

beds of vegetation are able to collect considerable amounts of warmth is well known through Kerner's investigations, and the phenomenon has been described later by Brinkmann (1905, p. 27). Neither of these seems to know that the enormously high temperatures (30° C.) occurring in the upper layers of the vegetation are very distinctly limited to the surface; at about 1 m. below the surface the temperature is often only $15-18^{\circ}$ C. Thrusting an arm down through such a Sphagnum-bed warmed by the sun, we get an intense feeling of cold in the tips of the fingers and a feeling of great warmth up at the shoulders. I believe that the great warmth which thus arises in the littoral region is carried by the waves, especially on days when the wind rises before cooling begins, out over the lake, and is of benefit to the surface of the lake. To demonstrate further the importance of the littoral zone as a warmth-producing factor, I give here some observations from recent years.

On 3rd March 1907, when Furesö was everywhere covered with about 12 cm. of ice, the temperature towards the shore in about 6 cm. of water about $\frac{3}{4}$ m. from the margin of the ice was not less than 7° C. (sheltered thermometer); bright sunshine, time from noon to 4 p.m. The air temperature in the shade was $+0^{\circ}\cdot5$ C.; at 5 p.m. the temperature of the water at the same place had gone down to $+1^{\circ}\cdot5$, the air temperature to $-0^{\circ}\cdot5$. Shortly after the free margin of water had certainly become coated with a thin layer of ice.

On 28th March 1907, when the temperature of the air in the shade at 2 p.m. was about 10° C., the temperature of the surface-water in Esromsö in the pelagic region was $2^{\circ}\cdot5$. On the north coast of Nöddeboholt, close to the shore, exposed to the land wind from N.N.W., the temperature of the water was $5^{\circ}\cdot1$; but on the south side, on the borders of the vegetation, in bright sunshine, $17^{\circ}\cdot2$; in the ground only about $\frac{1}{4}$ m. from the water's edge, $7^{\circ}\cdot2$ C. At the same time numerous bog-hollows in Grib forest were still covered with ice. In a Sphagnum-moss which was strongly lighted by the sun, and whose sides were completely frozen and hard as stone, the thermometer a few cm. below the surface of the Sphagnum-bed registered 12° C.

On 12th April 1906 one of the experimental ponds belonging to the Fresh-water Biological Laboratory was still covered with ice on the sheltered side and the margin frozen; on the opposite, sunny side the temperature was 7° C. On 29th March 1907 all three experimental ponds were on the sheltered side, which at this time of year never has any sunlight, covered by 6 cm. of ice. The temperature of the air in the shade was 11° C. at 2 p.m. The temperature of the water on the sunny side of the ponds, amongst the vegetation, was $14-17^{\circ}$ C.;