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? WHY THE WEATHER ?

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MEASURING AIR TEMPERATURE

Why does the weatherman measure air temperature with a thermometer enclosed in a shelter, instead of putting the instrument out in the sunshine? This question has been answered by various writers in various language, but there is probably no clearer explanation to be found than the following, given in Glazebrook's "Dictionary of Applied Physics":

"The accurate measurement of the temperature of the air in the open is one of the most difficult of all meteorological measurements, for it is so readily affected by effects of radiation. Radiation from the sun, the clouds, the sky, the ground and surrounding objects passes in straight lines through the air without appreciably affecting its temperature, for air is very transparent to radiant heat, especially if it is dry. But the instrument that is used to measure the temperature of the air is some kind of thermometer, and is made of material which intercepts radiant heat to an appreciable extent. In consequence, the reading of the instrument may differ from that corresponding with true air temperature by any amount up to fifty degrees Fahrenheit, or even more.

"Such differences depend partly upon the nature of the thermometer, partly upon the amounts of the different kinds of radiation experienced, and partly upon the wind velocity and other extraneous factors. The reading of a thermometer freely exposed in the open may thus bear no determinable relation to the temperature of the particles of air in which it is placed. It is usual, therefore, to provide some form of thermometer shelter or 'screen,' which will serve to support the thermometers and to protect them from the weather and accidental damage, and at the same time shield them from radiation without impairing the free passage of air over their bulbs."

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