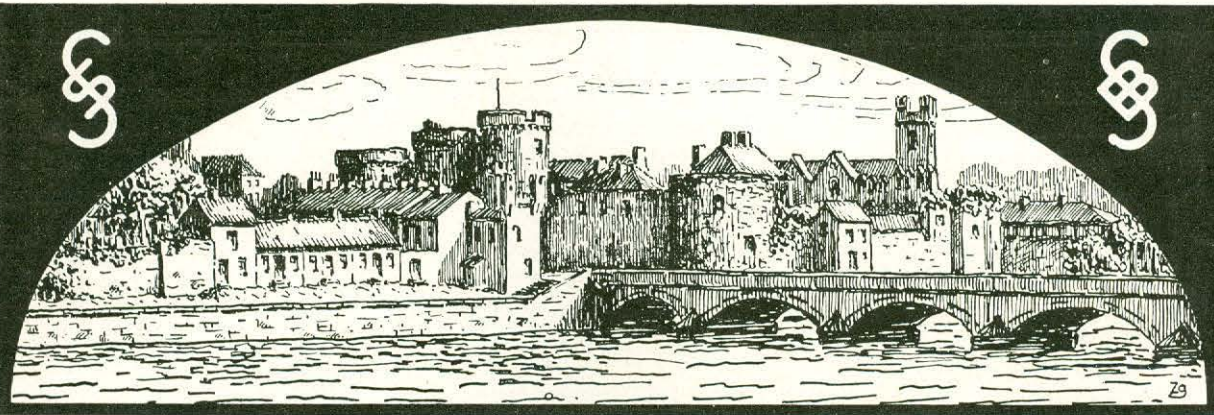


W. Hasbrouck



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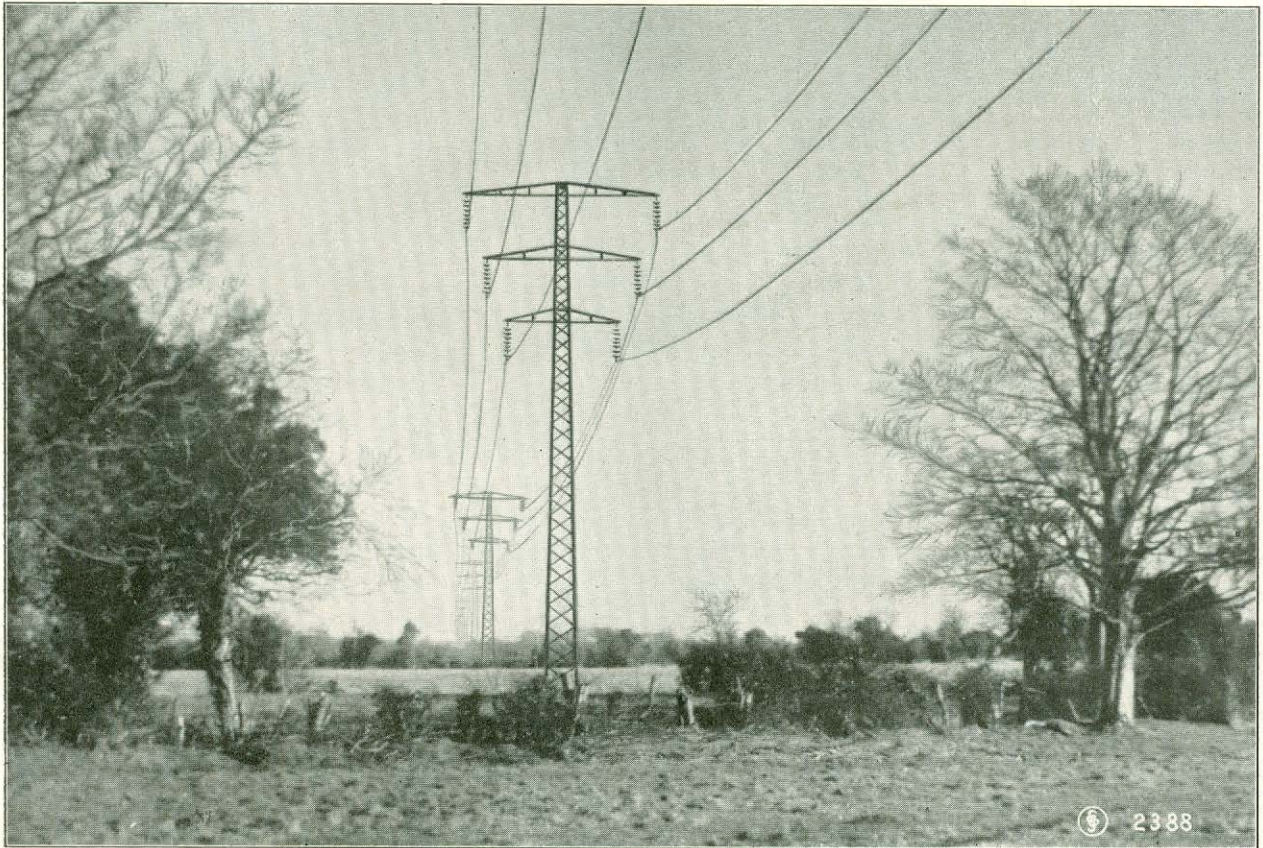
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Kommandit-Gesellschaft

2nd YEAR
JANUARY 1928
NUMBER 4

Electrical part of the Shannon Scheme

High Tension Transmission Lines

The Erection of the High Tension Transmission Lines, according to the General Building Programme, was the first actual work of the Electrical Part of the Shannon Scheme to be started



110-kV 6-conductor Lines, near Dublin

in Ireland and is, therefore, at present, the furthest advanced. The lines have, indeed, already become a familiar and welcome feature of the Irish countryside, opening up, as they do, electricity roads to carry the White Coal, i. e. electrical energy over the country. For this reason this series of articles on the Electrical Part will begin with a description of the Transmission Lines.

The Electrical Energy, generated at 10,500 Volts in the Power Station at Ardnacrusha is there stepped up to voltages of 110-kV and 38-kV (110,000 Volts and 38,000 Volts). This power will then be distributed over the whole of the Irish Free State by means of High Tension Transmission

Lines of 110-kV, 38-kV and 10-kV which are selected as being the most practical and economical distribution voltages for that country.

Picture 2. Shows the lay-out of the 110-kV and 38-kV lines and the position of the 110/38 and 38/10-kV Transformer Stations, for the First Development.

The 110-kV lines form the primary distribution system. A 6-conductor 110-kV line will run from

Ardnacrusha to Dublin, a distance of 116 miles (186 km), and a 3-conductor 110-kV line from Ardnacrusha to Cork, about 59 miles (95 km) to connect the two 110/38-kV Main Transformer

Stations in these two cities with the Power Station at Ardnacrusha.

The 38-kV Transmission System is planned to effect Loop Distribution. The total length of the 38-kV lines, when completed, will be about 1040 miles (1660 km) and the four Loops into which the System is divided, as shown in Picture 1, are:—

Loop I: Ardnacrusha — Waterford — Cork — Mallow — Tralee — Killarney — Ardnacrusha.

Loop II: Ardnacrusha — Ennis — Galway — Swinford — Boyle — Mohill — Athlone — Maryboro' — Ardnacrusha.

Loop III: Mohill — Cavan —

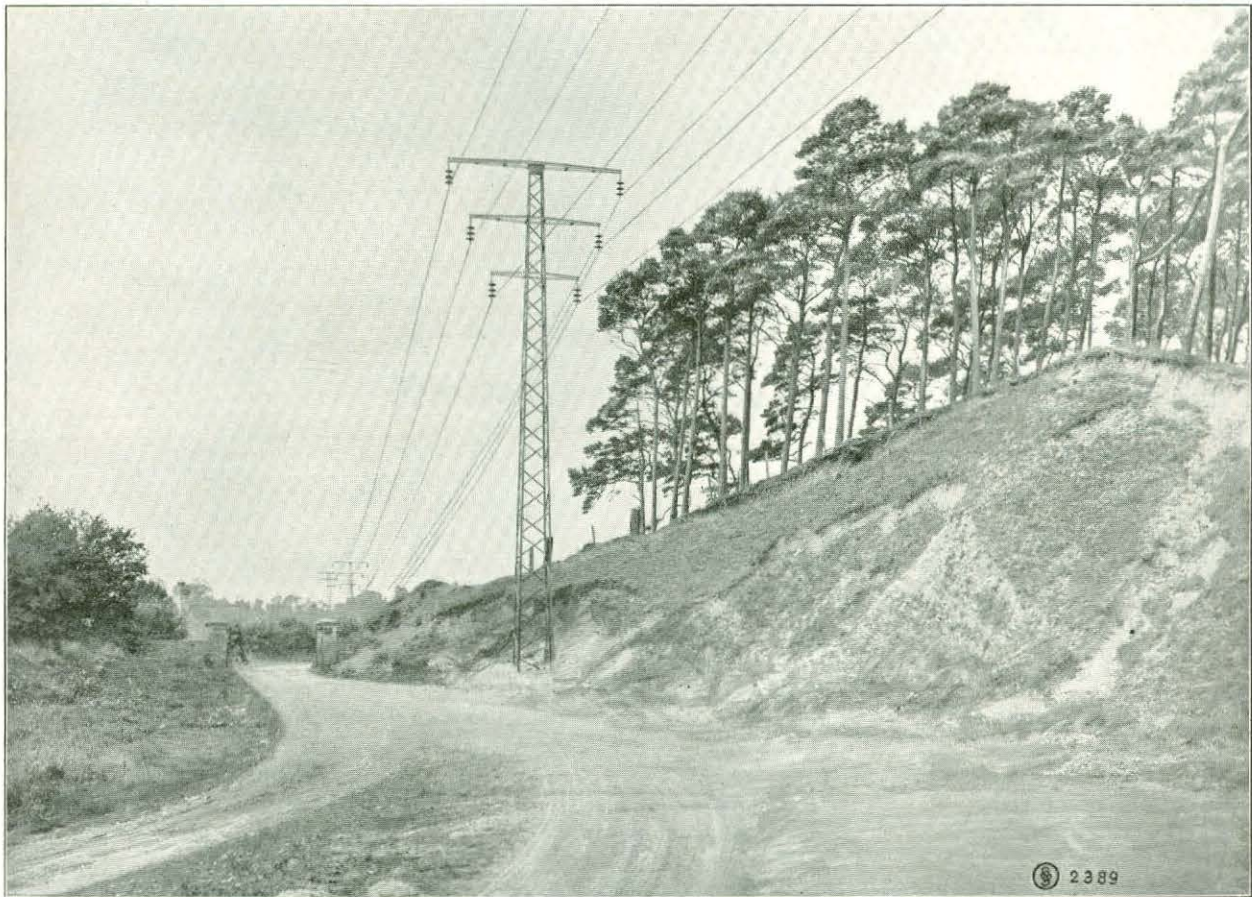
Ardee — Ashbourne — Dublin.

Loop IV: Dublin — Wexford — Waterford — Carlow — Maryboro' — Dublin.

The 38-kV system has, at first, 3 main feeding-centres, Ardnacrusha, Dublin and Cork. Later on the 38/10-kV Transformer Station at Maryboro' will be extended to a 110/38/10-kV



110-kV and 38-kV High Tension Distribution Systems over the Irish Free State



38-kV Lines, carrying 6 conductors, near Maryborough

Station, thus forming a fourth main feeding-centre for the 38-kV system. In the various 38/10-kV Transformer Stations connected up with the 38-kV lines the electrical energy is transformed down to 10-kV and these Stations feed a further distribution system of 10-kV lines. The latter system, owing to the fact that the 10-kV lines have not yet been definitely laid-out, is omitted in Picture 2. The 10-kV system is provided for local distribution and carries the electric current to the 10,000/380/220 Volt Transformer Stations of the cities, towns and villages. In these Stations the energy is transformed to Low Tension of 380 and 220 Volts at which voltages the consumers will get the electric Shannon Power to use for industrial purposes, lighting, heating, cooking, etc.

The 110-kV lines are built entirely on Lattice Steel Masts while the 38-kV lines are built on Lattice Steel Masts in the southern and on

Wooden Poles in the northern areas. For the 10-kV lines Wooden Poles exclusively are used.

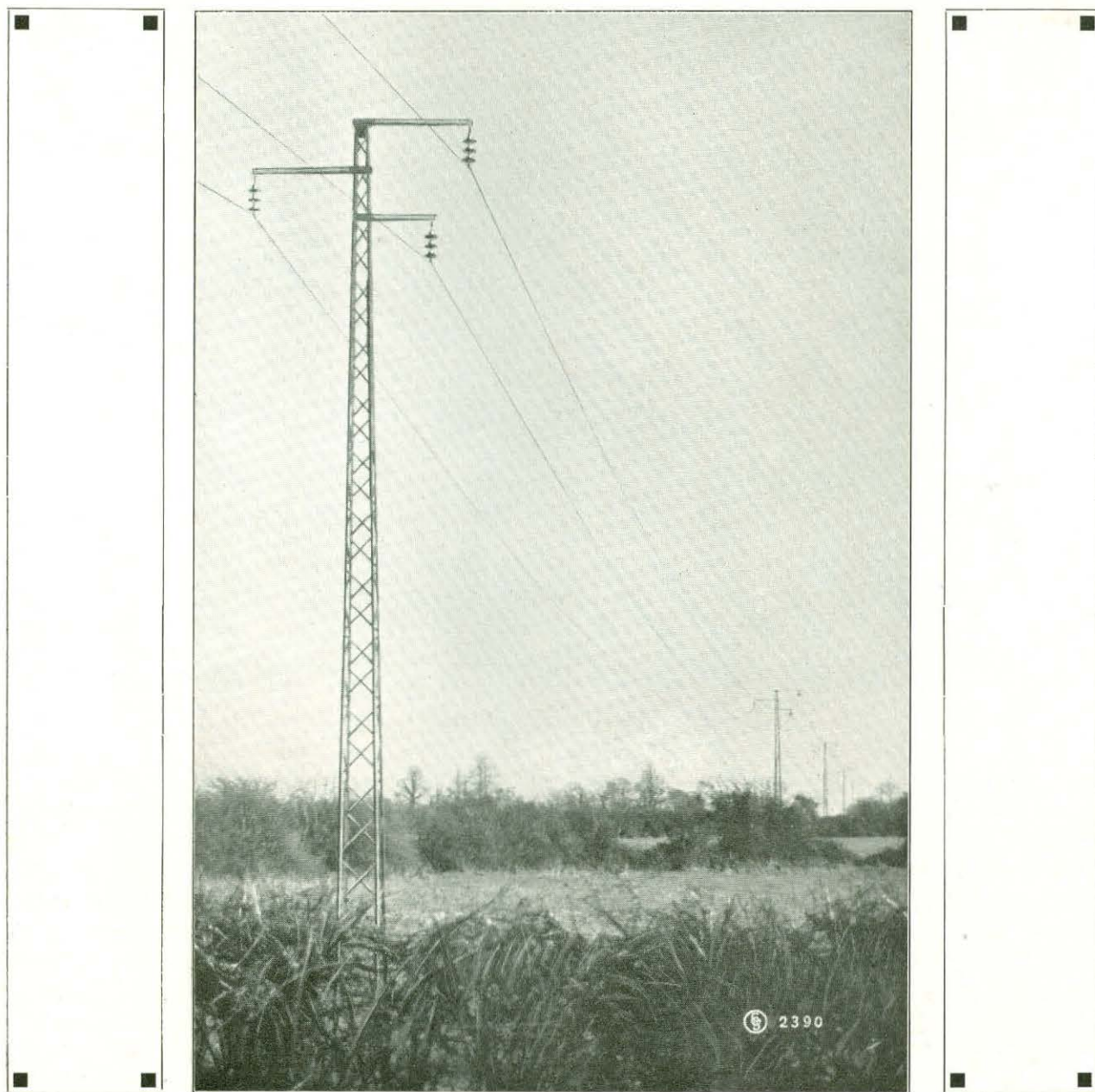
All the Transmission Lines are built according to Specifications issued by the Chief Electrical Engineer for the Government. These Specifications take into account special conditions peculiar to Ireland and are therefore, in some cases, even more exacting than corresponding regulations in other countries.

We shall now describe in some detail the construction of the 110-kV and 38-kV lines on Steel Masts, leaving an account of the lines on Wooden Poles for a later article. As already mentioned the 110 kV line running from Ardacrusha to Dublin is constructed as a 6-conductor line, and the 110-kV line from Ardacrusha to Cork as a 3-conductor.

The 38-kV lines are built as 3-conductor lines except in a few special cases where two

lines approach each other closely. The 2 lines are then suspended on a special pole-construct-

In Picture 1 a section of the 110-kV 6-conductor line, near Dublin, is shown; Picture 3



38-kV Lines, near Dublin

tion calculated to carry 6 conductors. To illustrate the Transmission Lines we give some typical examples in Pictures 1, 3 and 4.

shows part of a 38-kV line, carrying 6 conductors, near Maryborough, and Picture 4 portion of a 38-kV line in the neighbourhood of Dublin.

[to be continued.]