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? WHY THE WEATHER ?

Dr. Charles F. Brooks,
of Clark University
discusses:

LAKE TEMPERATURES IN SPRING

Fresh water is heaviest at a temperature of 39 degrees Fahrenheit. This explains the peculiar way in which the water of a deep lake in the north warms in the spring. At the close of winter the bulk of the water from the bottom of the lake to within perhaps 20 or 30 feet from the surface will be at a temperature of 39 degrees, and the higher layers successively colder, with perhaps a layer of ice on top. When the ice melts the surface water begins to warm, becomes heavier as it approaches 39 degrees, and so sinks and is replaced by the intermediate colder water. This overturning continues until the temperature of the whole body of water is raised to about 39 degrees. The process is slow as much heat is required to warm a large amount of water; the lake remains very cold in comparison with its shores.

But once the magic temperature of 39 degrees is reached, the overturning stops. Now the surface water as it warms becomes lighter, instead of heavier, and remains on top. As this thin layer may be heated without warming the whole mass, the temperature at the surface rises rapidly. The water below is slightly affected by conduction from the surface layer and by mixture from wind action. Nevertheless, it lags so far behind that 45 degrees at a depth of two feet and 50 degrees at one foot may accompany a surface temperature of 65 degrees. The incautious swimmer, encouraged by a hot day, is often unpleasantly surprised when he splashes around in deep water.

(Tomorrow: Chilly Lake and Ocean Winds in Spring)

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