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? WHY THE WEATHER ?

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LIGHTNING AND ELECTRIC POWER LINES

Some of the most remarkable recent advances in the world's knowledge of lightning have come through studies made by electrical engineers of the effects of lightning discharges on electric transmission lines. These studies include experiments in the laboratory with so-called "artificial lightning"; studies of the effects of high-voltage artificial discharges on transmission lines in the open; and, lastly, studies of the effects of real lightning on such lines. Last summer many records of "surges" produced on transmission lines by lightning discharges were obtained with cathode-ray oscillographs installed on lines in Pennsylvania and Ohio. These records show that when lightning strikes the line or passes near enough to it to cause a voltage surge by induction, the voltage of the line frequently rises millions of volts in a few microseconds, drops to half this value within the next few microseconds, and returns to normal voltage within less than a hundred microseconds. (A microsecond is one millionth of a second.)

The chief reason for the large amount of attention recently given to these lightning problems is the necessity of protecting from lightning the long lines for the transmission of electricity at high voltage that are spreading over the continent as a result of the so-called "super-power" movement, which aims to concentrate the generation of electricity at a comparatively small number of big power plants, so interconnected that they may all operate in the most economical manner.

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