

AUSTRIANS USE RADIO IN ALPS.

The Radio operator in active military service does not always have a hut or dug-out in which to set up his instruments. The photo herewith illustrates a temporary Austrian radio station near the top of a mountain peak in the Alps. The small antenna mast is guyed in position as shown and the operator at the foot of the pole is busy receiving a message. At the extreme right an officer is making observations which he reports to the wireless man for transmission to headquarters. Note the two industrious radio squad men kneeling down in the center of the photo. They are the "dynamo men" and their duty is to turn the crank and spin the dynamo until the voltmeter registers 110 volts. The operator can then press his key and send out his message. No current is necessary for receiving the messages. Photo © by Underwood and Underwood



Far Up in the Cold Mountain-tops, Thousands of Feet Above Sea Level, the Wireless Proves Itself Invaluable. This Portable Radio Set is Being Used by an Austrian Signal Corps Squad in the Alps Region.

PERISCOPE FOR READING TRANSFORMER TEMPERATURES.

In order to read the temperature of the

oil as indicated by the thermometers on transformers, the Pacific Power & Light Co. in one of its sub-stations has attached periscopes to each transformer to enable

of a square metal tube 4 ft. 8 in. (1.4 metre) long and 2 in. (5 cm.) square. At the ends are placed two mirrors facing each other at an angle

of 45 deg. with the sides of the tube. The lower mirror is 1 7/8 in. (4.8 cm.) wide and 3 in. (7.6 cm.) long, while the upper one is 1 3/8 in. (4.8 cm.) by 3 3/8 in. (8.6 cm.) long. The upper mirror is made longer to give a longer view of the thermometer scale.

ELECTRIC SHIP HAS FUTURE.

The electric ship is no longer a dream but a reality, and it is quite possible that within a few years of the close of the war every new vessel of any size will be driven, steered, stopt, reversed or turned, merely by the pressing of a series of buttons on the bridge. The application of this principle will enable ships to be run with the highest efficiency at an even speed, permit marine engineers more liberty of design and yield proportionately greater cargo space

than the present cumbersome form of machinery allows. The newer American merchant ships are electrically controlled.

London also recabled it immediately to the American Ministers in The Hague, Stockholm, Copenhagen and Christiania, thus covering Holland, Sweden, Denmark and Norway. The Ministers gave out the speech as soon as they received it to all the news agencies in their respective countries.

From London the speech was sent also to Petrograd and distributed to the news agencies by a branch of the American Committee on Public Information in the Russian capital. From Petrograd it was telegraphed over land lines to Moscow and thence to Brest Litovsk, the scene of the recent Russian-German peace parley.

To Paris the President's address was sent by way of the Commercial Cable in the space of 1 hour and 38 minutes. There it was given out to the Havas News Agency, the Agencie Radio and the Maison de la Presse, the French official institution for distributing news. These organizations forwarded it to Berne, to Rome, to Athens and to Madrid and Lisbon; thus covering Switzerland, Italy, Greece, Spain and Portugal.

News wires are working between Berlin and the Holland border, as well as to the Swiss border, so the speech got into Germany certainly from one or another of these border stations, (the message received in Holland and Switzerland being transmitted to the German border by courier, from which point it was telegraphed to Berlin) and doubtless was sent down thru the Central Empires from Berlin.

South Africa and India receive their news thru the Reuter Agency in England, and the speech was cabled to them by that organization.

It was sent to Australia by the British cable which runs from Vancouver, B. C., to Sydney. It was telegraphed to San Francisco in the short time of 1 hour and 38 minutes, and then cabled to Hawaii, to Shanghai (there distributed by Reuter's) and to Tokio, where the Japanese agencies—Kokusai and Nippon Dempo—sent it out.

By cable the speech went by direct cable to Havana, Port au Prince, Hayti and Caraccas, Venezuela. It also went via direct cable to Colon, across the isthmus to Panama, and from there down the west coast of South America to Santiago, Chili, whence it was telegraphed across the Andes (over the longest *under-ground* cable in the world) to all the lower capitals of South American republics, reaching Buenos Ayres first.

From the naval radio station at Darien, on the Isthmus of Panama, the address was flashed out to all the little islands and ships in the Caribbean. The naval radio station at San Diego, Calif., also flashed the message to ships in the Pacific.

The United States and Canada, of course, received it thru the ordinary news agencies which supply both.

An idea of the speed with which the speech was sent out may be had from the fact that Buenos Ayres reported back that it had been received in full one hour and forty-five minutes after the operators here had stopt sending. Meanwhile it had been retelegraphed across the mountains down in South America.

Many extremely interesting points were revealed by this gigantic news propaganda which the average person, who never uses the cables, knows but little about. In the

first place the modern atlas and geography "map of the world" does not show anywhere near all of the cables now laid and in successful operation in various parts of the world.

Several interesting long-distance cable routes used in broad-casting the President's speech of 2,700 words to the world are the following, and which were not mentioned in the newspaper accounts. In the preparation of this article the editors have had the assistance of Mr. Donald McNicol, Assistant Electrical Engineer of the Postal Telegraph Co., and Mr. Walter S. Rogers, Director of Foreign Press Division at New York.

The speech reached the "Far East"—India, Sumatra, Java, Ceylon (of Lipton tea fame) and the Malay Peninsula by cable. The message sped over the ocean cables from Lisbon, Portugal, down along the west coast of Africa, via Cape Verde Island, to Cape Town, South Africa. From here it was telegraphed across country to Durban, on the east coast, and flashed on via Mozambique north to Aden, at the south end of the Red Sea, thence by cable to Bombay, India. It continued from here by overland telegraph to Madras, on the east coast and, once more speeding under water, reached Penang on the Malay Peninsula. From Penang the message spread to the several islands in the East Indies. An alternative cable route, but liable to interruption due to present naval activities in the Mediterranean Sea, lies along the coast of Portugal from Lisbon, via Gibraltar, thru the Mediterranean, thence along the Suez Canal route, thru the Red Sea cables, to Aden

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