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? WHY THE WEATHER ?

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CLOUDS AS THERMOSTATS

It is well known that cloudy days and nights have more equable temperatures than clear ones; but it is not so well appreciated that to a large extent the clouds are the result of daytime heating and nighttime cooling. When heated, the more or less humid air near the ground is usually forced upward, expanding as it rises, and cooling till, if it goes high enough, cumulus clouds are formed here and there. If the wind is a cool one and not very dry, as a northwest wind usually is shortly after it begins to blow, the cumulus clouds rising through the cool wind reach a ceiling that marks the plane of contact between this lower wind and the warmer one usually found above under such circumstances. Against this ceiling the clouds flatten almost as does smoke in a room, and soon close up the sky. The sunlight shut off, the surface temperature stops rising, and clouds stop forming till evaporation of the sheet above allows the sun to shine again. Wherever the sun shines now, new clouds are formed, and the holes through which the sunlight came are sealed again and the temperature kept steady. The process continues till with the setting sun the evaporating clouds are no longer replaced, and the thermostat ceases to function. During the night, however, if the air is damp, the formation of a fog or low cloud sheet may take place as a result of the cooling by radiation and conduction, and such a fog or cloud will virtually prevent a further fall in temperature.

(Tomorrow: Tides and the Weather)

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