

Released upon receipt
but intended for use
October 25, 1934

A Science Service Feature

? WHY THE WEATHER ?

Mailed October 18, 1934

FREEZING AND WIND

By Charles Fitzhugh Talman,
Authority on Meteorology.

Water of any appreciable depth freezes over sooner in calm weather than when there is considerable wind. The explanation is as follows:

When a body of water, such as a lake or a pond, cools with the approach of winter, the chilled surface water at first settles down, on account of its increased density, and is replaced by warmer and less dense water from below. This interchange tends to make the temperature of the water uniform throughout its depth, and if it continued until the freezing point was reached the entire body of water would freeze solid at the same time.

It ceases, however, when a temperature of four degrees Centigrade (39.2 degrees Fahrenheit) is reached, since water is densest at that temperature and expands with further cooling until it turns to ice. Thus at the surface, where loss of heat is generally most rapid, the water cools to the freezing point and becomes ice while the water below is above the freezing point and is still liquid.

The churning effect of wind brings up a good deal of the warmer and denser water lying below the surface layer. The cooling of the latter to the freezing point is thus delayed.

(All rights reserved by Science Service, Inc.)

SCIENCE SERVICE
21st and Constitution Ave.
Washington, D.C.