

A Science Service Feature

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? WHY THE WEATHER ?

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VOLCANIC DUST AND WEATHER

Certain meteorologists--notably Dr. W. J. Humphreys, --have made out a plausible case for the hypothesis that the weather of the earth is in general somewhat cooler than usual at times when a veil of fine dust, due to violent explosive eruptions of volcanoes, hangs at a high level in the atmosphere. The occasional existence of such dust veils is beyond dispute, but the effect of their presence on the temperature of the air below them is not so simple and obvious as the layman might be inclined to suppose. The matter was investigated a priori as follows:

First, the size of the dust particles was computed from certain optical phenomena they produce. Next, calculations were made of the time they would require to fall from the great heights to which they are ejected by the eruptions in question, and this was found to be from one to three years. Then it was necessary to consider the relative effects of the dust upon outgoing radiation from the earth and incoming radiation from the sun. The glass of a greenhouse has the effect of trapping solar heat, so that the air is warmer inside the building than out, but the studies referred to lead to the conclusion that a veil of extremely fine dust should have just the opposite effect, and should therefore tend to lower terrestrial temperatures; and this conclusion appears to be verified by weather observations made during the periods following the great explosive eruptions.

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