Radio Power will Revolutionize

Tesla's World of Tomorrow

"We are on the threshold of a gigantic revolution, based on the commercialization of the wireless transmission of power.

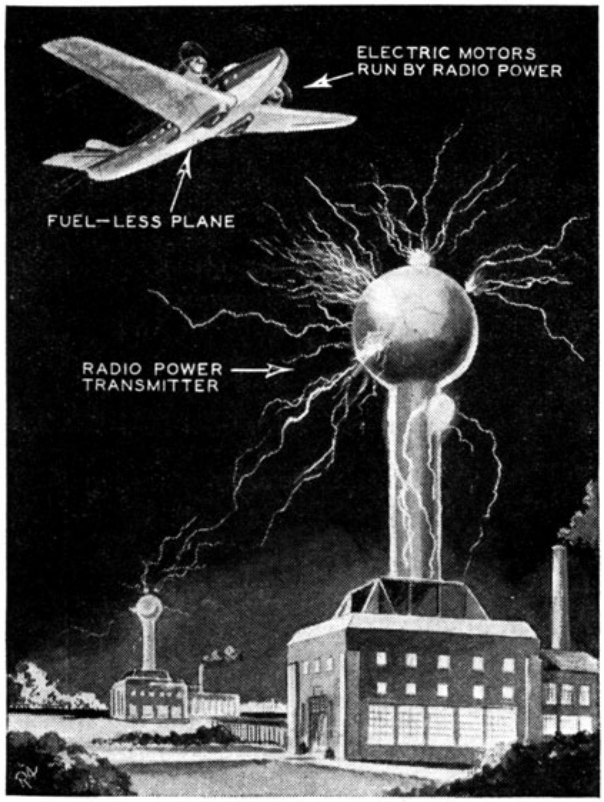
"Motion pictures will be flashed across limitless spaces . . .

"The same energy (wireless transmission of power) will drive airplanes and dirigibles from one central base.

". . . In rocket-propelled machines . . . it will be practicable to attain speeds of nearly a mile a second (3600 m.p.h.) through the rarefied medium above the stratosphere.

". . . We will be enabled to illuminate the whole sky at night . . . Eventually we will flash power in virtually unlimited amounts to planets."

—Nikola Tesla.



Nikola Tesla, electrical wizard, foresees the day when airplanes will be operated by radio-transmitted power supplied by ground stations, as shown in the drawing above.

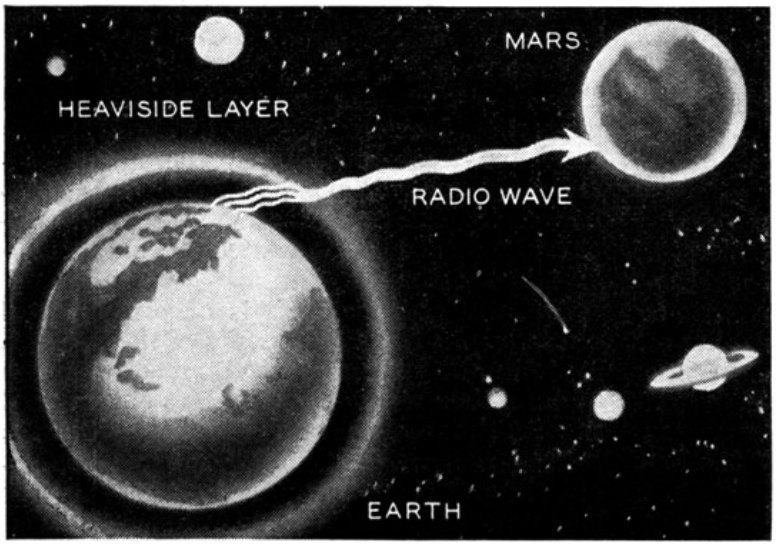
THE world will soon enjoy the benefits of electricity transmitted by radio. Huge and expensive transmission lines will be unnecessary. Bulky and unsightly distribution systems will be done away with. A little receiving device in your home will give you all the power you can use—and for only a fraction of present-day costs.

We will soon be communicating with other planets, where it is entirely possible that there is civilization far ahead of ours.

Tomorrow we will see rocket planes flying through stratosphere at a speed of a mile a second or 3600 miles an hour.

Fanciful dreams? No! Just conclusions based upon knowledge of what has been done, what is being done and what can be done in the future. I speak along practical lines and with a practical knowledge of what I am talking about.

Power transmission by radio is going to change our present civilization materially. The transmission of energy to another planet is now only a matter of engineering. I have solved the problem so well I no longer regard it as doubtful. I am also certain there are creatures on other planets whose ways are like ours. The new era will see amazing developments in interplanetary relations.



By using ultra-short waves, science expects to penetrate the heaviside layer, or gaseous medium surrounding the earth, and establish radio communication with Mars and other distant planets, as shown in drawing above.

Every other planet has to pass through the same phase of existence this earth did, and life is started on them during that favorable phase by the rays of some sun. It develops in the presence of moisture, heat and light in much the same manner as life does here. We know that light propagates in straight lines, and consequently our perceptions of the forms through the images projected on the retina must be true.

Therefore, it should not be hard to establish intelligent exchange of ideas between two

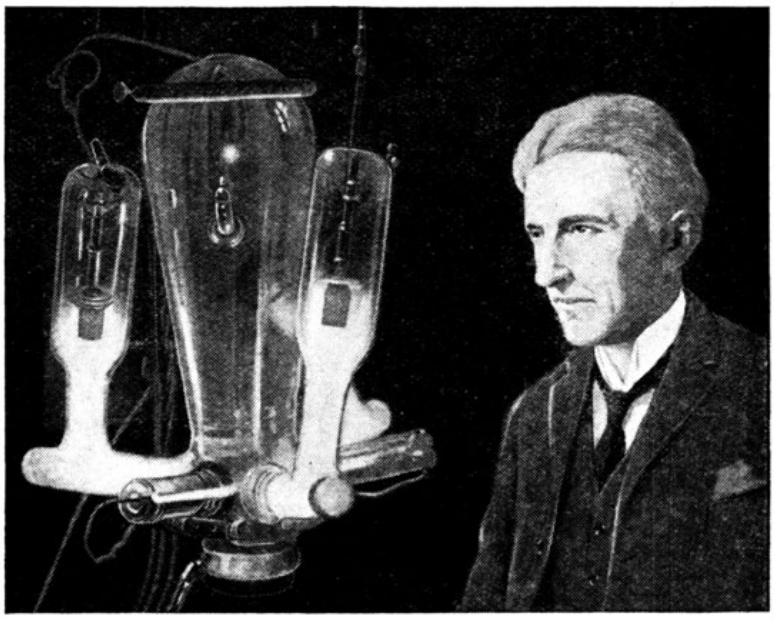
the WORLD

by NIKOLA TESLA
As told to
ALFRED ALBELLI

Who Is Tesla?

Radio Pioneer Nikola Tesla was born in Hungary, came to the United States in 1884 and has since developed more than 100 devices and improvements in electrical technology.

Once associated with the late Thomas A. Edison, Tesla sent a radio impulse around the world almost 40 years ago. He discovered the rotating field principle in alternating currents and is considered one of the greatest living electrical scientists and radio authorities.



Nikola Tesla is shown in his laboratory with late type mercury arc rectifier tubes. When operating, these tubes give off a violet glow.

planets. The earth we inhabit might be the beneficiary. It is conceivable that there is civilization on other planets far ahead of ours. If communication could be established by the earth the benefits to human beings would be incalculable.

As far back as June, 1900, in discussing my experiments at the beginning of the century, I said that my measurements and calculations showed that it was perfectly practicable to produce on our globe an electrical movement of such magnitude that, without the slightest doubt, its effect would be perceptible on some of our nearer planets, as Venus and Mars.

Interplanetary Communication Probable

Thus, from mere possibility, interplanetary communication has entered the stage of probability. In fact, that we can produce a distinct effect on one of these planets in this novel manner, namely, by disturbing the electrical condition of the earth, is beyond any doubt.

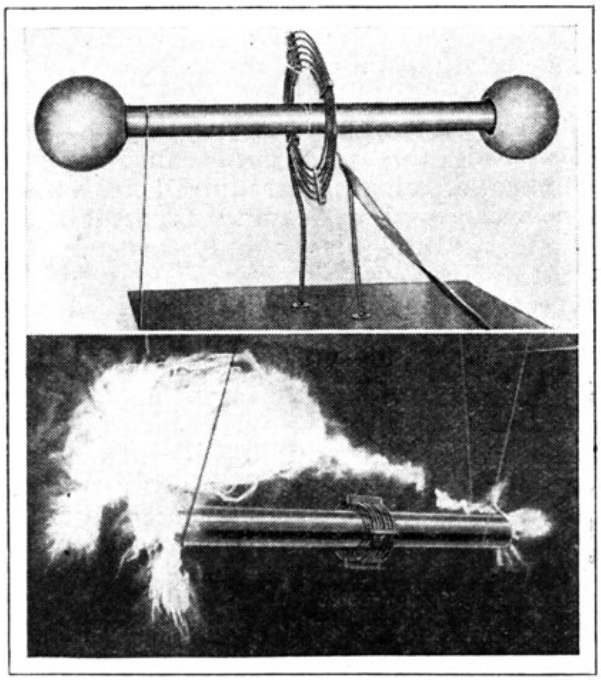
In order to make myself clearer I shall delve still further into the preliminary discoveries made in what I call my pioneering days, which was long before any other scientist had made any progress in this field. I have always chosen to remain in the background.

Some years ago I urged the experts engaged in the commercial application of the wireless art to employ very short waves, but for a long time my suggestions were not heeded. Eventually, though, this was done, and gradually the wave lengths were reduced to but a few meters.

Invariably it was found that these waves, just as those in the air, follow the curvature of the earth and bend around obstacles, a peculiarity exhibited to a much lesser degree by transverse vibrations in a solid.

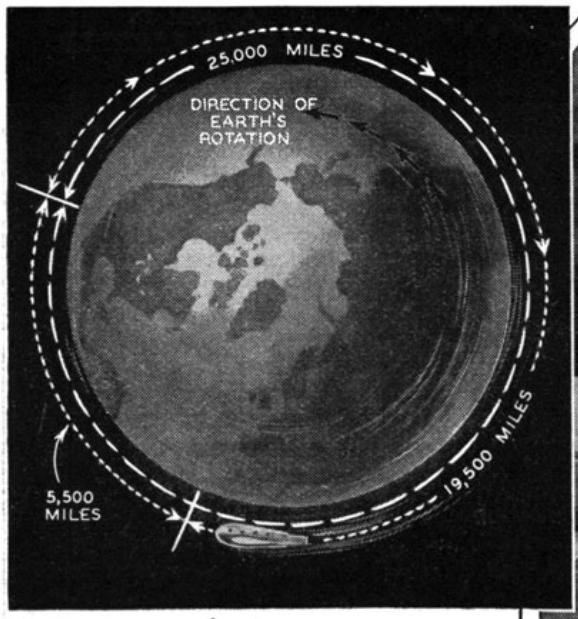
Recently, however, ultra-short waves have been experimented with and the fact that they also have that same property was hailed as a great discovery, offering the stupendous promise of making wireless transmission infinitely simpler and cheaper.

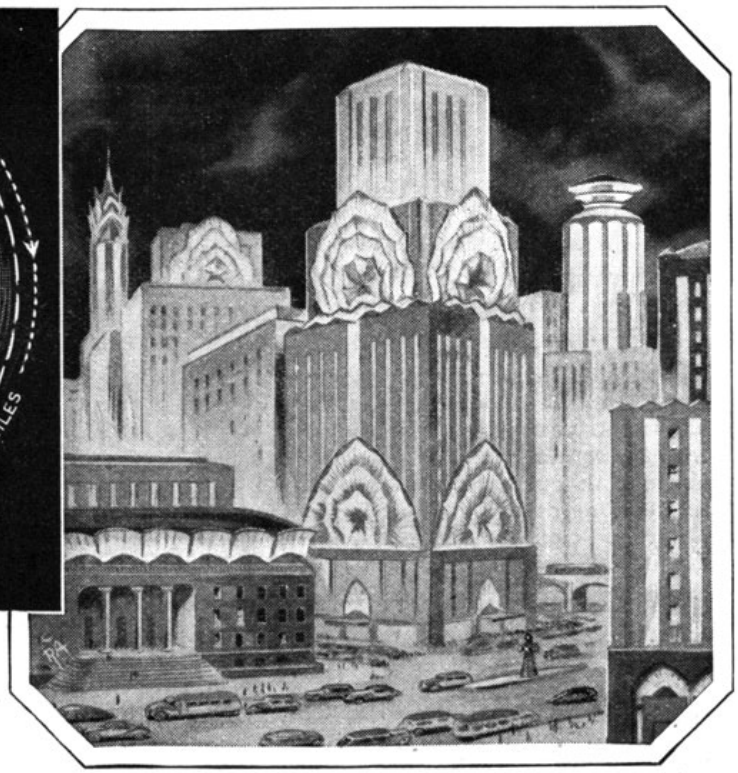
It is of interest to know what wireless



Top photo shows the famous Tesla coil, used to transmit early radio signals. Below, the coil in actual operation.

Rocket Ships to Circle Globe in 5½ Hours; Night to Change Into Day





Future rocket planes may circle the globe in 5½ hours. At 3600 m.p.h., the plane travels about 19,500 miles. Earth's rotation adds 5500 miles to total. Right, lights directed against giant reflectors may furnish constant daylight in future, if radio-power projects prove successful.

experts have expected, knowing that waves a few meters long are transmitted clear to the antipodes. Is there any reason that they should behave radically different when their length is reduced to about half of one meter?

As the knowledge of this subject seems very limited, I may state that even waves only one or two millimeters long, which I produced thirty-four years ago, provided that they carry sufficient energy, can be transmitted around the globe. This is not so much due to refraction and reflection as to the properties of a gaseous medium and certain peculiar action.

Short Waves Provide Increased Channels

The chief object of employing very short waves is to provide an increased number of channels required to satisfy the ever-growing demand for radio appliances. But this is only because the transmitting and receiving apparatus, as generally employed, is ill-conceived and not well adapted for selection.

Because of this and other shortcomings, I do not attach much importance to the employment of waves which are now being experimented with. Besides, I am contemplating the use of another principle which I have discovered and which is almost unlimited in the number of channels and in the energy three-electrode tubes.

This invention has been credited to others, but as a matter of fact it was brought out by me in 1892, the principle being transmitted.

It should enable us to obtain many important results heretofore considered impossible. With the knowledge of the facts before me, I do not think it hazardous to predict that we will be enabled to illuminate the whole sky at night and that eventually we will flash power in virtually unlimited amounts to planets.

I would not be surprised at all if an experiment to transmit thousands of horsepower to the moon by this new method were made in a few years from now. We must establish transmission of power in all its innumerable applications. This has been my life work, and although I am now close to 78, I unhesitatingly say that I hope to see its fruition.

I have been fortunate in the evolution of new ideas, and the thought that a number of them will be remembered by posterity makes me happy indeed. I am confident

(Continued on page 117)

What About Today's Scientists?

"The scientists from Franklin to Morse were clear thinkers and did not produce erroneous theories. The scientists of today think deeply instead of clearly. One must be sane to think clearly, but one can think deeply and be quite insane.

"Today's scientists have substituted mathematics for experiments and they wander off through equation after equation and eventually build a structure which has no relation to reality."

—Nikola Tesla.

Radio Power to Revolutionize World

(Continued from page 42)

that my rotating field and induction motor and the wireless system I have given to the world will live long after I have gone.

You ask me about atomic energy? I experimented with the atom, and achieved similar ends, long before the wave of ballyhoo swept over the country in recent years. The idea of atomic energy is illusionary but it has taken a powerful hold on the mind and there are still some who believe it be be realizable.

Tesla's Vacuum Tube

I have disintegrated atoms in my experiments with a high potential vacuum tube I brought out in 1896 which I consider one of my best inventions. I have operated it with pressures ranging from 4,000,000 to 18,000,000 volts. More recently I have designed an apparatus for 50,000,000 volts which should produce many results of great scientific importance.

But as to atomic energy, my experimental observations have shown that the process of disintegration is not accompanied by a liberation of such energy as might be expected from the present theories.

And as for the cosmic ray: I called attention to this radiation while investigating Roentgen rays and radioactivity. In 1899 I erected a broadcasting plant at Colorado Springs, the first and only wireless plant in existence at that time, and there confirmed my theory by actual observation. My findings are in disagreement with the theories more recently advanced.

I have satisfied myself that the rays are not generated by the formation of new matter in space, a process which would be like water running up hill. According to my observations, they come from all the suns of the universe and in such abundance that the part contributed by our own sun is very insignificant by percentage. Some of these rays are of such terrific power that they can traverse through thousands of miles of solid matter.

Properties of Solar Rays

They have, furthermore, other extraordinary properties. This ray, which I call the primary solar ray, gives rise to a secondary radiation by impact against the air and the cosmic dust scattered through space. It is now commonly called the cosmic ray, and comes, of course, equally from all directions in space. If radium could be screened effectively against this ray it would cease to be radioactive.

The scientists from Franklin to Morse were clear thinkers and did not produce erroneous theories. The scientists of today think deeply instead of clearly. One must be sane to think clearly, but one can think deeply and be quite insane.

Today's scientists have substituted mathematics for experiments, and they wander off through equation after equation, and

(Continued on page 118)

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28x4.75-19	2.45	0.95	29x5.50-19	3.35	1.15
29x4.75-20	2.50	0.95	30x6.00-18	3.40	1.15
29x5.00-19	2.85	1.05	31x6.00-19	3.40	1.15
30x5.00-20	2.85	1.05	32x6.00-20	3.45	1.25
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32x4	2.95	0.85	30x5	3.65	1.35
33x4	2.95	0.85	33x5	3.75	1.45
34x4	3.25	0.85	35x5	3.95	1.55

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Radio Power to Revolutionize World

(Continued from page 117)

eventually build a structure which has no relation to reality.

I work every hour that I am awake but not with a feverish tempo. Although I live in the midst of the hustle and bustle of New York, I do not time my scientific experiments to the hectic, jazz rhythm of the hysterical metropolis. I work for the future—build for the future. Just as today I see the realization of experiments carried on fifty years ago, I am now working with a view toward still greater achievements which will come to pass a half century hence.

That is my method. After experiencing a desire to invent a certain thing, I go on for days, months, even years with the idea in the back of my head. Whenever I feel like it, I play around with the problem without giving it any deliberate consideration. This is the incubation period.

How Tesla Works

Next comes the stage of direct effort. At this point the solution is somewhere in my subconscious mind, although it may take some time before it reaches the level of consciousness.

As my conceived device begins to take form, I make mental changes in the construction, improvements are figured out, and I even operate it. All of this is preliminary work—all in my mind. When the machine itself is finished, I slip my imaginary job over it and find they coincide to the minutest detail.

A great development can be expected in rocket propelled machines for purposes of peace and war. With such machines it will be practicable to attain speeds of nearly a mile a second (3600 miles per hour), through the rarefied medium above the stratosphere.

I anticipate that such machines will be of tremendous importance in international conflicts of the future. I foresee that in times not too distant, wars between various countries will be carried on without a single combatant passing over the border.

Infernal Gas Machines

At this very time it is possible to construct infernal machines which will carry any desired quantity of poison gases and explosives, launch them against a target thousands of miles away and destroy a whole city or community.

If wars are not done away with, we are bound to come eventually to this kind of warfare, because it is the most economical means of inflicting injury and striking terror in the hearts of the enemy that has ever been imagined.

My paramount desire today, which guides me in everything I do, is an ambition to harness the forces of nature for the service of mankind. As I see it, we are on the threshold of a gigantic revolution based on the commercialization of the wireless trans-

Radio Power to Revolutionize World

mission of power. The principles for this have been discovered by me.

As this wireless energy is converted into a commodity for the use of the masses, transport and transmission will be subjected to tremendous changes. Motion pictures will be flashed across limitless spaces by my system. The same energy will drive airplanes and dirigibles from one central base.

In this new era man will be able to travel safely, and at great speed, to any part of the world—the jungle—the arctic—the desert—mountain tops—over oceans. The instruments by which these wonders will be achieved will be amazingly simple.

These things will come to pass. Some of them are already within the realm of realization. But like those wonders which I predicted and helped perfect nearly fifty years ago—in the early 80's—power transmission is just around the corner. It's coming.

Today I repeat again what I said to contemporary scientists of those earlier pioneering days:

The scientific man does not aim at an immediate result. He does not expect that his advanced ideas will be readily taken up. His work is like that of the planter—for the future. His duty is to lay the foundation for those who are to come, and point the way. He lives and labors and hopes.

How President Roosevelt Keeps Fit

(Continued from page 65)

est in the outdoors than the present President. Before illness robbed him of the full use of his legs he was an all-around athlete, enjoying tennis, hunting, iceboating, swimming, baseball and football.

But although the President's enormous energy is geared to the production peak of a precision-tooled machine, he does not allow his energy to run away with him. He knows when to work and when to rest—a lesson brought home to him in force when in 1921 paralysis struck him down. Deprived of the use of both his arms and his legs and given scant aid from physicians who knew next to nothing about his disease, Roosevelt was forced to work out his own salvation. His subsequent victory was two-fold: physical recovery and a basic knowledge of mental discipline.

Today, a great part of the President's health program is given over to mental relaxation. He is a great reader, enjoys moving pictures, likes to listen to the radio and is enthusiastic about music, both popular and classical tunes.

Indoor games are one of the President's favorite methods of relieving mental pressure. He enjoys rummy, solitaire, bridge and parchesi, playing them all with his characteristic gusto, but never worrying about their outcome. The President is also one of America's leading hobbyists. His stamp collection is noteworthy and his group of ship models and naval paintings and lithographs is one of the most extensive in existence.

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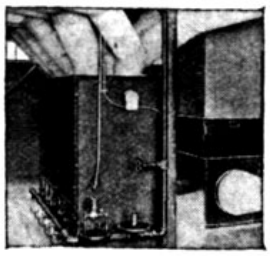

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