A Science Service Feature

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ICE AT THE BOTTOM OF STREAMS

The formation of ice at the bottom of streams when the water above is unfrozen is not a rare phenomenon, though, for obvious reasons, the existence of ice in such a location usually remains unnoticed. A case was reported some years ago in which a layer of soft ice 2½ feet thick formed on the bed of the River Neva, at St. Petersburg, where the river was 65 feet deep, interrupting the city's water supply, which was obtained through pipes laid on the bottom. Divers who went down to clear the pipes sank into the ice up to their knees.

Ice thus formed at the bottom is called anchor-ice. Its formation is usually explained as due to the cooling of the bottom by the rapid radiation of heat through the water. The ice forms at night and/in clear weather, and more readily on dark colored rocks or other objects at the bottom than on light, because the former radiate heat more rapidly. While this is probably the principal mode of formation, it is not necessarily the only one. In the polar regions, where the ground is permanently frozen except near the surface, the water at the bottom of a stream loses heat rapidly by conduction to the ground beneath and may thus cool beneath the freezing-point before the water does so at the surface.

When a stream flows so rapidly that a sheet of ice cannot form at the surface the result of cooling below the freezing-point is to form little needles or flakes of ice, called frazil. This may be found at all depths. Quantities of frazil doubtless often cling to irregularities at the bottom, and also to masses of anchor ice previously formed, thus increasing the thickness of the latter.

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