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? WHY THE WEATHER ?

Dr. Charles F. Brooks,
of Clark University,
discusses:

CONVECTION

One can hardly talk about the weather at any time of year, summer least of all, without frequently referring to "convection" or "convectonal circulation". Convection takes place only in liquids and gases. It is a transference from one point to another of the liquid or gas itself. If we set a long wash boiler with a little water in it on a gas stove, and light a small burner underneath the center, the water at both ends as well as the center will gradually become warm. Convection means "to carry together". Currents in the water just described carry their heat with them from the middle to the ends and wherever else the water is cooler.

How do such currents start? The first result of the heating is to expand the liquid slightly right over the flame. This tends to produce a bulge at the surface, but immediately some of the surface water flows away down the slope towards either end. Now, at the bottom of the boiler, the pressure becomes greater at the ends than in the middle where the water is light and expanded. Consequently, at the bottom a return flow sets in from the ends towards the middle. This flow of heavier water forces up the lighter, warmer water at the center and a permanent circulation, or convection, is established. Very similar processes take place on a large scale in the atmosphere, establishing circulations of air between hot and cold regions.

(Tomorrow: The Rain Tree)

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