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? WHY THE WEATHER ?

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LIGHTNING VOLTAGE

By Charles Fitzhugh Talman,
Authority on Meteorology

When the voltage of lightning was a subject of guesswork, the figures cited for it were staggering. Five thousand million volts for a mile-long flash was a common estimate. Measurements of laboratory lightning and of the voltages induced on transmission lines by natural lightning have cut down such figures considerably. A figure widely quoted in recent years is 100,000,000 volts for a flash a thousand feet long. This is based on the researches of the late F. W. Peek, Jr. Peek overlooked, however, the investigations carried out many years ago by Dr. B. Walter, of Hamburg, showing that an electrical discharge through the air is built up progressively. Walter's discovery has been confirmed quite recently by the photographs of lightning taken first by Schonland, in South Africa, and subsequently by others, with the extremely high-speed Boys camera, in which we find evidence that an ordinary lightning stroke is always preceded by what Schonland calls a "leader" stroke, in the opposite direction. The preliminary discharge proceeds in a series of spurts, with intervals between them of the order of the twenty-millionth of a second. These step-like advances build up a path of ionized air, along which the main discharge occurs. The voltage required to effect a discharge along a path thus prepared is far smaller than would be needed to break down the original resistance between cloud and earth.

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2101 Constitution Ave.
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