

Canada's Newest Short Wave Station

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In a small, neat looking, white painted, wooden building on LuLu Island is located the newest link in the Dominion Government's chain of shore-to-ship wireless stations, with which it is planned to keep in constant touch with ships all the way from here to Australia and the Orient. Around this building, which is about the size of a small house, are four tall masts several hundred feet apart, which may be seen for miles; three of them are 150 feet high and the other is 110 feet. They are in the form of a triangle and between them are suspended two long-wave, two short-wave antennas, and between one of them and the building is a radiophone aerial.

In the building are housed the two long-wave transmitters, transferred from Point Grey and the Merchant's Exchange, a new short-wave transmitter, a radiophone transmitter and auxiliary apparatus. The receiving apparatus is all housed in the old stations in Vancouver and at Point Grey.

An interesting feature of this station, the first of its kind in Canada, is the automatic control of the transmitters from the Marine Building and the Point Grey stations. The mechanism is similar to that of the automatic telephone. It has the selectors, relays, etc., that are part of the ordinary dial telephone, so that when the operator dials certain numbers in the proper sequence the required set starts up, tunes to a certain wavelength, changes to another wavelength if required and finally shuts down again. The city operators can do anything those at Lulu Island can do except fix the apparatus if something goes wrong, so there is always a man on duty at the island station for these emergencies.

The city operator dials 31. The electric impulses travel from the city to Lulu Island, the selector arm moves up three contacts and along one, connecting with the point 31; the electricity, by means of relays, starts up the set, the motor generator in the next room also starting to supply the necessary "juice". The operator dials another number, say 27, and a little motor tunes a big condenser so that the set will send on 3000 meters. He may want to change his wavelength to 2999 meters, so he dials 33 and the little motor tunes the condenser to 2000 meters. When he has finished sending, he dials 37 and the set is automatically shut down. The long wave sets have a range of 600 to 3000 meters and the shortwave set is tuned to send on either 20.7 meters or 41.5 meters but could be adjusted with some trouble to anything between 20 and 60 meters. The wavelength of the radiophone transmitter is just under 200 meters.

Not only do the city and Point Grey operators run the short wave, long wave and radiophone transmitters automatically, but they also listen in on their own sending to see that it is really getting on the air.

The automatic device, which was designed and constructed by a Vancouver firm, Canadian Telephones and Supplies Ltd., is operated from the city and Point Grey stations through a single pair of wires.

The technical men who built this station were Mr. L.W. Stephenson, who was with Marconi when the first trans-Atlantic station was built at Glace Bay; Mr. G. Gilbert, who has seen more than a quarter of a century of wireless experience, and Mr. C.W. Thomas, who will be one of the operators of the station.

The main apparatus room of this building has the panels of the transmitting sets along three sides of it and a U-shaped table in the middle from which the station may be operated. In a small room nearby is located the motor-generator set, from which the necessary power is supplied to operate the transmitters. One of the generators supplies the plate circuits with 2500 volts and 1000 volts, while the filament current is provided by means of a 24-volt generator, across which are connected some storage batteries to keep the supply constant. The grid bias is supplied from some more storage batteries.

The new piece of apparatus at this station is the short-wave outfit, which has an output of two kilowatts. The set is connected to each of its antennas by means of a transmission line fed doublet and the keying is accomplished by absorbing the energy from the intermediate amplifier. Most of the parts are supported on plate glass and the condensers, rheostats, etc., are turned by means of rods a yard or more long. This prevents leakage at such high frequencies.

Many dials on this set have to be clamped in position when the final adjustments have been made, due to the fact that a very small variation will appreciably affect its balance and wavelength. There are really two transmitters quite independent of each other, but because there is only one keying circuit, they can not both be used simultaneously. These transmitters send on a wavelength of 20.7 and 41.5 meters respectively. Any other wavelength would require adjustments in the antennas and in the set. This is not done.

The two transmitter units and an oscillator-amplifier get their power from the motor generator. The final amplifier gets its power from a three-phase full-wave rectifier. The station power comes in through a three conductor lead cased cable at a potential of 500 volts, and is transformed to several different potentials inside the building. The lead sheath on the supply cable is to prevent induction.

Simultaneous transmission for four messages can take place—two long-wave Morse, one short-wave Morse and one radiophone.