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? WHY THE WEATHER ?

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HEATING OF THE FREE AIR

We know by everyday experience that the air is readily heated and cooled but we do not always realize that the air so affected is usually but a thin layer near the ground. A thermometer placed half an inch above the ground in the open, or on a bright day, even two or three feet up gives temperatures several degrees higher by day and lower by night than does one four or more feet above the ground. This is because the ground is most immediately important in heating and cooling the air. Every few minutes on a sunny day cooler and heavier air descends to the hot ground and blows the warm air there away and upward. We then say it is gusty. Convection is taking place. The temperature of the air in contact with the ground is being kept more moderate, and warm masses are being sent up here and there where they temper the great body of cooler air. By nightfall the free air may have been heated appreciably by this process to a height of about a mile. The whole mass of the atmosphere is also warmed slightly by the direct action of the sun's rays and radiation from the ground. This heating is greatest in the lowest layers, where the absorbers such as water vapor, carbon dioxide, and dust are most dense.

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