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? WHY THE WEATHER ? Mailed October 19, 1933

FROSTS AND FREEZES

By Charles Fitzhugh Talman,
Authority on Meteorology.

While trees and other perennial plants are sometimes killed in winter by low temperatures and may also suffer in spring or autumn from the effects of a general "freeze," prevailing by night or day, the frosts with which farmers and fruit-growers are chiefly concerned occur only at night or in the early morning and are more or less local in character. They are due to the chilling of the ground in calm weather by radiation to a clear sky and the consequent cooling of the lower air.

Under these conditions a layer of stagnant cold air forms close to the ground, with warmer air lying above it. The difference of temperature at different levels is often so pronounced that fruit on the lower branches of a tree is killed while that growing on the higher branches escapes. Similarly, frost will occur in the bottom of an enclosed valley but not on the surrounding slopes. In such a location the layer of cold air in the valley is generally deepened by additional cold air draining down from the hills. Clouds, by checking radiation from the earth, and wind, by mixing the colder and warmer layers of air together, prevent frosts that would otherwise occur.

More often than not a frost that damages tender vegetation produces a deposit of the tiny ice crystals known as "hoarfrost." If, however, the air is very dry a destructive frost may occur without this deposit and it is then known as a "black" frost.

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21st and Constitution Ave.
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