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A Science Service Feature

? WHY THE WEATHER ?

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

HEATING OF LAND SURFACES

The surface of land heats and cools very readily, and its temperature reaches greater extremes than either air or water temperatures. Land surfaces do not store much heat, what heat the ground receives is almost immediately returned to the air or to space. Different kinds of land surface show widely varying temperature characteristics. In the first place, we can note differences in reflecting power, the white, smooth surface will reflect more radiation and have a smaller range of temperature than the black, rough surface.

Relative dryness is an important feature. If moisture is present, part of the heat received will be spent in evaporating the moisture instead of raising the temperature of the ground. Measurements on some bright August days showed that a granite surface lost no heat in evaporation, a sand surface 20 per cent. of the heat received, and a swampy meadow consumed 50 per cent. in evaporation alone. In consequence, the granite was the hottest and the meadow the coldest. Moist surfaces also tend to heat more slowly than dry because of the high specific heat of water, that is, it requires more heat to warm a given weight of water one degree Fahrenheit than to warm equally the same amount of almost any other substance.

(Tomorrow: The Heat Budget of the Ground)

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Science Service,
1115 Conn. Ave.,
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