

# TESLA'S TASK OF TAMING AIR

The Inventor's Hopes of Building  
Fame on the Establish-  
ment of a New Art.

## GREAT FORCE HIS TOY

Wants to Make Nature World's  
Utilitarian Agent.

## TALKS OF SIGNALING MARS.

Transmission of Intelligence Feasible  
Assuming Equal Conditions Ex-  
ist on the Other Planet.

NIKOLA TESLA has come to Chicago. One afternoon of busy work with his machinery, a lecture in the evening, a day of social visits. That was all. To-day he leaves for Colorado, where his busy mind will continue to work in the same channels as it follows when he is at home in New York.

But Chicago is left full of wonder. "What of Tesla?" is the question which everyone must ask who has come into contact with the man and been made to feel with personal force something of the scope of his ideas. That he lives in high regions of an atmosphere totally unfamiliar to practical Chicago business sense everyone must recognize. But whether it is an atmosphere of phantasms, bubbles, specters, or whether it is the breeding place of things all important for the practical world of the future, that is the question.

### Belittles His Experiments.

It is a question which each man can answer as best suits his own disposition. Indeed to Tesla himself it is indifferent whether it is answered at all or not. But when he was approached yesterday by a reporter for THE TIMES-HERALD and asked questions about the nature of his work and its bearing on human affairs, he consented to talk quite freely. He said many things that throw further light upon his lecture of the night before, as well as having interest as expressions of a character unique among the men of genius of the day.

From what he said it was very clear that for him the little experiments he had performed at the dinner of the Commercial Club were simply trifling applications of the principle he is working out in his investigations. That he could transmit force to some distance without the use of wires, that he could make lights glow and wheels revolve and torpedoes explode without any contact with them except through the medium of air, was wonderful enough to the men who saw it. It filled their attention, for it was specific and immediately present.

### But One Problem Before Him.

But to Tesla himself, however much pleasure he may have taken in seeing his experiments work so successfully, it was only a little illustration of one of the simplest forms of communication and transmission of power which he says he has discovered and become able to control.

This great problem, the transmission of force in quicker and more precise and more effective and economical ways, is the center of all Tesla's speculations at the present time. It has long been the great problem set by him for solution.

"The invention of the torpedo boat worked at a distance," he says, "and the discovery of the principles of wireless telegraphy are simply incidents in my progress. They are not ends which I deliberately set out to accomplish. For many years I have given myself over to the problems involved in communication between individuals at distances and in the transmission of energy from one place to another. There are methods for these things which are as old as the human race, and there are others which are comparatively new.

### Wants Fame for Something New.

"None of them is as effective as it might be. I have discovered other ways of transmitting force, and some of them are capable of great development. They will tend to revolutionize the human race in many of its doings.

"What I am doing is to develop a new art. Is that not more important than the attempt to elaborate an old art in some of its phases? I want to go down to posterity as the founder of a new method of communication. I do not care for practical results in the immediate present. Where I have time I stop to develop the application of the principles that I have announced, but that is a part of the work which it is usually safe to leave to others. They will do it because there is money in it. For myself I am content to find the new principles through the knowledge of which the applications become possible."

### Suggests the Wizard in Face.

Tesla's bright eyes glowed as he spoke of his ends in his work. Leaning forward, peering almost each moment into the eyes of his interviewer to make sure that his meaning had been understood, he proved a talker from whose train of reasoning there was no escape while a man was under his influence. With close cropped mustache, high cheek bones, clean shaven face showing all over the signs of a beard struggling to assume complete control of his appearance, he is a man whom only the addition of a pointed beard would be needed to turn into a typical Mephistopheles.

He turned aside from his statement as to his general aims to answer some questions put to him about the agencies which he has developed for communication with Mars or any other planet. That is another application of his theories about ways of transmitting force.

### Signal Can Reach Mars.

"Signaling to Mars?" he said. "I have apparatus which can accomplish it beyond any question. If I should wish to send a signal to that planet I could be perfectly certain that the electrical effects would be thrown exactly where I desire to have them and that the exact signals I desire to make would be made. Further than that, I have an instrument by which I can receive with precision any signal that might be made to this world from Mars. Of course that is not the

same as saying that I could establish communication with beings on Mars, but if they should know that I was signaling them, and had intelligence approximately similar to ours, communication would not be impossible."

Then Tesla began to explain the difference between his methods and those that might be suggested at first hand for sending a signal. "Suppose," he said, "a ray of light should be sent out toward Mars. It would send its beams in all directions and only a very slight proportion of the energy would fall upon any particular spot on the planet. If there were sensitive enough instruments there that infinitesimal bit of force would affect them. But in order to make the sending of signals practicable what is needed is a way of condensing energy. It is this that I have found out how to do, and for this I possess the proper instruments already.

### Receiver and Sender Needed.

"Two sets of instruments are necessary—one of them to send, the other to receive. My oscillator is used to send out the electrical vibrations, and I have an exceedingly sensitive mechanism which I call the rotating brush to receive signals. By the use of 100 horse power with any oscillator I would be able to start the entire electricity of the earth in vibration and secure sufficient strength to take effect on an ordinary fine relay on Mars. The amount of electricity needed to affect a relay is perfectly well known. By the aid of astronomical data I have calculated exactly what is necessary to secure the desired results on another planet. I can send out in this way force amounting to a trillion times as much as could be sent from a 100-foot reflector, if such a big one could be made to send rays of light into space.

"Now, on the other hand, there is the receiving of the signal. This is accomplished by the rotating brush, which is incomparably the most sensitive device known to science. I described it in my lecture before the Royal Institution in 1892.

### Gathers All the Force.

"Heretofore only a minute amount of energy falling on a planet from another would fall upon and affect the receiving instrument of whatever kind it might be. Now, through my device, the entire amount of the energy falling on the receiving planet can be gathered together and made to take effect on the instrument which receives the signals. The sensitive instrument will harness the entire electricity which the planet gets. The calculations are exact and beyond question.

"There you have all that is needed for the sending of signals from one planet to another. The difficulty was to get enough force upon a given spot to make the signal marked enough to be appreciable. The two instruments I have described overcome all this difficulty."

Mr. Tesla has not yet attempted to signal to any point so far away as Mars, but he is using these very same instruments in other modifications in signaling between different parts of the earth. They are similar in many ways to the instruments which he used Saturday evening before the Commercial Club to transmit power the little distance across the room without the aid of wires.

### Transmission From India.

The principle is the same. He says that his sensitive rotating brush, as he has it in operation in his laboratory, will detect any electrical disturbance or sudden physical commotion which occurs in any part of the planet. A sharp electrical storm in India would be made known to him, he says, by vibrations of his instrument.

When asked what particular problem was occupying his attention most of all at the present time Tesla said: "I am striving to find out the best means of getting power from nature. The use of waterfalls to develop electricity which can be conducted through the air to the places where it is needed for practical use is one of the sides of the investigation. There is still another method I am struggling with, but I cannot say anything about it. It is older in my thought than the electrical method, but harder to work out and much less developed. "Central in these problems of the transmission of force is the use of air as a transmitter. I told in my lecture how by the application of tremendous pressure through an exceedingly high voltage of electricity I could turn air from an insulator to a conductor. I can make it act toward the power I want to transmit just like a copper wire."

### Great Resources of Air.

Mr. Tesla could not say too much in enlargement of his opinion expressed in the lecture that the coming century would bring the world into what might appropriately be called the era of the atmosphere. He is a wonderful optimist in his way, believing implicitly in man's ability to attain all his ends with ever increasing effectiveness, and in the air he sees the factors which will rapidly be developed to make up for all the threatened deficiencies in other parts of the material environment, such as in the timber and coal supply. Out of air will come, he predicts, the food of the world. Through it all power will be transmitted. It will be the vehicle for the spread of intelligence and of energy. Persons will begin to transport themselves through it in flying machines. Finally by the process of liquefaction much may be accomplished for science and for industry.

In regard to the air as the source of the

world's food supply, he said: "I have discovered a form of electrical discharge which excites the affinity of nitrogen for other substances. As is well known, nitrogen, as we find it is inert and will not combine with other substances, not even with fluorine. By my process nitric acid and ammonia can be produced. These are the world's fertilizers. The barren parts of the earth can be reclaimed by them and made to produce with all the luxuriance of past geological ages. There is much poetry in the idea that in this way the work of the sun on the earth can be made more effective."

### Electricity for Motors.

Asked what he thought about the motors which would be most successful in the future for use in transportation Tesla said that the air motor had certain very beautiful features, but that his faith in electricity was very high and that he thought through it most of the work of the world would be accomplished.

In answer to a question as to the practical value of the things he had thus far accomplished Tesla claimed for the results of his investigations all the greater utility to the world because he had not patented them and attempted to derive personal gain from them. He threatened, however, to take steps to patent the next great invention he should make. "Wireless telegraphy," he said, "is something now that is free to all the world to experiment with. Nobody can hinder anyone from using a wireless instrument. I was the first man to announce the principle of the instruments now used by Marconi and others. I gave it to the world in a lecture in St. Louis in 1893. It may not be practical in your sense now, but it will be some time soon."

### Alternating Currents His.

"Then there is the principle of alternating currents first announced by me and now universally applied in telegraphy. What could be more practical than that? At the lecture last night I was speaking of it and said that there was only one trouble with it from my point of view. 'What is that?' asked some one. 'That it won't work?' 'No,' I replied, 'that I didn't have it patented. It works for everybody.'"

In his view of what work is of the most value Tesla is consistent throughout. He believes thoroughly that work for the future is the work that counts. He believes that it is better to find out the general principles than to bother with the details of application. He threatens, however, to be in a position to make applications in many lines on an alarmingly big scale before many years have passed.

As to the methods of work which the inventor follows he said many things which were of interest. He boasted with a certain measure of pride that he had not for ten years performed an experiment which was a failure.

"Of course, there is sometimes a defective piece of machinery which has to be replaced, but when I make an experiment I know in advance always that it will succeed. Perhaps I have spent something like 99 per cent of my time thinking and 1 per cent experimenting. The experiment simply proves that there is no element in the situation which the thinking has overlooked. Then, too, there is a great pleasure in watching the actual accomplishment of what one has been able to predict by means of his science."

"Are you going to Colorado for a feast?" Mr. Tesla was asked.

"Rest? Oh, no," he answered. "I shall just keep on thinking on the same lines and will work as hard while there as if I were in New York."

### Absorption in Study Complete.

Tesla told one or two stories tending to indicate his complete absorption in the investigation which he pursues. When speaking of the circumstances surrounding the invention of his sensitive rotating brush he said: "I had come back from attending the funeral of my mother, and was bowed down with grief, but I became absorbed in this study. After a time I forgot that my mother had died. I don't mean that I simply was so absorbed that I neglected to think of the fact, but I actually forgot it, and my mother was to me as one of the living. After a time I began to feel an overweening longing to visit her again. I felt that I could not resist it, and prepared to make the trip. Then something brought back to me the knowledge that she was dead, and I found that my work of investigation had actually stolen my memory on this point for a long time—months even."

Tesla says that his daily habits in New York City are such that he follows the same beaten track day after day. In all his years in that city he says that there have been only very few occasions when he walked on any other streets than those which lead from his lodgings to his laboratories, and he is perfectly satisfied with that limitation of his movements.