" Non-Danger " Area.

When transverse stray transmission takes place from the top to the bottom of pipes the taking of potential readings would, by the orthodox method of conclusion, lead to the decision that the area in which the readings were taken was a non-danger area; and thus the finding in several cases of pitted pipes in a so-called non-danger area may be satisfactorily explained by the assumption that the portion of the amperage transmitted by the earth-return is partially transmitted between the "Soil" and the "Earth" by means of pipes laid close to the rails. Unfortunately, this transverse stray transmission takes place in the outlying sections of a traction system in which no method of "pipe-drainage" can be adopted. Fortunately, however, the load is light in these outlying sections and any damage which results can almost invariably be traced to localized points and as due to abnormal or what may be termed special conditions. The cure is to so treat the abnormal conditions as to render pipes, etc., at these points immune, which is by a no means difficult task to one who is well-informed in regard to the various factors controlling the situation.

Danger Area.

Transverse transmission at points in the neighborhood of where the tracks converge at the power-house, which is usually the danger area defined by potential readings, does not lead to any apparent contradiction of the finding that such is a danger area; and to render the pipes in this area immune is a simple task. For if the generators in the power-house be insulated from "Earth" in the power-house and their low-voltage side be connected by insulated cables to suitable track points (chosen so that these points will be, practically speaking, equi-voltage points—arbitrary zero points), and the loss of voltage (drop) on these insulated cables be, say, 15 volts, then a couple or so of hundred feet of insulated cable laid alongside of the pipe-line and connected to the pipes about every fifty feet can be connected by an insulated cable to the low-voltage side of the generators, the cable being of such size that the loss of voltage (drop) on it would be about 12 volts. By this method not only will the pipes be drained but they will also be lower in voltage than the contiguous rails. For stray transmission must find its home-quarters by means of some medium; and if no other one is provided this medium will be the rails in the neighborhood of the power-house or point of track convergence; where, if the accidental transmission agents, (pipes, etc.), are in close proximity to the track and the character of the soil is favorable, electrolytic corrosion will result.