would seem impossible that it could have been deposited unless formed where found. It has been found upon smooth rock in rapid water ten feet in depth; and it has been seen to burst up from the flat rock bed of the St. Lawrence, at the head of the Longue Sault rapids, where there is a depth of twelve feet. I have seen it rising to a surface already nearly covered with it, and at the same time, have felt it with a pole upon the stony bottom in upwards of twelve feet of water.

A remarkable instance of the formation of ice under a considerable depth of water occurred in the winter of '56–'57, at New York. The gutta-percha pipe—about 2½ inches diameter—which supplies "Blackwell's Island" with Croton water, was frozen solid while resting on the bottom in a tide way at a depth of at least twenty-five feet below the surface. The flow in the pipe had been arrested by an obstruction, and the East River was at the time covered with floating ice. As the water within the pipe was fresh and very pure it could become solid while the surrounding salt water remained liquid, but it *may* have been over-grown with anchor ice.

The temperature of running water falls considerably below 32° without congealing, and therefore anchor ice is not melted. It is probably often formed in water at a temperature as low as 28° or 29°, which is not impossible if the air is 30° below zero; and although no anchor ice is formed under the solid surface ice, that which has been carried there does not melt,—shewing that the water in motion under the surface ice below rapids does not soon recover the warmth it has lost in traversing the shallow open reaches above.

The appearance of the open water above the Lachine Rapids, after a cold period, seems to prove both the place of origin and the fact of rising of anchor ice; but *how* it is formed, and *why* it rises, are questions of interest which I have never seen explained, and to obtain answers to which is the object of these notes.

With respect to the mode of formation, it is analagous to that by which dew or hoar frost is formed on the surface of the earth, and is probably due to radiation from the warmer bed of the stream to the colder surface current, and still colder atmosphere. When the temperature of the air rises above 40°, the surface of the snow covered ground remains colder than the atmosphere, and radiation ceases. When it ceases the power which kept anchor ice at the bottom is suspended; and from this circumstance, and the regular rising of the