

TALKING OVER A GAP OF MILES ALONG A RAY OF LIGHT.



EXPERIMENTS WITH
WIRELESS TELEPHONE
ON WANNSEE, NEAR BERLIN

PROFESSOR ERNEST RUHMER has won national fame by sending messages for several miles over a telephone without the aid of a wire. What Marconi has done in the field of telegraphy he has done in another field, and those experts in Europe who are best qualified to speak with authority on the subject say that his achievement is as notable and will produce as far-reaching results as the distinguished Italian's.

Professor Ruhmer has for several years been known as an indefatigable physicist, and some time ago he gave proof that his labor had not been in vain by inventing the instrument known as the photophone. Consequently, the leading electricians and other experts of Germany were not surprised when he informed them recently that he had discovered a method of sending wireless messages by telephone and that he intended to give a practical proof thereof, which he would like them to witness.

Many accepted the invitation, among them Herr von Rudiger, a prominent government official, and Professors Kalisch and Kapp, of the Technical High School, of Charlottenburg, as well as representatives of the Berlin and Vienna press.

The experiments were held on the Wannsee, near Berlin, and were most successful in spite of the facts that heavy rain was falling and the air was frequently disturbed by noise from nearby vessels. The inventor sent wireless messages by telephone for a distance, first of two and a half and then of four and a quarter miles.

"How did Professor Ruhmer happen to invent such a wonderful thing?" many persons are now asking, and scientists reply that he has achieved success by following faithfully in the line of Professor Alexander Graham Bell's experiment with light. In 1889 Professor Bell proposed that the radiophone be used for utilizing radiant energy, such as light or radiant heat, for the transmission of sound.

The radiophone, which was then attracting much attention, was an apparatus founded on the discovery made by Mr. May while carrying out experiments on selenium—that when selenium exposed to light its electrical resistance differs greatly from what it is in the dark.

While pondering over this discovery Professor Bell conceived the idea that if a ray of light issuing from one station could be made to fall on a selenium plate at another station, and if its intensity could be varied by the voice of a speaker, then, if a telephone and a battery in circuit with the selenium plate were connected, the words spoken in the distant station would be heard in the telephone.

Tests which were made proved that this theory was correct.

Since then Professor Simon, the inventor of the "singing lamp," and Mr. W. Duddell, the English scientist, have shown clearly that light can be used for the transmission of sound and that their experimental service to direction have been of signal service to Professor Ruhmer while perfecting his method of wireless telephony is thought by experts to be very probable.

New Use of Selenium.
Nevertheless Professor Ruhmer has made one distinct and most important discovery, and therefore, no matter how much he may

be indebted to the work of others who have experimented with light, he is well entitled to all the praise which he is now receiving, for if he had not made this discovery he could not have perfected his system of wireless telephony. He was first to discover how to make the utmost possible use of that curious metal selenium.

Hitherto selenium was supposed to be color-blind, or, in other words, to be only sensitive to red and yellow rays. Now, however, Professor Ruhmer has discovered, through many chemical tests, that selenium is also sensitive to blue, violet and ultraviolet, or invisible rays. To show the importance of this discovery it is only necessary to point out that if selenium were only sensitive to red and yellow rays it would be impossible to telephone without wires when the sun was shining.

The more selenium is exposed to light the better it acts as conductor of electricity, and on this principle Professor Ruhmer's invention is mainly based.

His experiments at the Wannsee were surprisingly simple. At the transmitting station a person spoke into the diaphragm of the ordinary telephone. The sound waves then acted upon the electrical current by which the light was produced, and this light was carried to the receiving station. There the light acted upon the selenium, which, as has been said, conducts the current better or worse, according as the light is strong or weak, and through the aid of the current, which was successively weak and strong, the same sounds as those generated in the transmitting station were exactly reproduced in the receiving station.

Moreover, the diaphragm vibrated in the same manner in each station, and the sounds sent forth from one point were distinctly heard at the other. The selenium used on this occasion was in a mirror, which was less than four inches in diameter.

Further Tests To Be Made
Messages were sent on this occasion between Emperor William's tower on the Havel to an island near Potsdam, and though the mirror was so small and the light consequently so imperfect the sounds

were distinctly heard at both places and persons were easily able to converse with each other. The distance in this case was fully four and a quarter miles.

The inventor, however, was apparently not entirely satisfied, and arrangements are now being made to experiment further at an early date. These experiments will consist in sending messages between two stations which will be about nine miles from each other, or more than double the previous distance, and it is probable that the two places selected will be Emperor William's tower on the Havel and the Geophysical Institute, in Potsdam.

For these experiments a mirror four feet in diameter is now being constructed at Nurnberg, and it is authoritatively announced that in order to secure their success the Minister of War has decided to place \$10,000 at the disposal of Professor Ruhmer.

This prompt action on the part of the government is generally regarded as positive proof that the new system of wireless telephony will soon be introduced into the army and navy, one reason being because they are already well equipped with searchlights similar to those which are used in connection with this system, and another because the cost of the new apparatus is much less than that of ordinary telephone construction.

Some Notable Advantages.
The new system is said to possess three great advantages over the one now in use. One is that by means of it messages can be sent a hundred times more rapidly than at present; another is that replies to all messages received can be sent instantaneously, if desired, and the third is that perfect secrecy is at all times assured.

The one disadvantage of the system is that the distance to which messages can be transmitted is limited. Experts are confident that the system will prove effective for a distance of 125 or, possibly, for 150 or 175 miles, but they say that under present conditions that is as much as can be expected. At the same time, they maintain that this cannot prove a serious detriment to the success of the system, since the cost of a wireless telephone is so small that the instruments are bound to come into use everywhere.

Those who witnessed the recent experiments on the Wannsee agree in saying that they will not forget them as long as they live. And no wonder, for never before was such an exhibition given. There, beside the dark water and within hailing distance of half a dozen vessels, flashed a brilliant light, a dazzling electric eye, and now and then the radiant beam from this light actually spoke.

Brazilian Priest's Invention.

WIRELESS telephony is a natural corollary to wireless telegraphy. The same laws of nature are at the basis of both human inventions. But wireless telegraphy is now a fact, accepted by scientists and by the public. Wireless telephony, on the other hand, is still in the air. Scientists are interested in it, possibly, as established in England and Germany. The many-headed public has never a head to surrender to the subject.

Even among scientists the name of the Brazilian priest Robert Landell de Moura

is little known. Few of them are aware of his claims to be the pioneer in this branch of electrical research. Messrs. Brighton, in England, and Ruhmer, in Germany, have recently interested the learned by their experiments in wireless telephony. But before Brighton and Ruhmer were heard of, Father Landell, after years of experimenting, had succeeded in obtaining a Brazilian patent for his invention, which he called a gourdophone.

The patent was issued in 1900. It is numbered 5,279 in the Brazilian records. It was

expressly granted "for an apparatus intended for the phonetic transmission of speech at a distance, with or without wires, through space, earth or water."

With this apparatus Father Landell, in the years 1900 and 1901, made many public demonstrations which attracted attention in Brazil, but have only vaguely and intermittently reached the ears of Anglo-Saxondom.

And why?
An attempted answer may be found in an article in *La Vos de Espana*, a paper of San Paulo, published under date of December 16, 1900. Said the writer, a personal friend of the reverend scientist:

"If Father Landell had been born in England, Germany or the United States the government, the capitalist, the people themselves would have pressed forward to offer him every sort of assistance to enable him to bring his scientific discoveries to a happy conclusion. Unfortunately, Father Landell is a Brazilian, and of Brazil it was said by the famous scientist Agassiz, 'Everything is great here except the men.'"

If that be the true reason, Father Landell himself would be the last to believe it. The same writer acknowledges that the reverend gentleman, "with the angelic goodness which characterizes him," had expressly repudiated this slur upon his fatherland.

"No, my friend," Father Landell had written, "the opinion of the great naturalist which you quoted is not only not applicable to my individual case, but Brazil is great as well through the riches that God has poured upon her as through her sons."

The paper which published this correspondence made note of the fact that Father Landell, in the presence of Mr. Lupton, the British Consul at Sao Paulo, and other local magnates had demonstrated that by his apparatus the human voice could be transmitted phonetically without wires to a distance of thirty or thirty-five miles.

All this happened some time ago. Since then Father Landell has left his native country, and for several months has been a resident of New York city. He has made applications to patent his inventions in the



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United States to the Patent Office at Washington. He recently received word that his theories were so revolutionary that patents could not be granted without the submission of working models to make practical demonstration of their verity. These models he will supply as soon as he is in a position to do so.

It was only a few days ago that I met Father Landell for the first time. I found him a gentleman some forty years of age, spare and ascetic in body, vivid and enthusiastic in mind. He was born in Brazil, of which country both his parents are natives, though his mother is of Scotch descent. Educated and ordained in Europe, he returned to his native country to become a parish priest and professor in the seminary until he left for the United States.

He was quite ready to speak about the inventions to which his entire worldly life is devoted. Only his worldly life, however, is involved. His first thought is for his religion, his second for science.

"I wish to show to the world," he told me, "that the Catholic Church is not the enemy of science or of human progress. Individuals in the Church may in this or that case have opposed the light, but they did it in blindness to Catholic truth. I have myself met with opposition from my fellow believers. In Brazil a superstitious mob, holding that I was in partnership with the devil, broke into my study and destroyed my apparatus. Nearly all my friends of education and intelligence, whether in or out of holy orders, looked upon my theories as contrary to science. I know what it is to feel like Galileo, and to cry, 'E pur si muove.' When everybody was against me, I simply stood my ground and said, 'It is so, it can be no otherwise.'"

Father Landell explained that it was impossible for him to go into details concerning his theories and inventions so long as the patents were pending. But in a general way he was willing to explain that his system of wireless telephony depended upon a new principle of light which he had discovered.

"By virtue of this principle," he went on, "it is possible to transmit speech through a luminous axis without the intervention of selenium or of a microphone. Nay, even a receiver will not be necessary. All persons within the radius of reception will be able to hear the message with the aid merely of their natural organs."

"And what is the distance to which you can reach?"

"Practically infinite."

Mary Stymsus and Her Sunny Haven for Childhood

LIVING through the "garden of the world," as Western New York folk love to hear their fertile fields and well kept farms called, you will note nothing especially remarkable if you passed Mary Stymsus' home. Big, modern houses, with smooth lawns, are a common sight through that section, and the traveler by the world-famed orchards of Orleans county sees many homes whose very look declares that the owner has prospered in this world's goods and intends his sons and daughters shall profit thereby.

A woman's quick, sympathetic eye would be likely, though, to note the pretty two-story and a half structure, bounded on four sides by broad verandas, standing just pleasantly back from a rather untraveled thoroughfare, two miles from West Kendall Station, was a little different from the run of the better farmhouses passed before; that the curtains at every window were surprisingly fresh and dainty; that smooth lawn and cosy porches gave evidence of many little feet and hands—a difference, certainly, but one more easily felt than described.

Visit the pretty place and you look at it through new eyes, which see in the simple, comfortable frame dwelling a memorial to a mother and grandparents, dead and gone many years. For inside this house and outside, through the long, golden days of spring, summer and fall, Mary Stymsus, with her fresh face, sweet voiced, is making a home in all the best sense of that too often abused word for eight little ones, girls and boys, who but for Mary Stymsus would know naught but cold and hunger, with and blows.

It is not an institution. Mary Stymsus says it never shall be that. It is a home, pure and simple, where the little ones laugh and play from morning to night, and call the sweet soul who gives her life to them mother or mamma, as the little lips will. A bonnier, sayer family of girls and boys than Mary Stymsus' orphans one would travel far to find.

When Mary Stymsus' sister or her brother were left without parents or home, at an early age, grandparents stepped in and gave the forlorn sister and brother all that money and love could provide. The brother

grew up and gave his life to his country in the early days of the civil war, and his little sister, who had been a very little child, to the tender arms and loving protection that had warmed and cheered her own young life.

When in young womanhood, the aged grandparents no longer needing her, having passed to their well earned rest, Mary, after training herself for a nurse, went to Brooklyn. For several years she worked among the children of the slums. When no other haven of refuge opened to the orphaned, or worse than orphaned, child, that child she took to her own lodging. The work grew rapidly. Different relatives had left her a little money from time to time and there was no doubt in the girl's mind how she should use it.

Brooklyn made her heart sick and soul sore. The misery there was so deep and far reaching that her strength and money, even supplemented by her church and many charitable organizations, seemed to go only to the bottom. Her children—she had several little ones—could not have a home in hired rooms. She would make a home for as many as she could, and so she went back to Orleans county, near the country she had loved so well as a girl.

There are eight little ones in the comfortable home to-day, which was built all for them, with its big verandas, its sunny parlors, its airy sleeping rooms. There are the best of bathrooms to keep the little bodies clean and well. A big furnace makes the whole house as comfortable as a June day. The kitchen and dining room are roomy and spotless and sweet smelling.

Dolls and books and toys may litter every floor, but there is always the sound of childish laughter re-echoing through the rooms, never the noise of baby sobbing. A black-eyed, black-haired, red-cheeked lassie of sixteen is the oldest of Mary Stymsus' charges, and a happy little mother to the younger ones. With six babies under four years old Mary Stymsus, much as she loves them, needs such a helper.

When it is best and she can, this mother of many legally adopted, where beer be-

settled parents refuse their consent then Mary Stymsus takes the needy child into her heart and home, trusting that a way will

open to keep the little one. The babies she teaches herself. The older boys and girls go to the district school and take their rank

with the best of the neighbors' girls and boys. Mary Stymsus' heart is open to-day for

more of the forlorn waifs who need her love and care. She is not willing to talk of herself or her work, save to the sympathetic neighbors. She admits, regretfully, that she has room in bed and at table for a dozen more, but that her funds will not care comfortably for so many.

This woman's life is placid, peaceful to-day; yes, placid and peaceful, in spite of all the care and labor involved in looking after the wants and needs of eight rollicking youngsters, with only blind Mary Stymsus, picked up, too, from Brooklyn's slums, to aid her.

Happy in such a life? You should see that face!

Says Nothing, Sails Away.

Of a well known New Yorker was asked the question "why I always kept his intended departure for Europe a secret. He said he was forced to do so to be saved from his friends."

"As a matter of fact," said he, "it's because I want to escape being made a purchasing agent for a dozen or two of people whom I know. Whenever they learn that I am about to go abroad they overwhelm me with commissions of all kinds."

"One man wants a photograph of a certain tower of the Castle of Heidelberg; another wants a peculiar kind of match safe, which may be bought at a certain place in Paris; a third is anxious to have a few London neckties, and others want umbrellas, sticks, opera glasses, cigarholders, jewels or something else."

"It's a nuisance, in the first place, to buy these things, especially if you are in a hurry. Then, when you arrive back in New York you are likely to have trouble with the customs officials, because your friends always expect to get their articles in duty free. Besides, no one ever pays you in advance, and you have to go around dunning the people."

"You often buy things that do not suit the person who has asked the favor of you, and their disappointed looks or words make you feel unpleasant. I have been through these experiences several times."



MARY STYMSUS AND HER FAMILY