

July 6

? WHY THE WEATHER ?

Dr. Charles F. Brooks,
Secretary, American Meteorological Society
tells:

HOW TO TAKE THE TEMPERATURE OF THE AIR

At our house we may insist it is 97° F. while our neighbor boasts that his thermometer reached 100. We may both have standard thermometers. Such a discrepancy can easily be accounted for by difference in exposure of the two thermometers. What we wish to find is the temperature of the air.

The air in general is warmed a little by direct sunlight, but mainly by the earth's surface, which in turn is heated by the sun. Some parts of the surface absorb heat readily and become much hotter than others. For instance, on June 18, 1918 a dirt parade ground in Texas reached a temperature of 141 degrees while the temperature of adjoining grass was 112 and the air temperature 101. Similarly, a screen of foliage will not become nearly so hot as a brick wall or a tar roof. In fact, the relative coolness of the foliage is largely the result of cooling by the evaporation of transpired water.

If we place our thermometer close to one of these heaters of the air, especially in a place where there is no breeze, we fail to get a correct average air temperature, just as we would get a wrong idea of the general temperature of a room if we hung our thermometer directly over a radiator. Again, if we place our thermometer in the sun it will absorb more heat from the sunlight than the air does, and will therefore become hotter than the air. Thus a thermometer with a large black bulb exposed to the sun may register 120° F. though the air temperature is only 50 degrees.

There is a way of observing air temperature accurately, even in full sunshine, and that is by swinging, whirling or fanning the thermometer vigorously, and by this means bringing so many molecules of atmospheric gases into contact with the bulb that the effect of direct heating by surroundings is reduced to a minimum. Even by such a method an open space should be chosen to avoid obtaining temperatures of warm pockets of air.

(Tomorrow: Why July Is Hottest.)
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