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? WHY THE WEATHER ?

By Dr. Charles F. Brooks  
of Clark University

COLD WEATHER THUNDERSTORMS

An extraordinary effort of Nature is required to form a thunderstorm in winter. In summer such a storm is made quite readily under the conditions of abundant moisture and sufficient heat occurring every few days. In autumn the heat and moisture favorable for thunderstorms are seldom present, though in October and November, 1924, quite a number occurred in the Middle West. The thunder and, back of it, the lightning, that give the thunderstorm its distinction are the result of electrical separation. That is, the lightning cannot occur without a considerable difference between the electric charges of different portions of the storm cloud, or between the storm cloud and the ground. Such differences are the combined result of the splitting of raindrops, or rubbing of snowflakes, and the separation of the smaller, negatively charged portions from the larger, positively charged ones. Hence, the greater the number of large raindrops or snowflakes that can be developed and then split by falling too fast the greater can be the electrical separation. And also, the stronger the vertical winds are which take the smaller from the larger portions, the greater will be the chance for lightning. Both abundant condensation and strong convection (vertical air movements) are favored by warm moist air. Therefore, if the air is not rather warm and moist, a thunderstorm can be formed only by a great enough contrast in temperature to offset the disadvantage of the lack of moisture and heat. Winter differences, large though they are at times, are rarely sufficient to overcome the handicap; that is why thunderstorms are rare in winter.

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(Tomorrow: Rain or Snow Curtains)

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