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? WHY THE WEATHER ? Mailed October 28, 1929.

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THE SOLAR CONSTANT

The amount of radiant energy from the sun that passes through the atmosphere and reaches the surface of the earth is subject to great variations, depending in part upon the varying height of the sun above the horizon and in part upon other circumstances. On the other hand, the amount that reaches the outer limit of the atmosphere varies but little from a mean value, which can be expressed by a figure known as the "solar constant". The following explanation, furnished by the Smithsonian Institution, is designed to make this important datum understandable to non-scientific readers:

"The solar constant of radiation is the intensity of the sun's rays as they would be found on the moon, for instance, outside the earth's atmosphere at mean solar distance. It is measured in calories per square centimeter per minute. A fair indication of this quantity would be had if one should consider a cube of water about the size of the dice used in backgammon and imagine such a cube to be blackened with India ink, so that it would fully absorb the solar rays. In one minute of time such a cube, if it could be exposed with one face at right angles to the solar beam outside the earth's atmosphere, would rise about 1.9 degrees centigrade in temperature, which is the approximate mean value of the solar constant of radiation."

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