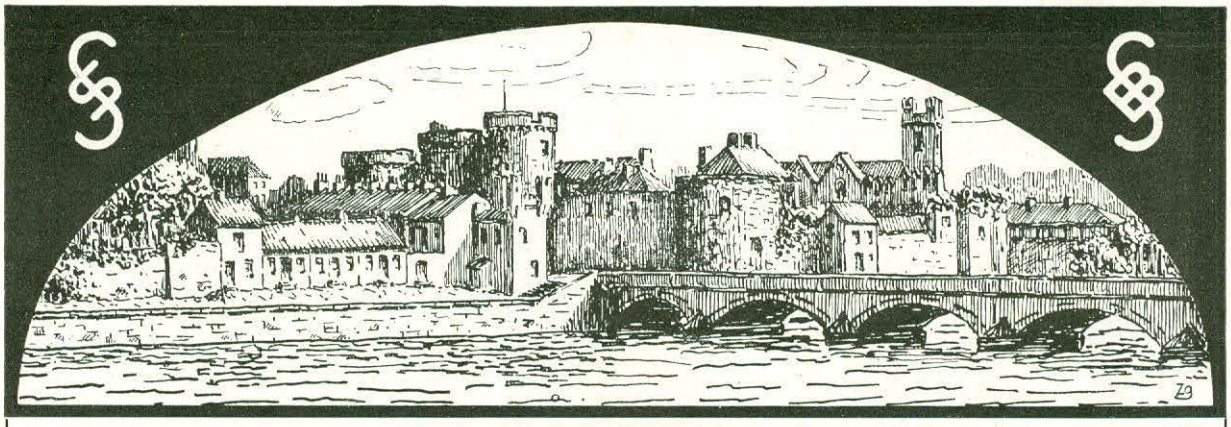


Siemens-Schuckertwerke Aktien-Gesellschaft **SIEMENS** Siemens-Bauunion GmbH. Kommandit-Gesellschaft

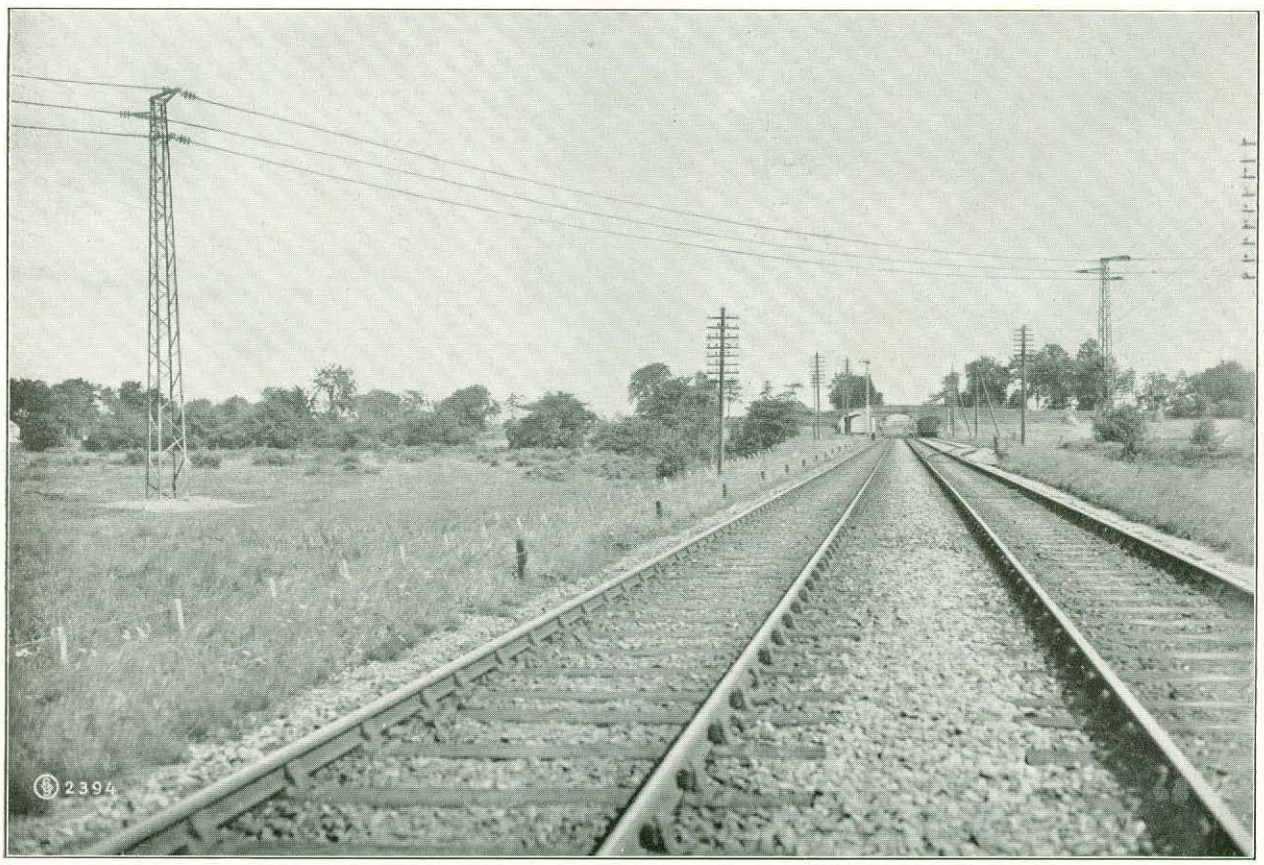
PROGRESS ON THE SHANNON

2nd YEAR FEBRUARY 1928 NUMBER 5

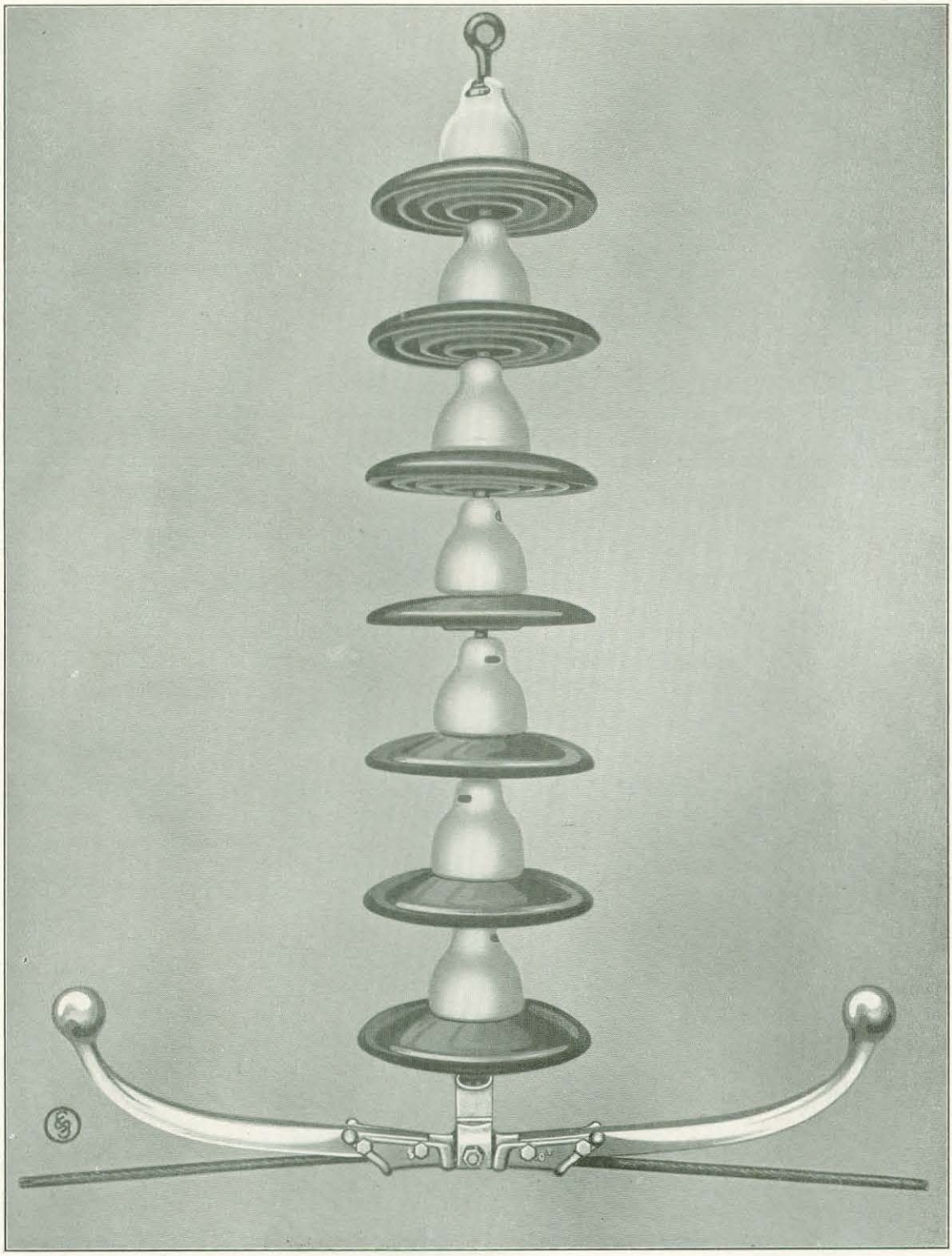
Electrical part of the Shannon Scheme

High Tension Transmission Lines (Continuation)

For the conductors, in almost every case, hard-drawn copper having an ultimate tensile strength of over 40 kg sq. mm. is used. The cross-sectional area of the copper is 95 sq. mm. for the 110-kV

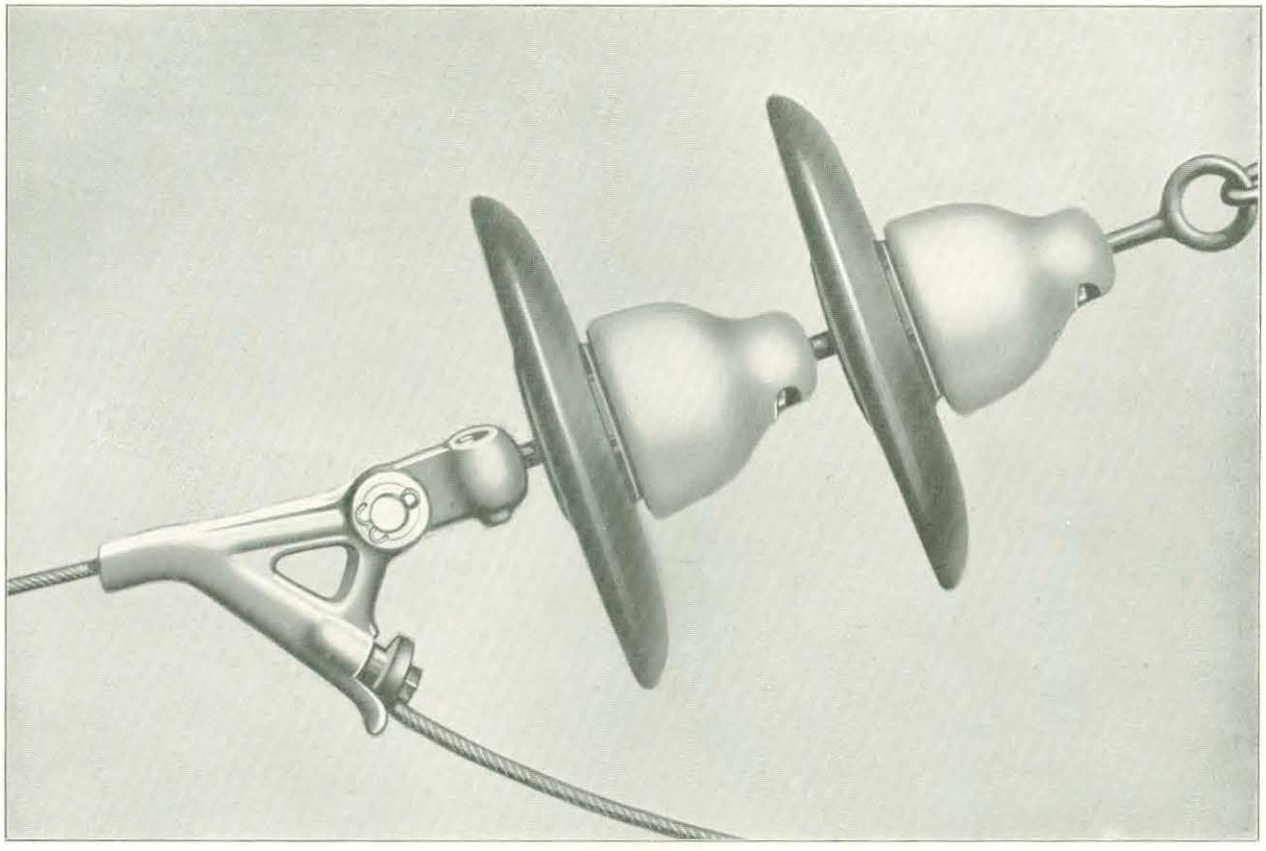


Railway Crossing, near Naas



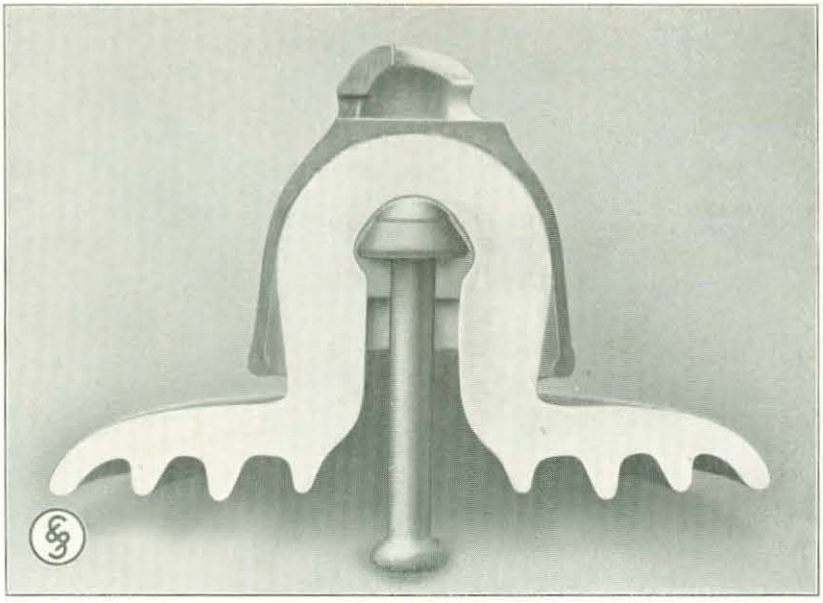
Suspension Insulator Chain for 110-kV Lines

lines and 50 sq. mm. for the 38-kV lines. The 95 sq. mm. cable is stranded with 19 single wires, the diameter of each wire being 2.5 mm. while the 50 sq. mm. cable has 19 single wires, the diameter of each being 1.8 mm. These copper conductors are strained in such a way that at a temperature of -5° C and with an additional load of 180 Vd grammes m length of conductor (where m



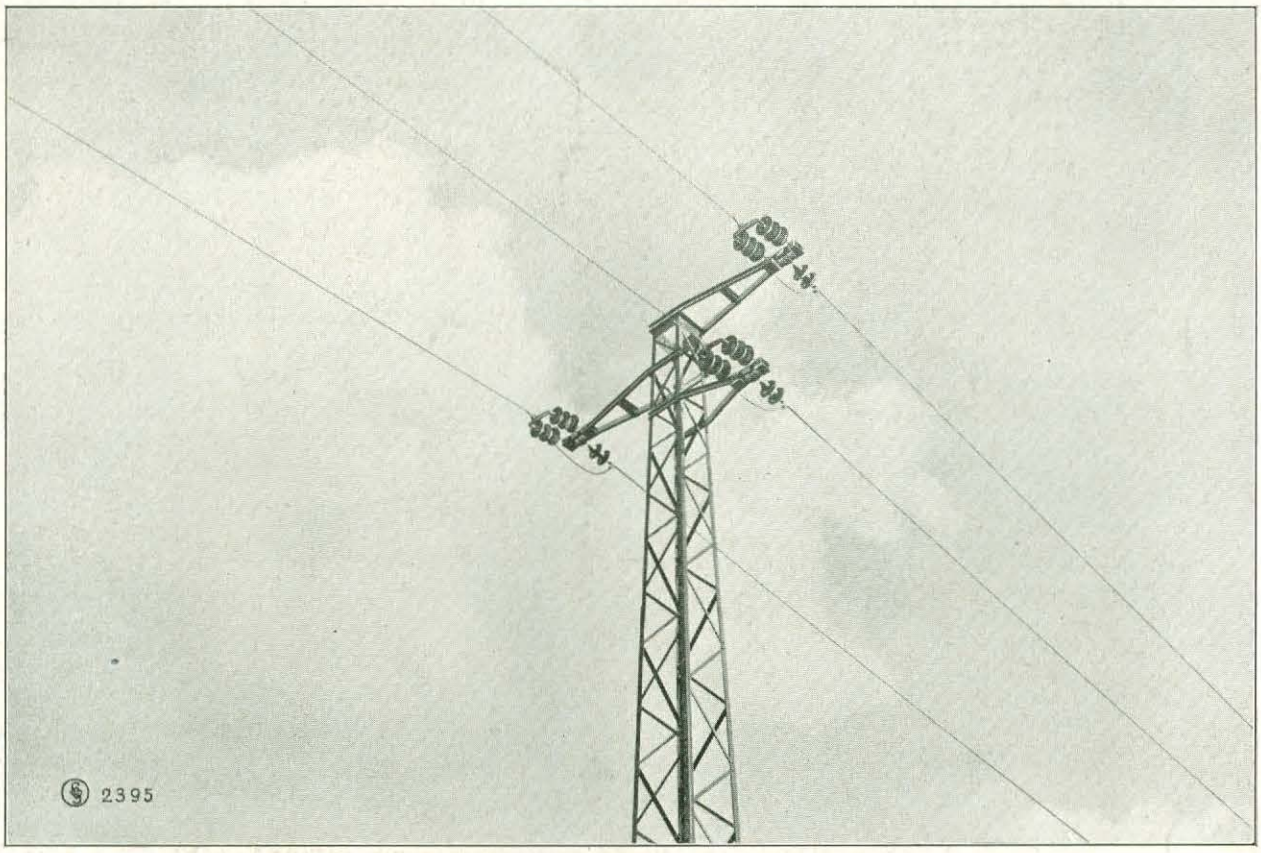
Strain Insulator Chain for 38-kV Lines

is the length of the conductor in metres and a the diameter in millimetres) the stress does not exceed 19 kg/sq. mm. Only in exceptional circumstances, on the 38-kV lines, where their use is necessitated by the profile of the ground as, for example, where a deep valley has to be crossed by the lines or where an abnormally long span occurs, are bronze conductors employed. Bronze conductors for such cases have a cross-section of 95 sq. mm., the cable being stranded with 37 single wires. As these Bronze conductors have an ultimate tensile strength of 70 kg/sq. mm. the sag is less then with copper conductors, while the same requisite factor of safety is maintained.



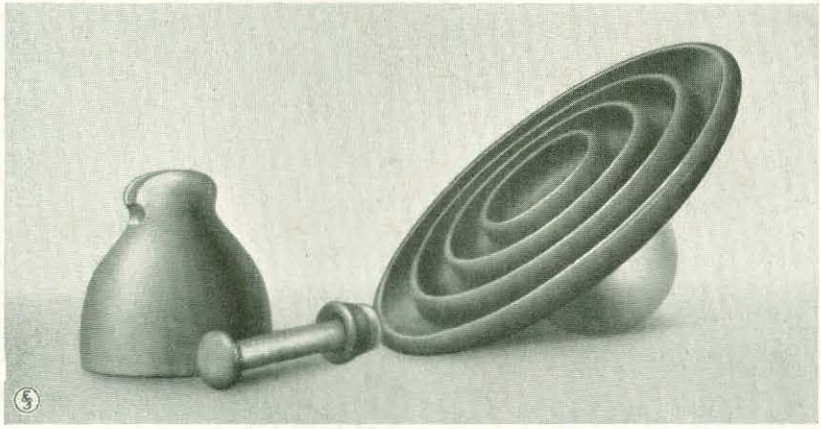
V-Ring-Insulator Unit, Cross Section

The conductors of the 110-kV lines and of the 38-kV lines are supported by Porcelain Insulator Chains of 7 and 2 suspension insulators respectively. The employed insulators, Type „V" Ha 313, are shown in Pictures 2–4. They are designed for a dry flashover at 150-kV



Head-Equipment of one of the Masts of the Railway-Crossing, near Naas

per 2 insulators or at 450-kV per 7 insulators and, for a wet flash-over (rain 3 mm/min at an angle of 45° and water of 20 μ S cm^{-1}) at 123-kV per 2 insulators or 338-kV per 7 insulators. The said arrangement of insulators is provided for ordinary safety. Where greater security is required as, for instance, when the line runs over public roads, an additional insulator is placed in the suspension- or strain - chains. In cases where still greater mechanical and electrical security is desired as when crossing Railways, Navigable Rivers, Canals or Communication Lines, double chains of 8 insulators each, for the 110-kV lines, and of 3 insulators each, for the 38-kV lines, are used on suspension- as well as on strain - chains. Picture 1 shows a Railway Crossing, near Naas, and Picture 5 the Head-Equipment of one of the Masts in this Crossing.



Parts of a V-Ring-Insulator before assembling

[to be continued.]

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