The World's Most Powerful Wireless

The New Station at Newcastle, N.B., is Expected to Transmit 150 Words a Minute

By L. R. HETHERINGTON

ON the banks of the Miramichi in the Province of New Brunswick is the little town of Newcastle, that historic spot where, in days of old, Boishebert assembled his clans preparatory to making onslaughts on the English at St. John, Chignecto and Quebec.

In that town to-day, the Universal Radio Syndicate, with Mr. E. W. Sawyer, of San Francisco as construction engineer, has about completed the most powerful wireless station in the world.

Above the busy traffic of the Intercolonial Railway trains as they go rushing by, it thrusts its steel head 500 feet in the air surrounded by its six 300 feet auxiliaries.

Strung between these towers, like a hugh umbrella, is the antenna, a net work of about 120,000 feet of silicon bronze wire. A vast number of trenches have been dug on the grounds and another 140,000 feet of wire has been laid in these to secure proper ground connections.

In the operating house at the base of the steel tower are installed the sending and receiving instruments, manufactured in Copenhagen, Denmark.

OUTSIDE the line of towers the power house is located. This is equipped with two 225 B. H. P. Diesel motors, each weighing 50,000 pounds, of the largest design, directly coupled to two 1,000 volts D. C. generator supplying power to the operating instruments. The fly wheels of these engines are eleven feet in diameter and weigh seven tons.

It has been most interesting to watch the workmen as they travelled up and down to their work on the tall steel tower. They worked inside the structure on a movable platform, which looked fairly substantial, but they were taken up in a frail looking box elevator, hoisted by a steam winch outside the trestle work, with a steel cable, which seems like a mere thread.

The distance across the Atlantic to the corresponding station at Ballybunion, south-west coast of Ireland, is about 2,700 miles.

The total cost of the station was about $175,000.

ALL wireless is founded on the discovery made many years ago by Henrich Hertz, a German scientist, that electro-magnetic impulses could be made to travel great distances through the air, and these impulses were called "Hertzian Waves" after their discoverer. Later, with the experiments and research of Marconi, Poulsen, Tesla and other pioneers, the art of wireless communication is being improved and perfected.

Among the wireless systems now in use are the Marconi, Poulsen, Goldschmidt, Lodge-Muirhead, Slaby-arco, Braun-Siemens-Halske, Braney-Popp, Rochefort, Dueretet-Popoff and the Guarini.

The system used in Newcastle is the Poulsen, invented in 1905 by Dr. Poulsen, a Danish scientist, and while fundamentally like the other systems, differs materially in many essential features. The Marconi system makes signals by closing and breaking on electric circuit. Every dot and dash signal represents an independent electric current impulse transmitted through the air; the Poulsen system makes signals by varying—at the will of the sending operator—the electrical wave length in a continuous current. The Marconi system opens the line of transmission for each separate signal; the Poulsen system opens the line once and keeps it open by continuous electric impulses, while the signals are being transmitted.

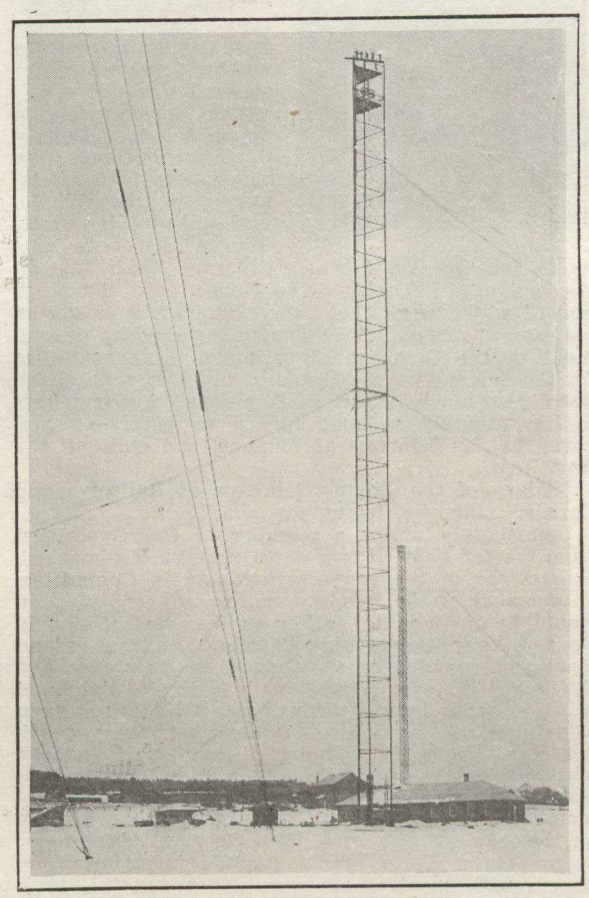
In the Marconi system, the question whether these intermittent waves sent out reach a certain point, depends upon the energy of each initial impulse. It is like throwing a stone into a pond, if the stone is big enough and the pond is not too large, the waves which are very large at the spot where the stone falls into the water, will finally reach the shore, although very much diminished in size. In the Poulsen system the waves not only preserve their original form, but as the energy is being sent out constantly, one wave reinforces the other. This system operates night and day with the same efficiency, sunlight having very slight effect on transmission. A drawback to which other systems are subject is their efficiency—as far as distance is concerned—is three or four times greater at night than in the day time. Stations that can reach a ship 1,000 or 2,000 miles at night cannot reach over 200 or 300 in the day time. This is supposed to be caused by the electrification of the ether by the sun's rays, which presumably makes it more difficult for the artificially created waves to travel through the ether, and also causes a greater absorption of energy by the earth.

Poulsen signals can only be read by Poulsen receiving apparatus. This prevents other wireless stations from reading messages not intended for them.

Duplex sending and receiving has been accomplished by this system, which means that two messages can be sent or received by the same antenna simultaneously.

The United States Government has adopted this system for their great new station at Panama, and it is also being used to good advantage by the Federal Telegraph Company of San Francisco, which has direct communication day and night with Honolulu, 2,600 miles away.

Beginning to Build the Big Steel Tower at Newcastle, Beside the Receiving Station. In the distance a 300-foot Wooden Tower Completed.



What the 500-foot Tower Looked Like When the Men Had Got Up 420 Feet. The Men Worked on a Movable Platform Inside the Tower Itself.

THERE is much discussion now over the question, "Will wireless oust cables?" and it is the general opinion if cable companies adopt the wireless they will more than hold their own against the wireless company not having cables. The commercial speed expected from the wireless station at Newcastle is 150 words a minute, while the greatest speed worked by cables across the Atlantic is 50 words a minute.

Immediate connection from one continent to another seventy years ago sounded about as real as building a tower to the moon. When, in 1857, the great cable was laid from Ireland to Newfoundland, which linked the hemispheres, there was great international rejoicing. It was a wonderful accomplishment. But, when, in 1897, Marconigrams were sent without any visible path to travel, and received hundreds of miles away, it was much more wonderful and seemed nothing short of a modern miracle.

In the few years it has been in use great good has been accomplished. The lives saved from the West India Line steamer, "Cobequid," wrecked January 13th, 1914, on Trinity Ledge, Bay of Fundy, raises the number saved through wireless telegraphy to five thousand five hundred.

Inside Stories

By NORMAN PATTERSON

AN inside story about Sir Hugh Graham and his relation to the rest of the publishers in Canada is told by one who was associated with the press association some fifteen years ago. It occurred at the time that the united press of Canada put up a fight against the Canadian papermakers under the anti-combine clause of the Fielding tariff of 1897, the only successful fight ever waged under that Act.

The papermakers had combined to raise the price of newsprint. The publishers raised a row and sent a committee to Ottawa to interview the Government. They secured the appointment of a Royal Commission to investigate. This Commission started in to get evidence. The publishers were up against it to prove the manufacturing cost of a hundred pounds of paper, for which the manufacturers were charging about $2.25. Some one discovered that the Montreal Star had a contract with the Canada Paper Company at $1.67. If this could be proved, it would show that newsprint could be made at that price.

Here is where Sir Hugh, then Mr. Graham, came in. Would Mr. Graham help them out. A politic member of the committee was sent to interview him. He refused to come to the assistance of his brethren of the press. They could swelter and be hanged for all he cared. Nevertheless, P. D. Ross, J. E. Atkinson and T. H. Preston, the brains of the fight, were not to be denied. They put Mr. Graham in the box, proved the price, and won the fight. The net result was a saving of several hundred thousand dollars to the newspapers of Canada every year since.

But what did the publishers of Canada think of Mr. Graham? The answer would not look well in print, but suffice it to say that if his appointment as High Commissioner were to be decided by them, the box would be well charged with black balls.

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RIGHT interesting to Ontario politicians is the struggle for the succession to Sir James Whitney as Premier. Hon. J. J. Foy, Attorney-General, is acting premier, but has no ambition to succeed to the leadership. He was never a great political warrior, and he has come to years when men seek leisure rather than battle. He may be premier temporarily, but the real struggle is between the Hanna section and the Beck section. The Hanna section is strong in the House, the Beck section strong in the country. The Hanna section would win easily were it not for the unfortunate Proudfoot charges of last session. But much water will flow under the bridge before the Ontario Conservatives again enjoy such a decade of peace and joy as they had between 1903 and 1913.

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WHEN a smart Yankee comes along and asks you whether you think that it would be possible to start a telephone company in your province in opposition to the Bell, be careful. If he shows you a new instrument and sets it down on the desk in front of you, don't talk until you have examined the instrument and found out whether it has wires attached to it which run somewhere. If there are wires, then don't talk at all.

It was the lack of this good advice which led to the downfall of J. Octave Mousseau, member of the Quebec Legislature. A wicked Burns detective had such a conversation with him and used this method to get Mr. Mousseau to talk into a detectaphone. There was a wire from that new-fangled instrument into the next room where sat another wicked detective and an equally wicked newspaper man.

Indeed all contractors for public works, all politicians who deal with patronage, and all men who have grave business secrets concealed about their person, should familiarize themselves with this new instrument in all its forms.