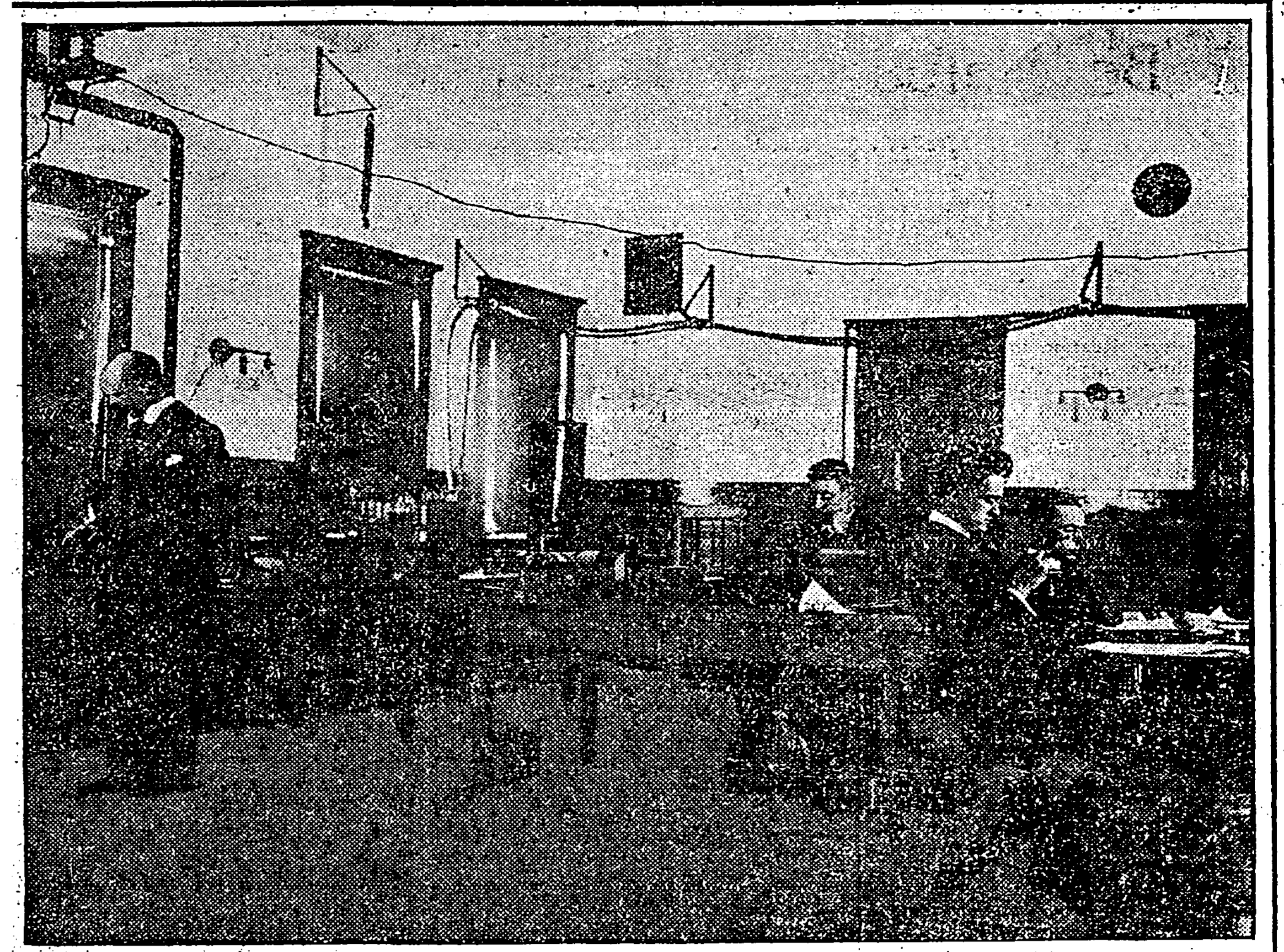


# GIVES UP ROYALTIES ON GREAT TELEPHONE INVENTION

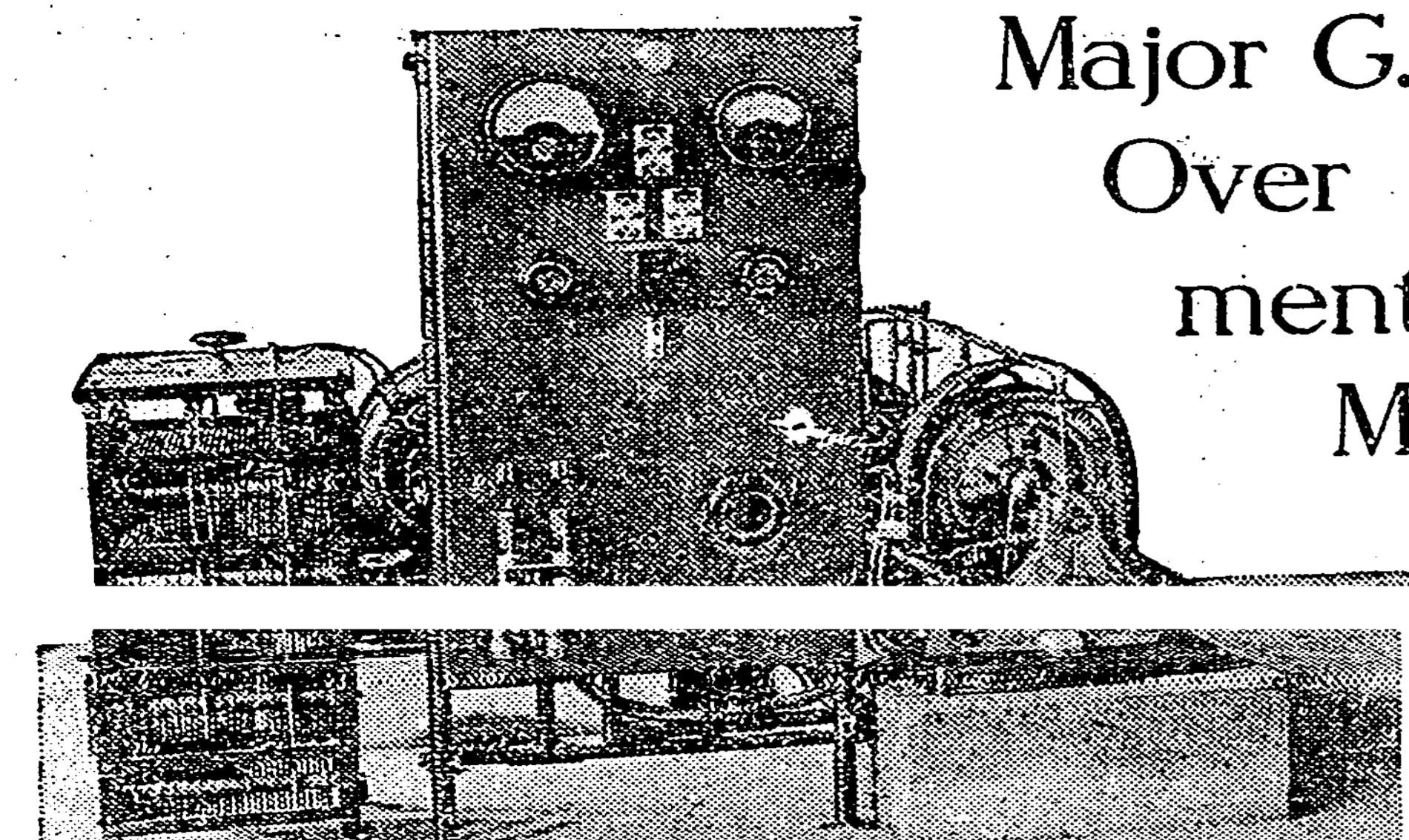
Major G. O. Squier of the Army Turns Over His Patent to the Government--His Multiplex Telephone May Revolutionize Long Distance Talking.

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Laboratory in War Department Showing Major Squier (at left) and His Assistants Experimenting with New Phone.



Generator for the Squier Multiplex Telephone.

YOU may sit in your office in New York, pick up your desk telephone, and, calling up your friend in Rio Janeiro, inquire whether or not the next moment comes with your mining partner in Cape Nome, Alaska, 6,000 miles away, and ask him how your placer claim venture is panning out, and but a moment later be talking to that gay society fellow in New Orleans to learn whether the cotillion he led last evening was a success—all this in the space of a few minutes and at a cost of but a few cents.

"This is a sample of the logical results that will of necessity flow from this invention if adopted by the people to the full extent of its possibilities."

Thus spoke Major George O. Squier, Assistant Chief Signal Officer of the United States Army, who has recently patented one of the most remarkable inventions of this remarkably inventive age, an invention whereby not only a number of conversations may be carried on simultaneously over the same wire—even when other persons are using the wire for ordinary telephone use—and also the transmission may be extended to any number of thousands of miles, regardless of the size of the wire, without the slightest appreciable diminution in the strength and quality of the tone transmitted.

When on January 23 last Major Squier received his four patents on his remarkable system of multiplex telephony it was found that the beneficial use of them was "dedicated to the public." In other words, he put it beyond the power not only of himself but of any other person to use his invention, but had even put it beyond his own power.

The invention that to him speeded millions he had voluntarily given to the people of his country for their own use. "So that if they see fit to use it," he said to THE TIMES representative, "they may have telephones for use not only locally but for long distances without anything but the initial cost and absolutely without rent or hire."

It may well be said that Major Squier's invention is no more wonderful than his remarkable action in thus voluntarily waiving his rights to a subject matter that would crowd millions in his pocket without moving out of his seat. The records of the Patent Office disclose no such other case of self-abnegation. Here is what Major Squier has to say on the subject:

"Is it not right that I should give this to the public? I obtained my education through the American people; as an officer of the United States Army, and my time and all the goods that may accrue from it, I make of that time and the education given me belongs morally to them. When a man in the army commences to think of money he commences to forget his moral duty to his country. It is my creed that all that is best in me, all that that best can produce, belongs to my country and my people. Do they not provide for me? I am assured by these people of the United States three square meals a day and comfortable quarters as long as I do my duty. A man with millions cannot ask more; he cannot eat more or dress more comfortably than my countrymen assure me I shall always find my portion as long as I do my duty."

"I have given my life and all that is in it to my country, and I think it only right that whatever of good I may bring forth, especially if that good has its roots in the education they afforded me, should accrue without cost to the benefit of the people. Therefore I have dedicated this invention to their use without reserve, placing it beyond the power of even a monopoly of capital but not only of any monopoly of capital but not of any limitation upon its use. It is as free as air to the humblest."

These are brave words. Had an army officer, with nothing to give to the people in exchange for what they had given him, uttered them, they might be considered as cheap bombast. But when one opens it in the palm of his hand, opens it to all and then speaks as Major Squier spoke to THE TIMES representative, they are not only brave words, but words of truth. Truly the man is as remarkable as his invention.

"What do you think of Major Squier?" asked THE TIMES representative of a humble subordinate in the War Office,

who was well acquainted with his action in surrendering all his interest to the people. "I think he stands out above these fellows with their monopolies like these fellows on a dirty shirt!" was the homely reply.

Such is the man that THE TIMES representative found sitting in his office on the fourth floor of the War Department last week buried deep in the study of aeronautics—for, be it known, Major Squier is a pilot, as well as an army expert in that line. Him it was that Orville Wright, in September, 1903, after making his record-breaking flight of over an hour, took up as a passenger and with him circled the parade ground at Fort Myer, Washington, for more than ten minutes—the first man, beyond the Wrights themselves, to test the virtues of the then novel aeroplane. He has since written a book on aeronautics which has become an authority on that subject.

There was no silly assumption of feigned reluctance to speak on the subject when he was asked to give to THE TIMES his own story of this invention that has stirred the scientific world from Vienna to San Francisco. On the contrary, he pointed to a copy of THE TIMES lying close at his right hand and said:

"I will gladly tell you everything I can in connection with the matter, especially gladly to THE TIMES, which, you see, I read, and which I have read constantly for fifteen years."

"When did you first conceive this idea of multiplex telephony, Major?" he was asked.

"I first conceived it in November, 1903, nearly a year and a half ago," he replied. "I was confined to my room with a severe cold. The few days of my confinement, which gave me a respite from the routine work of my office, that had held my nose all day close down to my desk, without time for independent thought, also gave me time to collect and co-ordinate some ideas that had been incubating in my brain for some time."

"I want to say here that I was most fortunate in being specially prepared for just this line of experimental thought that I followed during these vacation days of illness. My education at West Point had given me a mathematical and technically scientific training. Shortly after I graduated there the powers of the War Department determined to have certain officers specially educated in electricity, which was then coming to the fore in the way of telephones and electric lights. I was sent to Johns Hop-

kins University, where for five years I sat at the feet of Professor Rowland, probably the most eminent teacher in that line in the United States. It was there that I gained my degree of Doctor of Philosophy.

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starts and stops into telegraph language—and you get your message.

"That is the ordinary wireless; but, as I have illustrated, less than one millionth part of the original sending force reached the wire it was intended for; the rest is scattered through space in all directions."

"Now, our experiments proved that when these vibrations of an alternating current of electricity were under one hundred thousand alternations or vibrations per second, the current would follow a wire to which it was attached, not in the wire, as in the case of a continuous current, as the telephone, but along the outside, using the wire only as a guide. In short, by starting these alternating waves—if their frequency be less than one hundred thousand per second, for above that they tend to pass into space—by starting them, I say, along a wire they will follow it indefinitely as a trolley wheel follows its wire. And, what is most important, all the energy formerly wasted in radiating in every direction now devotes itself solely to driving the current along the surface of the wire, or rather through the ether immediately adjacent to the wire. And thus it goes until it reaches a wire whose vibrations correspond to its own, tuned alike, as it is called, when it reproduces whatever phenomenon in the way of sound it started out with. And so, if there is a telephone receiver at the other end whose wire is tuned to its own vibrations, it will leave everything, go into that receiver, and reproduce the original sound phenomenon. That is the basis of the invention."

"Furthermore, as these alternating currents will only respond to wires and instruments that have the same frequency of alternation, any number of different currents can be sent along a single wire at the same time without interference, for each current will halt only when it comes to a wire or receiver tuned to its exact number of vibrations. Thus, theoretically, any number of messages may be telephoned over the same wire at the same time."

"But in practice, with the inaccurate instruments we have to use in actual work, how many different currents could be sent simultaneously over a single wire? Practically, how many independent conversations could be carried on?" Major Squier was asked.

"In the present state of the science," he replied, "I should say from six to a dozen could easily be handled with the instruments in use to-day."

"What would be the cost of making a universal installation of your system throughout the country upon all the telephone and telegraph lines?"

"Only the cost of central generators of alternating currents and the expense of what additional receivers and transmitters would be needed. Of course if two people want to talk over a telephone wire, they must have separate transmitters through which to talk. These would be the only additional expense. Thus, I could take a single telephone wire between New York and Chicago, that can now be used for transmission of only a single conversation and by equipping it

with three generators, transmitters and receivers at each end, make that wire do the work of four; that is, four persons at each end could carry on four independent conversations over the single wire without any of them disturbing each other in the least. Of course the three alternating currents would have to have different rates of vibration."

"I spoke only of what should be the logical result of the invention if the people, to whom I have given it, will take advantage of it," replied Major Squier. "There are wires already strung from here to South America, Alaska, and California. All that would be needed would be a generator of an alternating current and transmitters and receivers, all which, I presume, are at the places. I have named. Did the people have the use of the wires there would be no cost save that of generating the alternating current, and since the whole force of the ether wave, instead of being diffused in space save an infinitesimal fraction, as in the wireless system, is directed along the guiding wire, the cost of generating sufficient current to send those three messages would be a matter of only a few cents."

"The reason that such communication is not possible by telephone is because telephoning over great distances is now impossible by reason of the necessity of using a large wire. It would take a wire as big around as my arm to carry a straight telephone message from here to San Francisco. Think what it would be, then, if it had to carry a message to Rio Janeiro or Cape Nome! But with my system the size of the wire, providing it is good copper metal, is immaterial, for, bear in mind, the wire acts merely as a guide for the so-called wireless current and does not have to be increased in size as the transmission distance is increased. Therefore I say one may talk by telephone over distances never dreamed of under the present telephone system. I have an apparatus, as one might hold a candle in the night. Can you not realize to what a short distance that light would throw its rays? A few hundred feet away and it would be impossible to read the largest type by its light. Why? 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