

The following sets were seen at the works of the Berliner Telefon Fabrik Company in Vienna:—

- (a) Several 4-kilowatt Arc Portable Military Sets.
- (b) Several 1½-kilowatt Pack Military Sets.
- (c) Two 25-kilowatt arcs for the Station under erection at Oberlaa.

The Military Sets were subsequently seen operating under working conditions, and the site of the Station at Oberlaa was also visited.

The following points of interest were noted:—

- (a) The buildings of the Station at Oberlaa are very roomy and well planned and are completed; as are also the two masts built up of American pitch pine and iron bolts, 273 feet high and 243 feet apart. It is anticipated that the following results will be obtained:—

Day range 960 miles over land, night range 1,500 miles. Wave-Lengths from 5,000 to 20,000 feet.

A minimum speed of 60 words per minute is guaranteed over a distance of 288 miles to Trieste, where a similar Set exists, a mountain of 13,000 feet high intervening. The station is guaranteed against faults of material for 12 months, and will be taken over by the Government after one month's successful working. Its official object is chiefly to communicate with the important Austrian Fortified Posts in the Empire.

The 25-kilowatt arcs, with which it is to be equipped, are not yet installed, but as stated above, were seen at the works. The energy is obtained from a 40-H.P. petrol engine.

- (b) The Austrian Government has adopted the Poulsen system for all Government Stations, and a 4-kilowatt Set is already working in the new War Office at Vienna.

- (c) The following Stations will be completed by about September 1913:—

Vienna	-	-	-	-	-	25 k.w.
Trieste	-	-	-	-	-	5 k.w.
Sarajero	-	-	-	-	-	25 k.w.
Premysl	-	-	-	-	-	15 k.w.
Trebinze	-	-	-	-	-	10 k.w.
Riva	-	-	-	-	-	6 k.w.

- (d) All the Austrian Poulsen apparatus is manufactured at the Berliner Telefon Fabrik presumably under agreement with the Universal Radio Syndicate.
- (e) Except for very small details, all the arcs seen were identical in principle with those under trial in H.M.S. "Vernon," and they were certainly not superior in silence and steady burning.
- (f) It was stated that Stations 1 kilometre apart could work with a 10 per cent. difference of Wave-Length without hearing the hissing of each other's arcs. At a Portable Military Station it was found by actual experiment that 10 per cent. difference of Wave-Length was ample to read either of two stations of 4 k.w. and 1½ k.w., which were distant respectively 5 and 26 miles.
- (g) The German Navy use practically the same arcs, but with very elaborate details of Wave measuring, rapid change of Wave, and changing from send to receive, &c., which are kept secret. The German Officers complain that these elaborations are complicated and unnecessary, but the whole matter is in the hands of a Professor at one of the Universities, who insists on them.
- (h) It was stated that in Germany the practice is to avoid the transmission of a "spacing" Wave by switching the arc through the back contact of the Signalling Key on to a closed oscillating circuit.
- (i) The German Navy found it possible with their big ships to transmit 1,600-foot Wave with full efficiency, and they also use a 30,000-foot Wave at a considerable sacrifice of range.
- (j) The shortest Wave which it is considered possible to transmit with the Poulsen System, is 1,500 feet, below which the necessary reduction in the capacity of the oscillating circuit prevents the arc from burning.

(k) For powers up to about $\frac{1}{2}$ k.w. an arc can be burnt without a magnetic field, in which case there is absolutely no sign of any unsteadiness or hissing.

A considerable amount of technical information in regard to the best method of winding inductances, and in regard to the production of long Waves from short Aerials, was also obtained, which will be of great assistance to the "Vernon."