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? WHY THE WEATHER ? Mailed June 16, 1930.

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MEASURING LIGHTNING

Benjamin Franklin and his contemporaries proved lightning to be an electric spark, but they could not measure the electrical quantities involved in it, since they had neither the instruments nor the units for making electrical measurements of any sort, nor had they more than a glimmering idea of what attributes of electricity are susceptible of measurement. Later, men learned how to measure a variety of electrical manifestations, both artificial and natural, but until quite recently they could only estimate the strength of lightning.

Within the last two decades a number of actual measurements have been made, though all of them by more or less indirect methods. The latest measurements are those obtained by electrical engineers in the course of elaborate researches carried on for the purpose of designing better means of protecting from lightning some of the costly paraphernalia of modern industry; especially oil-storage reservoirs and high-voltage electric transmission lines. These measurements are based on a combination of laboratory and field investigations, including the records obtained with the marvelously sensitive cathode-ray oscillograph of the surges, or sudden rises of voltage, produced on electric transmission lines by lightning strokes.

The precise data thus derived appear to justify the recent assertion of F.W. Peek, of the General Electric Company, that "the subject of lightning is now on an engineering basis." Peek has published the following figures for the electrical characteristics of a typical lightning flash:

Voltage: About 100,000,000
Current: About 100,000 amperes
Energy: About 4 kilowatt-hours
Power: About 1,000,000,000,000 horsepower
Time: A few millionths of a second.

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