

Long wave-lengths are employed, ranging from 6,000 to over 10,000 metres, and it was stated that sometimes better results were got with the shorter than with the longer waves.

There was no interference from any station except that at Coltano, which had been operating for only a week or two at the time referred to. Coltano is a high-power station erected in Italy to work to the Argentine, when a large station which is contemplated there has been completed.

The impression received from what was seen and heard at Clifden was that wireless-telegraph work was being carried on in a businesslike and reliable manner, and that there was a fair volume of business, both Press and commercial work being handled. The weather was fine, and there was no interference from static experienced. There are, of course, times when static is present.

Messrs. Siemens Bros., who are the agents in London for the Telefunken system, had installed a couple of wireless sets at their works at Woolwich for experimental and demonstration purposes. One was of 10 kilowatts. Their two masts were 120 ft. high. They had reached Berlin, about seven hundred miles, in the daytime, but the terms of their license limited them to quite a short period of working and to 850 metres wave-length, which was not altogether suitable for the distance.

At Boulogne there is a station equipped with the Bellini-Tosi directive system. The aerials are arranged to serve two purposes—that is, to communicate in all directions or in a particular direction, as may be necessary. There are four iron lattice masts each 145 ft. high placed at four corners of a square having sides about 250 ft. long. From each side of the square six parallel copper conductors are suspended from a wire stretched between the masts and insulated therefrom. These parallel wires are separated from each other about 12 ft. They are not dropped vertically, but are inclined outwards, and are secured at a height of about 25 ft. from the ground and 60 ft. from the vertical to another supporting-wire stretched horizontally between the poles. The suspended wires, which are carefully insulated from the lower supporting-wires, are then stretched horizontally to insulators on the roof of the operating building placed in the centre of the square. A motor generator of 7.5 kilowatts is available for charging a battery of accumulators of 350-ampere-hours capacity. The spark-gap of the exciter circuit consists of two bell-shaped metals, with the edges turned well back, placed opposite each other and about a quarter of an inch apart. The spark forms at different points between the bell-shaped metals. The battery of condensers in the exciter circuit consists of Moscicki tubes. These are of good capacity and superior insulation. The primary and secondary coils for both transmitting and receiving are wound upon frames, and so disposed that one rotates inside the other. To direct waves in any direction the primary is turned to that direction; similarly to receive waves. The aerials are suitably and quickly connected to or disconnected from the sending and receiving coils by throw-over switches which have mercury cup connections. There are three detectors of iron-pyrites. This system has not given the results that were expected.

There is a fine wireless station of Lloyd's at Port Said. There are seven masts; the central one is 180 ft. high, and the others about 50 ft. above the ground. Three are on the building adjoining. The aerial slopes away in two directions from the top of the pole to the smaller poles, and consists of fourteen 7/32 phosphor bronze wires on each side. The guys are not broken by insulators. There are 110 storage cells of 38 ampere-hours at ten hours discharge. The petroleum-engine of 12 kw. runs a dynamo of 6 kilowatts for charging the cells. The spark-gap is of the rotating type. There are two 2½ kilowatt transformers giving 20,000 volts. The condensers are of the case type, and consist of zinc separated by glass plates in oil. The range of the station is about four hundred miles by day and up to fifteen hundred miles at night. As receivers they use the magnetic detector and crystals. Malta and Aden, each about a thousand miles distant, are always within range at night. It was stated that signals from Ipswich and Norddeich are heard quite regularly, and that Pola, on the Adriatic, comes in so strongly as to be interfering. Atmospherics are very bad at times, but it was said that the note of the Telefunken spark could be read through them. They hear ships fitted with the singing spark far beyond Aden. Their present equipment has been in operation only a few months. Prior to its installation the wireless station was at the lighthouse a few miles distant, and the range was only about three hundred miles at night. Induction coils giving a 10 in. spark were employed.

At Perth one of the high-power stations of the Commonwealth was nearing completion. It was not visited. The iron mast, about 400 ft. high, was seen towering in the distance. The station, although incomplete, was being tried with small power at night, and communication between it and the ship was maintained for two or three nights after leaving Fremantle. This station, when completed, was to have a range of 1,250 miles in the daytime.

The Sydney station at Pennant Hills, of power and range, when completed, corresponding to that at Perth, was visited. It occupied about 100 acres. The main pole, 396 ft. high and of iron, was a solid-looking, well-built structure, strongly guyed to anchors firmly bedded in massive concrete foundations sunk in the ground. This mast was the central support for the umbrella aerial, which was supported on the outside by wires taken to ten poles each about 100 ft. high and placed around a circle of large diameter. These poles were of wood, and were stayed with wire in all directions. Alterations were being made to them, as they were somewhat warped and did not look very presentable. The station was not in working-order, as some changes in the position of machinery in the power-house were in progress. The operating and apparatus rooms were comfortable, and appeared to be neatly equipped. The spark-gaps, condensers, and inductance and other coils were similar to those seen at the Allgemeine works at Berlin, which had been manufactured for use in the high-power stations of this Dominion. Alterations were undertaken before this station had been working long enough to enable definite conclusions to be formed as to its range. To determine the range it will be necessary to wait until the station is completed and has a suitable station to correspond with, and until trials over a period of time have taken place.