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? WHY THE WEATHER ?

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HOW OUR ATMOSPHERE IS WARMED AND COOLED

The sun's rays pass through our atmosphere in much the same way that they pass through a pane of glass:- that is, any portion of the atmosphere is heated very little by the passage. But they beat down upon the ground with quite the opposite result. Since the soil is a good absorber of heat, its temperature rises rapidly during the day. The air directly over it is heated in just the same way that air passing over a hot stove is heated, by contact with the hot metal, and by absorption of the dark heat rays coming from the stove. As this lower air is heated it expands and becomes lighter than air not so heated. As a result colder air will displace the warmer, usually forcing it upwards, and will in turn become warm and be displaced by other colder air. Thus, a vertical circulation continues as long as the earth is being heated by the sun. Such a circulation, called convection, while more obvious in hot weather than in cold, nevertheless, occurs to some extent even on the coldest clear days of winter, as is often evident from the daytime appearance of cumulus, or wool-pack, clouds at no great elevation.

The warmest part of the day, coming usually at about 2 in the afternoon, is later than the time of intensest sunlight, because the ground and, in turn, the air, being relatively cool, cannot respond immediately to the full effect of the sun's rays. The coldest part of the night, however, usually at about sunrise, must come at the time when, so to speak, the heat is turned on in the morning after uninterrupted cooling all night.

(Tomorrow: Healthful Sunshine)

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