

The Marconi system is largely used on the Atlantic liners. Press is sent out every night from Poldhu in England and Cape Cod in Canada. By this means steamers are able to keep in touch with the news of the day from one side or the other of the Atlantic, even though they may be unable to be heard by the coast stations. It was noticed that ships often get other ships to transmit messages for them, and thus vessels out of range of the originating vessel can be reached.

In Germany a visit was paid to Eberswalde. This is an experimental station of Messrs. Lorenz and Co., who were experimenting with the Goldschmidt system. They also had the Poulsen. There were two masts of 250 ft. height, upon which were two aeriels—one an umbrella, the other T-shaped. About half a mile distant there was another small station with mast about 80 ft. high. A counterpoise was used. Here were heard tunes that were being played at the other station, and we were informed that these tunes can be heard quite well at Berlin, forty-five miles away. The Goldschmidt apparatus was not in order, so no opportunity of a demonstration existed.

The experimental station of the Telefunken Wireless Company at Nauen was visited. Unfortunately the aerial here was dismantled, and the whole station was being practically rebuilt. The iron mast, which was formerly 325 ft. high and mounted upon a marble slab which had become crushed, was jacked up to enable new insulators of glass to be introduced, and a further 325 ft., half of which was at that time in place, was being added. When completed, the iron mast was to be 650 ft. high. The first mast was triangular in shape, and had 11 ft. sides. The top portion was being extended as a triangle also, but with reduced length of side. There were eighteen masts about 100 ft. high on the circumference of an area half a mile in diameter. These were for supporting the outer ends of the umbrella aerial. A new brick building of large size had been erected, and power boards, generators, and wireless apparatus generally were being installed. The power was to be 250 kilowatts. One-half was to be devoted to a generator that was designed to produce direct currents of a frequency of about 50,000. The station was expected to work to New York when completed, and it is understood that this end has been attained. It has appeared in the Press recently that the tower referred to was blown down during a gale.

The head office, store, and works, where the less heavy apparatus is manufactured, were inspected, and the utmost pains were taken and courtesy shown in explaining and giving demonstrations of various features.

A resonance signal amplifier was shown in operation. Morse tape on which had been perforated the word "Paris" was passed through a Wheatstone transmitter. On listening on an ordinary telephone receiver adjustments were made until the word was scarcely audible. A switch was then thrown which brought in the amplifier, when the signals became so intensified that on entering an adjoining room they were heard distinctly and loudly. It was then shown that the weak signals referred to were so amplified that they could operate a relay, which in turn caused them to be recorded on tape by means of a Morse register. The amplifier can also be used to record rapid signals up to about sixty-five words a minute.

One of the troubles attending wireless work is that an operator has to be continually wearing a telephone receiver so as to detect calls. This company has a call apparatus which rings a bell at the receiving station. The apparatus does not respond to static or to general signalling. It consists of a highly sensitive galvanometer whose needle is deflected and mechanically held when it makes a full excursion, and at that point a local circuit is closed which rings the bell. In order to call it is necessary for the calling station to hold the key depressed for several seconds. These radiations enable the galvanometer-needle to gradually increase its deflection until its full movement is attained, when a tooth engages and depresses it. Depressions of the key for shorter periods do not allow the galvanometer-needle to move so as to be carried to the point of completion of the local bell circuit. A 3 kw. set was seen in operation fitted with an automatic starter, so arranged that by merely closing the main switch the motor generator was brought up to speed in about fifteen seconds. In conjunction with the transmitter of this set was a receiver fitted with an automatic break-in relay. Normally the station is in position for receiving. To send it is necessary only to operate the key. When the key is again released the receiver is automatically cut in. The receiver, however, does not cut in during the spaces between letters, but only between words. It is thus possible for a station sending to know whether the receiving station is breaking or not. For operating stations where the power to be used is large—say, 30 to 40 kilowatts or more—the company uses a relay key. This has large contacts and considerable break. It has also large surface, so as to permit of heat radiation. An ordinary key or Wheatstone transmitter can be used to work the relay through a local circuit.

Special care is taken with the manufacture of detectors. They are made of varying degrees of sensitiveness. Many of these were tried, and with the special method and apparatus devised for experimenting with them it was possible easily and quickly to determine the merit of each so far at least as sensitiveness was concerned.

On going through the store, it was found to be so well stocked with apparatus, mostly made up, that one could not help expressing surprise at the quantity. It was, however, stated that the company had received orders for about 350 sets of various powers during the year, so that they found it desirable to hold large stocks. Military sets were on exhibition. These were mounted on vehicles in some cases, and in other cases were suitable for conveyance on horses.

As already stated, the lighter work only of the company was dealt with at their own works. The ordinary manufacture of Telefunken apparatus is conducted by two large electrical firms, Messrs. Siemens and Halske and the Allgemeine Electricitäts Gesellschaft, of Berlin. The works of the latter company were visited, and there were seen assembled the transmitter spark-gaps, the banks of glass condensers, the various inductance coils, and the means of altering their relative positions and the class of insulation employed. This assembly of apparatus which was to be used in the New Zealand station presented a fine appearance, and left the impression that the company was desirous of supplying equipment suitable to compass the distance that was called for.