

# Alexander Stepanovitch Popoff

By DEXTER S. BARTLETT

ALEXANDER S. POPOFF HAS BECOME A controversial subject of late years. The Russians claim him as the sole inventor of wireless; yet he is apparently totally ignored by the Marconi adherents. The truth, as is often the case, seems to be somewhere between. His contributions may not have been epoch-forming, but are well worth mentioning for the record. He definitely was first to make practical use of a wireless device and the first to utilize an antenna. (Loomis and Edison had previously used antennas in experiments.) He made Branly's coherer a success with his decoherer and he was one of the first to have his equipment used in saving lives at sea.

Alexander Stepanovitch Popoff (or Popov) was born in Perm, in the Ural mountains of Russia, on March 16, 1859. At the age of 17 he entered the University of Sciences and in 1883 became professor at the Marine Academy at Kronstadt. It was there that he did most of his scientific work. He died at St. Petersburg (Leningrad) in January 1906.

After hearing of the discoveries of Roentgen and Crookes, he made up a series of tubes for investigating X-rays on fluorescent materials. He also heard of the experiments of Hertz and Branly and began his many wireless experiments at the Kronstadt Naval Yard.

As early as 1895, Professor Popoff communicated to the Physico-Chemical Society of St. Petersburg the details of a device employed by him for graphically registering aurosppheric disturbances with an iron-filing coherer, introduced between an antenna or "exploring rod" and ground. A relay and tapper (decoherer) were also employed, the former operating a 12-hour recorder. With this ar-

range, he detected thunderstorms at a distance of 20 miles.

Although Hughes and Lodge had used thumpers for decoherers, it remained for Popoff to make Branly's coherer usable by brilliantly hooking his bell tapper in the receiver relay circuit and thereby decohering after each received signal.

In May 1895, using his thunderstorm detector, along with an Hertz oscillator, he worked a distance of 1,000 meters. According to Sir Oliver Lodge, he had no thought of wireless telegraphy, but the experiment was for scientific purposes. Nevertheless, by Dec. 5, 1895, Popoff expressed confidence that he could establish a wireless telegraph system if he could perfect a more powerful transmitter.

On March 24, 1896, he and his assistant, Rybkine, gave a demonstration at St. Petersburg University, transmitting Morse signals between two buildings 250 meters apart and recording them on tape. This radio program—the first in the world, and taped, too—comprised only two words: "Henri Hertz."

In March 1897, he established a station at Kronstadt, and equipped the cruiser Africa with his apparatus. As the story of Popoff's record goes, in 1899 wireless communication was established between the battleship Admiral Aprasin and the coast, a distance of 45 miles. In 1900, a wireless dispatch from St. Petersburg, using Popoff's apparatus, was flashed to the icebreaker Ermak in the Baltic, instructing the crew to rescue a group of fishermen stranded on floating ice in the Gulf of Finland, possibly the first time wireless was used to save lives at sea.

In 1897, during experiments aimed



at organizing radio communications within the Baltic fleet, Popoff is claimed by the Russian author P. Kolessov to have discovered the reflection of electromagnetic waves by naval units. More than 40 years later this discovery was to serve as a basis for radar.

A year later the Russian Army used Popoff's equipment and in 1903 the Ministry of Postal-Telegraph opened its first commercial wireless service. In 1901 he became professor at the St. Petersburg Electro-Technical Institute, but still found time to work on developing wireless telegraphy on board units of the Russian fleet.

Undoubtedly Popoff has considerable justification in his claim for firsts in wireless telegraphy as his dates are mostly contemporary with Marconi. But being a basic scientist, Popoff is said to have refused to take out patents on his wireless system, contending that the discoveries should benefit the scientific world at large.

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## Bibliography

- Orrin E. Dunlap, *Radio's 100 Men of Science*, 1944  
*Larousse Du Siecle*, 1932 *Maver, Wireless T. & T.*, 1909  
*Cyclopedia of Applied Electricity*, 1912  
 Mary Texanna Loomis, *Radio Theory*, 1926  
 J. A. Fleming, *Principle of Electric Wave Telegraphy*, 1910  
 Story, *The Story of Wireless Telegraphy*, 1904  
*Radio Times of India*, Sept. 16, 1949.