

Multiplex Telephony

To the Editor of the Electrician

The Electrician (London), April 21st, 1911

SIR: In your issue of March 17th Mr. B.S. Cohen describes a method of multiplex telephony, due to Major George Owen Squier, of the U.S. Army. Referring to this, I beg to remark that this method is neither new nor is it the invention of Major Squier. In the "Elektrotechnische Zeitschrift", for 1907, p. 484, I proved, in the article "Über Mehrfach-Fernsprechen", mathematically that with high-frequency alternating currents multiple telephony can be pursued, in so much that every current might be the vehicle of a special speech. The currents produced must have such a high frequency that they do not produce sounds in the telephone. I showed also that the best effect is procured if an adjustment is made for resonance. In this manner the alternating currents with the respective messages are separated at both ends of the line—at both the sending and receiving ends. In the above-named article I mentioned also that I was able to transmit simultaneously five messages. I executed these experiments in the electrical laboratory of the Hungarian Post Office. A summary of this article appeared in the "Electrical World", 1907, Vol. XLIX., p. 1228, under the title "Multiple Telephony".

In the meantime I pursued my investigations relating to "multiplex telephony" with high-frequency currents. In the "Elektrotechnische Zeitschrift" of 1908, p. 1119, I published an article entitled "Über Wechselstromtelephonie", in which I showed the advantages of alternating-current telephony, and remarked that by the tuning of the alternating current to the circuit the speech can be transferred along the circuit without distortion. I showed also that the higher the frequency the higher is the intensity of the speech, and that in this way the much-discussed problem of the telephone relay can be solved in the easiest way, advantages which with loaded lines cannot always be obtained. A summary of this article appeared in the "Electrical World", 1908, Vol. LII., p. 1307, entitled "Alternating Currents for Telephony".

In the meantime I reported my experiments to the first Conference of the European Post and Telegraph Engineers, and I communicated to the Conference the fact that I was able to transmit messages on a line 15 km. long. This communication is to be found in the

“Comptes Rendus de la première conférence technique des administrations des postes et des télégraphes à Budapest”, 1908, p. 31. After these publications there appeared in the “Elektrotechnische Zeitschrift”, of 1909, p. 160, an article signed by Mr. Weinberg (of Washington), in which Mr. Weinberg not only verified my experiments on alternating-current telephony, but also proposed this method for trans-Atlantic telephony, a problem not yet solved today. A summary of this article also appeared in the “Electrical World”, 1909, Vol. LIII., p. 645, under the title Alternating Current for Telephony”.

Later I worked much on the improvement of methods of multiple telephony, and in the “Elektrotechnische Zeitschrift”, of 1909, p. 902, in an article entitled “Zur Mehrfachtelephonie” I described a more complete form of multiple telephony, which can be obtained by the use of electrolytic valves. In this case every alternating current is the vehicle of two messages, so that with the aid of n currents $2n$ messages can be transmitted. In the above-mentioned article I pointed out the great advantages of using high-frequency alternating currents for multiplex telegraphy, and the schemes which I found best for this purpose also appeared. A summary of this article also appeared in the “Electrical World”, 1909, Vol. LIV., p. 1058, under the title “Multiplex Telephony”.

It appears that the system of multiple telephony claimed by Major Squier is only a simpler form of my method published in the “Elektrotechnische Zeitschrift” of 1907, p. 484, and described also in the American “Electrical World”, Vol. XLIX., p. 1228, in which my scheme is also reproduced, from which also it can be seen that Major Squier’s method is only a simpler form of mine, because he uses it only for two messages.

I not only worked it out many years ago in the laboratory of the Royal Hungarian Post Office earlier than Major Squier, but I developed it and improved it with the aid of electrolytic valves to a greater degree than has Major Squier. All these methods and experiments were published in many European and American journals. And if Major Squier has dedicated this system to public use, I beg to remark that this was already done by the above-mentioned publications.

I publish these facts to prove my priority. -I am, & c.,

AUGUST MAIOR

Electrical Engineer of the Hungarian Post Office.

Budapest, March 24, 1911.