

ice, there is reason to suppose that radiation is but another term for magnetism in some of its varied forms.

With respect to the still more subtle question of its rising only when a change of temperature takes place to a certain extent, this is analogous to the fact that very cold metal adheres to the hand, lips or tongue with force sufficient to remove the skin, until the relative temperatures are altered, whereupon it loosens its hold. Here again change of temperature is another name for the cessation of an active force.

Whether the specific gravity of anchor ice, while it remains upon the bottom, is greater or less than that of the water above it or whether it is retained there by pressure or frost, may be questioned; but if this ice be more ærated than surface ice, the combined effects of increased and maximum density of water between 39° and 40° fahrt. (at about which temperature anchor ice leaves the bottom), and of the expansion of the contained air, with possibly some diminution of barometric pressure, may have something to do with its rising.

When water is at the temperature of about 40° Farenheit, its density is greatest; when colder or warmer than this, it is lighter. In summer it is always above 40°, and then surface water is lighter because warmer than that below; but in winter this is often reversed: the surface water is lighter because colder than that below, and this cold stratum of water in rapid motion acts on the bed of the river like a cold wind on the human body, producing such rapid radiation and extraction of heat as to cause the peculiar form of congelation known as anchor ice. This process must be accompanied by some decomposition, or by a rearrangement of the air evolved,—as anchor ice when at the bottom, if stirred, sends up numerous air bubbles of considerable size, and it is perhaps owing to the presence of this and its expansion that it rises so rapidly. When by an atmospheric temperature above 40°, the upper and lower strata of water change places, the current of electricity between the earth and the atmosphere is reversed,—the magnetic tide ebbs—radiation ceases, and the relative specific gravities of the anchor ice and its water envelope being altered it is detached from the bottom.

Anchor ice seems to bear about the same relation to solid ice which muscovado or granulated sugar does to that in the lump or cake. There is also a certain degree of similarity in the conditions under which the processes of solidification are in both cases carried on. The compact masses are formed by cooling in a state of comparative repose,