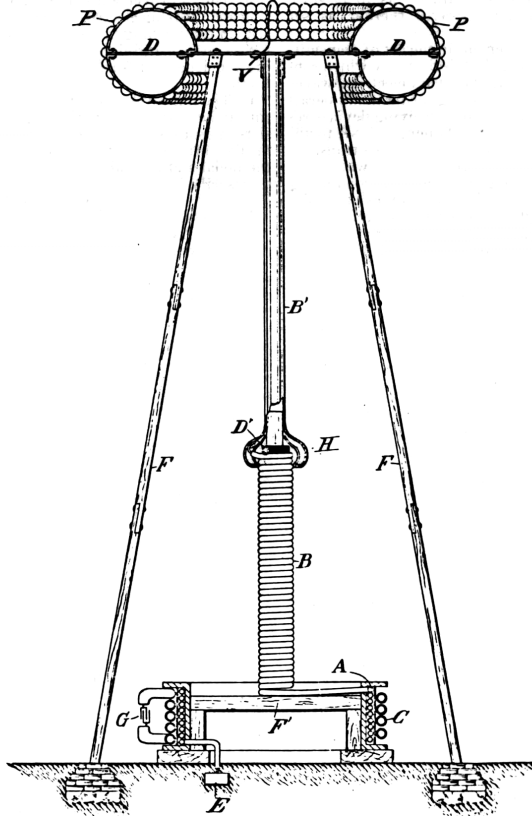
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<sup>8</sup> Nikola Tesla, "The Problem of Increasing Human Energy," *Century*, June, 1900

N. TESLA.  
APPARATUS FOR TRANSMITTING ELECTRICAL ENERGY.  
APPLICATION FILED JAN. 18, 1902. RENEWED MAY 4, 1907.

1,119,732.

Patented Dec. 1, 1914.



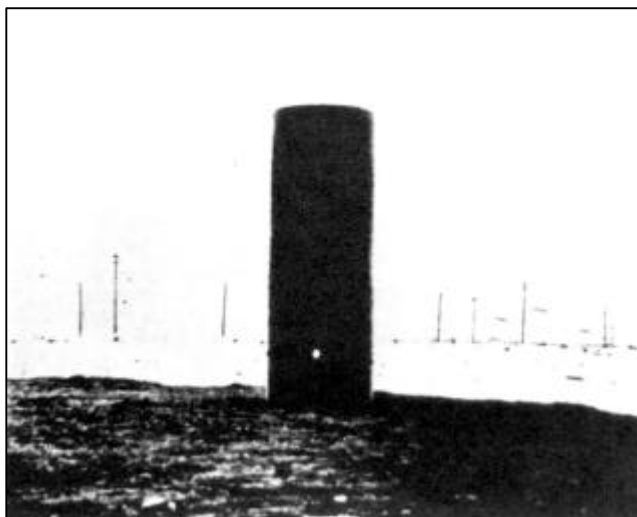
WITNESSES:  
*Wm. Lawson Dyer*  
*Benjamin Miller*

*Nikola Tesla*, INVENTOR,  
BY *Wm. Dyer & Cooper*,  
his ATTORNEYS.

Tesla states, "As to the transmission of power through space, that is a project which I considered absolutely certain of success long since. Years ago I was in the position to transmit wireless power to any distance without limit other than that imposed by the physical dimensions of the globe. In my system it makes no difference what the distance is. The efficiency of the transmission can be as high as 96 or 97 per cent, and there are practically no losses except such as are inevitable in the running of the machinery. **When there is no**

**receiver there is no energy consumption anywhere. When the receiver is put on, it draws power. That is the exact opposite of the Hertz-wave system.** In that case, if you have a plant of 1,000 horsepower (750 kW), it is radiating all the time whether the energy is received or not; but in my system no power is lost. When there are no receivers, the plant consumes only a few horsepower necessary to maintain the vibration; it runs idle, as the Edison plant when the lamps and motors are shut off.”<sup>9</sup>

These incredible facts are explained by Dr. Corum and Spaniol elsewhere, “...the distinction between Tesla’s system and ‘Hertzian’ waves is to be clearly understood. Tesla, and others of his day, used the term ‘Hertzian waves’ to describe what we call today, energy transfer by wireless transverse electromagnetic (TEM) radiation...no one wants to stand in front of a high power radar antenna. For these, E and H are in phase, the power flow is a ‘real’ quantity (as opposed to reactive – Ed. note), and the surface integral of  $E \times H$  (Poynting vector – Ed. note) is nonzero. The case is not so simple in an unloaded power system, an RF transformer with a tuned secondary, or with a cavity resonator. In these situations, the fields are in phase quadrature, the circulating power is reactive and the average Poynting flux is zero – unless a load is applied. They deliver no power without a resistive load. These are clearly the power systems which Tesla created. The polyphase power distribution system was created by him in the 1880s and inaugurated at Niagara Falls in 1895. The RF transformer was invented and patented by him in the 1890s. Terrestrial resonances he experimentally discovered at the turn of the century. And, for the next 40 years he tried to bring through to commercial reality this global power system. Today, millions of us have working scale models of it in our kitchens, while the larger version sits idle.”<sup>10</sup>



Receiving coil a great distance from the transmitter lighting a light bulb (white spot) in a test of Tesla’s wireless transmission of power in 1899.

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<sup>9</sup> Nikola Tesla, “Minutes of the Annual Meeting of the AIEE,” May 18, 1917.

<sup>10</sup> Corum, Corum, and Spaniol, “Concerning Cavity Q,” *Proceedings of the International Tesla Symposium*, 1988, p. 3-15



# THE ELECTRICAL EXPERIMENTER

H. GERNSBACK EDITOR  
H. W. SECOR ASSOCIATE EDITOR



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September, 1917

Number 5

## U. S. Blows Up Tesla Radio Tower

**S**USPECTING that German spies were using the big wireless tower erected at Shoreham, L. I., about twenty years ago by Nikola Tesla, the Federal Government ordered the tower destroyed and it was recently demolished with dynamite. During the past month several strangers had been seen lurking about the place.

Tesla erected the tower, which was about 185 feet high, with a well about 100 feet deep, for use in experimenting with the transmission of electrical energy for power and lighting purposes by wireless. The equipment cost nearly \$200,000.

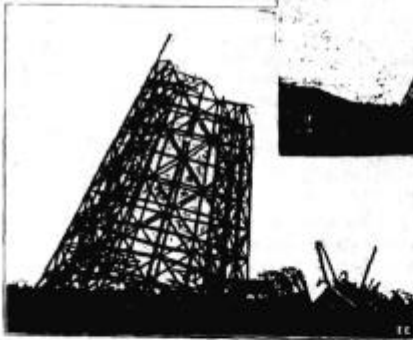
The late J. P. Morgan backed Nikola Tesla with the money to build this remarkable steel tower, that he might experiment in wireless even before people knew of Marconi. A complete description, revised by Dr. Tesla himself, of this unique and ultra-powerful radio plant was given in the March, 1916, issue of *THE ELECTRICAL EXPERIMENTER*. Every-

one interested in the study of high frequency currents should not fail to study that discourse as it contains the theory of how this master electrician proposed to charge this lofty antenna with thousands of kilowatts of high frequency electrical energy, then to radiate it thru the earth and run ships, factories and street cars with "wireless power."

Most of our readers have, no doubt, read about the famous Tesla wireless tower, which structure involved the expenditure of a vast sum of money and engineering talent. From this lofty structure, which was designed some 20 years ago by Dr. Tesla and his associates, there was to be propagated an electric wave of such intensity that it could charge the earth to such a potential that the effect of the wave or charge could be felt in the utmost confines of the globe.

Further, it may be said that Tesla, all in all, does not believe in the modern Hertzian wave theory of wireless transmission at all. Several other engineers of note have also

gone on record as stating their belief to be in accordance with Dr. Tesla's. More wonderful still is the fact that this scientist pro-



Two Views of the Last Minutes of Tesla's Gigantic Radio Tower at Shoreham, L. I., New York. As It Was Being Demolished by the Federal Government. It Was Suspected That German Spies Were Using the Tower for Radio-Communication Purposes. It Stood 185 Feet Above the Ground and Cost About \$200,000. Tesla Had Not Used It For Several Years.

mulgated his basic theory of earth current transmission a great many years ago in some of his patents and other publications. Briefly explained, the Tesla theory is that a wireless tower, such as that here illustrated and specially constructed to have a high capacity, acts as a huge electric condenser. This is charged by a suitable high frequency, high voltage apparatus and a current is discharged into the earth periodically and in the form of a high frequency alternating wave. The electric wave is then supposed to travel thru the earth along its surface shell and in turn to manifest its presence at any point where there might be erected a similar high capacity tower to that above described.

A simple analogy to this action is the following: Take a hollow spherical chamber filled with a liquid, such as water; and then, place, respectively, a small piston pump, such as a bicycle pump, and an indicator, such as a pressure gage. Now if we took

some of the water into the pump and force it back into the ball by pushing on the piston handle, this change in pressure will be in-

dicated on the gage secured to the opposite side of the sphere. In this way the Tesla earth currents are supposed to act.

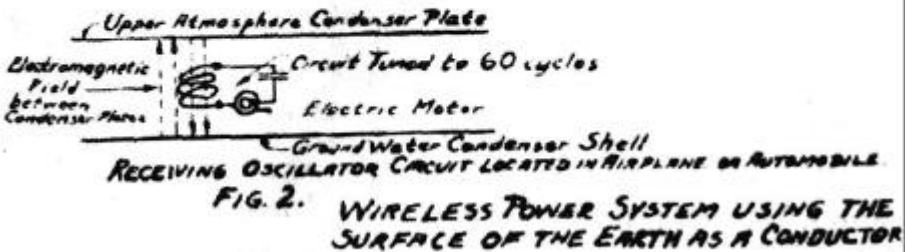
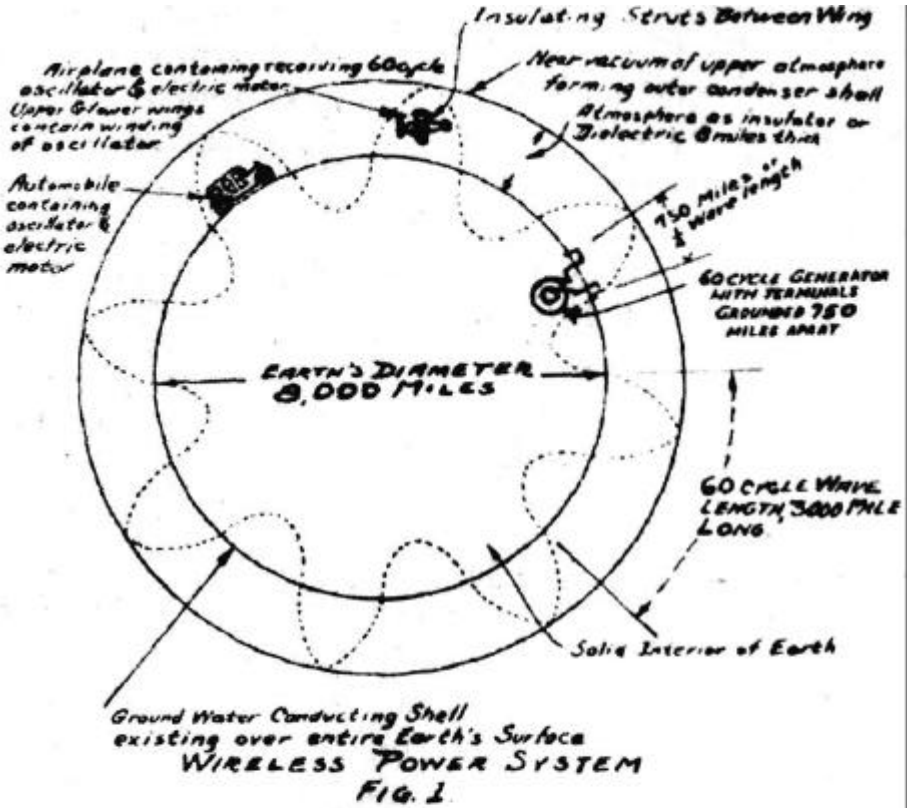
The patents of Dr. Tesla are basically quite different from those of Marconi and others in the wireless telegraphic and e. i. d. In the nature of things this would be expected to be the case, as Tesla believes and has designed apparatus intended for the transmission of large amounts of electrical energy, while the energy received in the transmission of intelligence wireless amounts to but a few millionths of an ampere in most cases by the time the current is transmitted. It has been picked up a thousand miles away. In the Hertzian wave system,

as it has been explained and believed in, the energy is transmitted with a very large loss to the receptor by electro-magnetic waves which pass out laterally from the transmitting wire into space. In Tesla's system the energy radiated is not used, but the current is led to earth and to an elevated terminal, while the energy is transmitted by a process of conduction. That is, the earth receives a large number of powerful high frequency electric shocks every second, and these act the same as the pump piston in the analogy.

Quoting from one of Tesla's early patents on this point: "It is to be noted that the phenomenon here involved in the transmission of electrical energy is one of true conduction and is not to be confounded with the phenomena of electrical radiation, which have heretofore been observed, and which, from its very nature and mode of propagation, would render practically impossible the transmission of any appreciable amount of energy to such distances as are of practical importance."

Credit: MetaScience Foundation

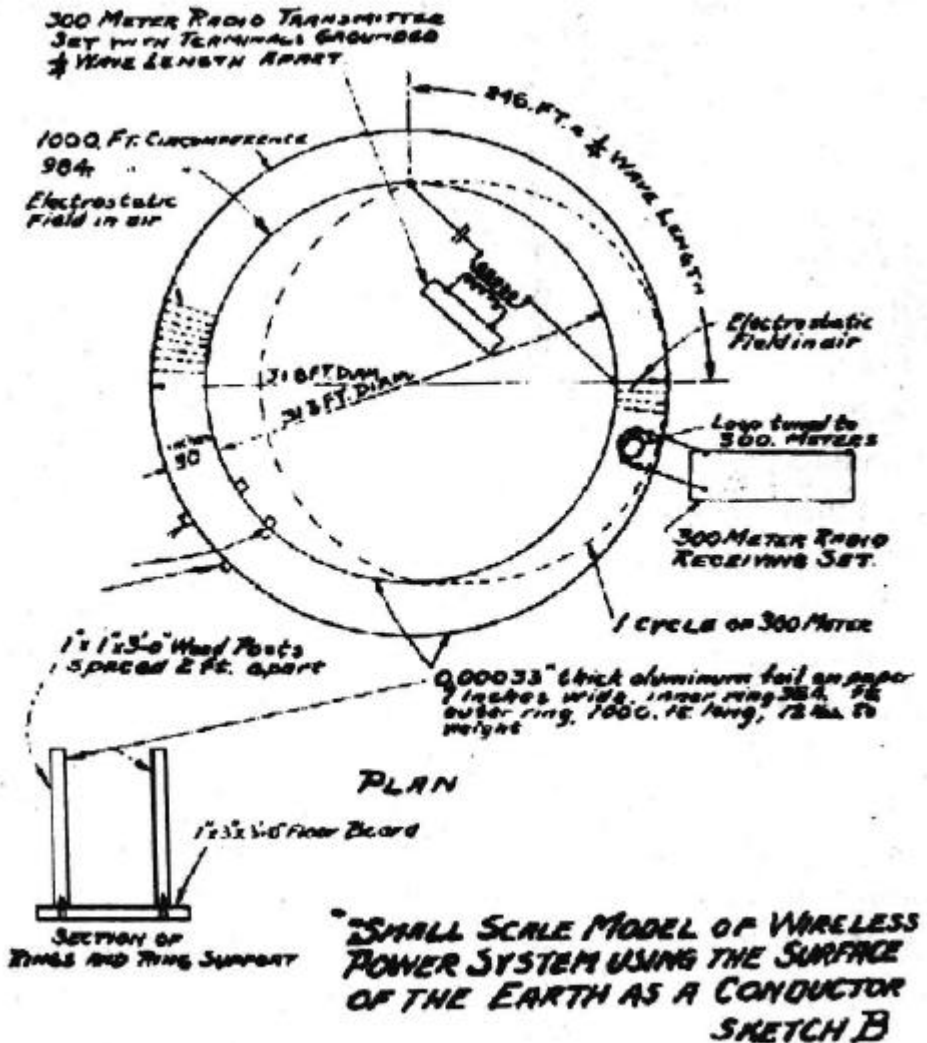
In the same "Cavity Q" article, the authors also settle the most common criticism of the Tesla wireless power system regarding biological effects. Calculating the circulating reactive power, they find a density of a microVAR per cubic meter at 7.8 Hz to be quite small, while it is well-known that the frequency is very biologically compatible. The authors also look at the present 100 V/m field and again find that raising it by a factor of 4 to 10 will pose no ill effects. (Thunderstorms do it all of the time around the world.)



SKETCH A.

In 1925, an electrical engineer, John B Flowers, developed a proposal to test and implement Tesla's Wireless Power System. He drafted the entire scheme for the Wardenclyffe project and presented it to H. L. Curtis, physicist, and J. H. Dillinger, head of the Radio Laboratory at the Bureau of Standards in Washington, DC. In a carefully worded 10-page document, complete with schematic drawings of the earth imbued with Tesla standing waves, Flowers unveiled a plan for operating cars and planes powered by wireless electricity (Sketch A). The plan was declined even though the mechanical test in Sketch B actually worked. Below is a report on the test results of the mechanical model of Tesla's wireless system:

"Using the concepts in Sketch B, a mechanical oscillator arm was fastened to the tied opening of a rubber balloon 20 inches in diameter. The oscillator arm was operated with an



electrical motor at 1750 RPM by means of an eccentric on the motor shaft. The balloon hung free in the air. The rubber surface of the balloon represented the earth's conducting surface and the air inside its insulating interior. The waves were propagated in the rubber surface at the rate of 51 feet per second, the frequency of transmission was 29 cycles per second and the wavelength was 21 inches. The mechanical oscillator was used in place of Tesla's electrical oscillator as it presents an almost perfect analogy. Standing or stationary waves of the rubber surface replace the electromagnetic waves of Tesla's system. By the test of this analog, the operation of Tesla's system can be forecast. When the oscillator arm was set in motion by operating the motor, there were three standing waves having six loops on the 'earth's surface' all having the same amplitude of vibration! When the finger was pushed against one or more loops, all the loops were reduced in amplitude in the same proportion showing the ability to



obtain all the power out at one or more points! The waves extended completely around the 'world' and returned to the sending station."<sup>11</sup>

Toby Grotz reports in his article that, in the 1980's, about 1/3 of the generated electrical power in this country was lost in transmission. Today, a couple of decades later, we have shamefully doubled our dependence on foreign oil and also doubled our electrical transmission grid inefficiency. From 31 Quads generated, a full 2/3 is totally wasted in "conversion losses."<sup>12</sup> (This is being repeated for emphasis.) No other energy production system of any kind in the world has so much wastefulness. Instead of trying to build 2 power plants per week (at 300 MW each) for the next 20 years (only to have a total of additional 6 trillion kWh available by 2020), as some U.S. government officials want to do, we simply need to eliminate the 7 trillion kWh of conversion losses in our present electricity generation modality. ***This book scientifically proves that Tesla's wireless transmission of power will accomplish electrical distribution, better than centralized or even, dispersed generation.***

Tesla discovered the evidence for charge clusters (as patented by Ken Shoulders and Hal Puthoff), the overunity effects of air arcs (as experimentally verified by Dr. Peter Graneau and George Hathaway), and the overunity effects of plasma glow discharge (as experimentally verified and patented by Dr. Paulo Correa).

Many believe it's time for Westinghouse, General Electric, and the J.P. Morgan Foundation to generously support a non-profit vehicle, such as a "Nikola Tesla Institute," to make amends for the billions that they reaped from Tesla's inventions. Several are considering a class action lawsuit, on behalf of Tesla's living descendants, to establish a trust fund. The reasons for legally attacking the profiteers of Tesla's inventive genius to fulfill Tesla's fondest dream of wireless transmission of power are the following. (This is a short list.)

1. General Electric, 1884: "Although Tesla had an antipathy toward the use of direct current motors, he worked to improve Edison's dynamos. He was sure he could increase the output, lower the cost, and decrease the maintenance. Edison replied, 'If you can do this, young man, it will be worth \$50,000 to you.' This would mean the realization of a laboratory for Tesla and the means for a life of scientific exploration. This was what he had visioned as the meaning of America's golden promise. He set to work harder than ever, driving himself beyond his endurance, and as a result came up with the design of twenty-four different types of standard machines, short cores, and uniform patterns which were to replace the old ones. Edison was delighted with the results, but there was no \$50,000 in Tesla's pay envelope and after some time, Tesla approached him for the money. It is said that Edison replied, "Tesla, you don't understand our American humor." Tesla didn't."<sup>13</sup> Tesla himself states this incident more succinctly, "For nearly a year my regular hours were from 10:30 AM until 5 o'clock the next morning without a day's exception. Edison said to me: 'I have had many hard-working assistants but you take the cake.' During this period, I designed twenty-four different types of standard machines with short cores and of uniform pattern which replaced the old ones. The Manager had promised me fifty thousand dollars on the completion of this task but it turned out to be a practical joke. This gave me a painful shock and I resigned my position."<sup>14</sup> The legal team will also detail all other legal nightmares caused by Edison, who continued to torture Tesla for years. Such examples include the court order to prevent Tesla from using GE light bulbs for

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<sup>11</sup> J. B. Flowers, July 16, 1925, as quoted in *Exotic Research Report*, July, 1999, p. 48

<sup>12</sup> "National Energy Security Post 9/11" U.S. Energy Association, June, 2002, p. 34

<sup>13</sup> Hunt and Draper, *Lightning in His Hand, The Life Story of Nikola Tesla*, Omni, 1981, p.42

<sup>14</sup> Nikola Tesla, *My Inventions, The Autobiography of Nikola Tesla*, Hart Brothers, 1982, p. 72

the Pan American Exhibition of 1901 in Buffalo, NY and the egregious lies about a 'debt-ridden company' spread by Edison to depress Westinghouse stock, not to mention the electrocution of dogs at state fairs by Edison to show the dangers of AC electricity. It is ultimately possible that Edison can be implicated in the burning of Tesla's NY laboratory in March, 1895, while he was out of the city. The motivation for the crime was overwhelming: Edison (General Electric) lost the Columbian Exposition light bulb contract to Westinghouse in 1892 to the tune of \$400,000. General Electric also lost the generator contract for the three initial 5,000 horsepower generators at Niagara Falls in 1893 and was forced to secure a license for the use of Tesla patents. Tesla (Westinghouse) completed the powerhouse in 1895 and residents of Niagara Falls turned on the lights in April, 1895, proving the superiority of AC electricity. A year later and 20 miles away, Buffalo, NY would be the first city in the world to have electric street lamps. Meanwhile, GE lawyers could only repeatedly file petty lawsuits to wear down Westinghouse, so that eventually, it was called, "The War of the Currents." The uneducated Edison led the groundless and unscrupulous battle by scaring the public with words like, "Just as certain as death, Westinghouse will kill a customer within six months after he puts in a system of any size. He has got a new thing and it will require a great deal of experimenting to get it working practically. It will never be free from danger."<sup>15</sup>

2. Westinghouse, 1888: Tesla was awarded patents on the AC system of motors and generators in May, 1888. "Within a few months, Westinghouse acquired the patented American rights and hired Tesla at a salary of \$2,000 a month to work in Pittsburgh on the development of the polyphase system. Tesla's system for the transmission and distribution of alternating current, including the induction motor, was covered by 40 historic patents. His motor was the missing link for today's alternating current system of centralized electric generating stations capable of efficiently and economically distributing electricity over long distances. It is widely believed that Tesla received a million dollars for his patents and that Westinghouse was to pay Tesla \$1 per horsepower for each AC motor produced. However, according to Westinghouse historical records, the contract specified that Tesla was to receive about \$60,000 and earn \$2.50 per horsepower for each motor produced. Four years after the contract was signed, it was rumored, the accrued royalties totaled approximately \$12 million. Westinghouse was advised to get rid of the royalty contract when his firm was in financial trouble and the fate of his company was at stake. So Westinghouse told Tesla he did not think he could honor the royalty clause...The 1897 annual report of Westinghouse shows that *Tesla was paid \$216,600 for outright purchase* of the polyphase system patents."<sup>16</sup> Over 110 years later, the amount of profit that Westinghouse has realized from Tesla's polyphase system has to be embarrassingly huge amount of money. Today, in comparison, pharmaceutical companies routinely ask Congress to extend the term of their patents beyond 20 years, just so they can "recover" more profit.
3. J. Pierpont Morgan, 1901: "It has been stated that Morgan simply gave Tesla \$150,000 with no strings attached. Actually, there were plenty of strings attached. Morgan delayed his check for a few months. Finally it came with the stipulation that fifty-one percent of the patents relating to wireless telephony and telegraphy, not only those to

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<sup>15</sup> John Shatlan, "Tesla: Scientific Superman who Aided Westinghouse Industry," *Pittsburgh Business Journal*, July 19, 1982 and the *Tesla Journal*, 1986, p. 60

<sup>16</sup> *Ibid.*, p. 60 (Ed. note: the same facts are also found in O'Neill's biography, *Prodigal Genius.*)

be used in the present but the ones to be developed – all were to be in Morgan’s name. The \$150,000 was well-secured...On March 1, 1901, Tesla sent to Morgan his contract, *signing over the fifty-one percent interest in his patents and inventions and in any future ones relating to electric lighting and wireless telegraphy or telephony*...Morgan’s \$150,000 was woefully inadequate when Tesla considered all that must be done, but it was a start. He secured a tract of land on Long Island, about sixty miles from New York City, though an arrangement with James S. Warden. Tesla had pictured to Warden a glowing and convincing real estate boom in that site, employing several thousand people who would build their homes on the adjacent land. Warden cooperated to the extent of offering two hundred acres of land for the use of the scientist, twenty acres already cleared and with a well one hundred feet deep. By July 23, 1901, work had started on the project with the roads cleared and the right of way in order. Thus, within a little less than five months after the contract with Morgan was signed, work was started on Tesla’s giant project.”<sup>17</sup> The rest of the horror story is history, as only the tower frame was erected in the next year. No more money was forthcoming for the project that Morgan initiated, even when the equipment cost alone cost about \$200,000. Morgan believed that he would “have nothing to sell except antennas (and refused) to contribute to that charity.”<sup>18</sup> Tesla tried and tried for years until in 1917 the U.S. government blew up the abandoned Wardenclyffe tower because suspected German spies were seen “lurking” around it. With Edison as his willing ally, Morgan even publicly discredited Tesla’s name, so that all of the five school textbook publishers of the time removed any reference to him. Any wonder why even today, 100 years later, hardly anyone knows who Tesla is?

Upon reading the rest of this book, all of us who contributed to this book know that the engineers and physicists of the 21<sup>st</sup> century will come to appreciate the benefits of the tremendously efficient (about 95%) wireless transmission of power. In terms of today’s systems theory, Tesla understood that it is vital to “increase human energy” in order to maximize the quality of life worldwide.<sup>19</sup> (See Puharich article for a detailed analysis of this Tesla theme.) In terms of economic theory, many countries will benefit from this service. At first, receiving stations will be needed. Just like television and radio, only an energy receiver is required, which may eventually be built into appliances, so no power cord will be necessary! Just think, monthly electric utility bills will be optional, like “cable TV.”

Tesla was an electrical genius who revolutionized our world in a way that DC power could never have accomplished, since the resistance of any transmission lines, (except perhaps, superconductive ones), is prohibitive for direct current. He deserved much better treatment from all three of the tycoons described above, than to spend the last 40 years of his life in abject poverty. However, he was too much of a gentleman to hold a grudge. Instead, regarding the magnifying transmitter, Tesla wrote in his autobiography, “I am unwilling to accord to some small-minded and jealous individuals the satisfaction of having thwarted my efforts. These men are to me nothing more than microbes of a nasty disease. My project was retarded by laws of nature. ***The world was not prepared for it. It was too far ahead of time. But the same laws will prevail in the end and make it a triumphal success.***”<sup>20</sup>

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<sup>17</sup> Hunt and Draper, p. 136

<sup>18</sup> H.W. Jones, “Nikola Tesla, Generator of Social Change,” *Proc. of Inter. Tesla Sym.*, ’86, p.1-89

<sup>19</sup> Nikola Tesla “The Problem of Increasing Human Energy” *The Century Illustrated Monthly Magazine*, June 1900, p. A-109-A-152

<sup>20</sup> Nikola Tesla, *My Inventions*, p. 91

This book is being published in time for the Wardenclyffe Tower Centennial, (1903-2003) which to many, signifies an extraordinary cause to remember and resurrect. Let us fulfill this prophesy of Tesla, making it a triumphal success, by supporting a philanthropic, international wireless power station to benefit the whole world. The scientists who contributed to this anthology are available to make such a global wonder a reality. The benefits, immediately alleviating electric power shortages everywhere, are too numerous to count. (For example, in Tesla's homeland, the Electric Power Company of Serbia will raise their monthly rates by 50% on the day this book went to the publisher.) Are you willing to help make a world of difference?

(Editorial comments are inserted in many of the following contributed articles. They represent my scientific viewpoints, which may help other researchers. You can recognize these additions by the familiar ending: “– Ed. note.”)

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Thomas Valone can be reached through Integrity Research Institute, a nonprofit, 501(c)3 corporation, located at 5020 Sunnyside Ave., Suite 209, Beltsville MD 20705, [www.IntegrityResearchInstitute.org](http://www.IntegrityResearchInstitute.org) and [iri@erols.com](mailto:iri@erols.com)