

from $50^{\circ}2$ to $52^{\circ}2$; the extreme range shown by all the observations amounts to 13° .

Loch Leven.—Loch Leven* was sounded on the 11th, 12th, and 22nd June, 1900, and again on the 1st September and the 23rd October. A reading at the surface on the 11th June at 5 p.m. gave $58^{\circ}7$, and on the 12th June at 4.50 p.m. a temperature of $67^{\circ}5$ was observed—a range of nearly 9° in one day. This reading of $67^{\circ}5$ may be specially referred to as being, so far as we are aware, the highest temperature hitherto recorded in the waters of Scottish lochs, the next highest reading being one of 65° observed by Mr. Scott at the surface of Loch Oich in August, 1897. In September the surface temperature ranged only from 57° to $58^{\circ}5$. We are doubtful as to the working of the thermometer made use of in the October visit, and the readings have therefore not been included in the table.

The serials taken in June indicate the rapidity with which the waters of a shallow lake like Loch Leven become heated up in summer. During the eleven days between June 11th and 22nd the whole body of water had acquired a higher temperature, amounting to about 4° in the upper layers down to 30 feet, to nearly 3° at 50 feet, and to half a degree at 60 feet. But, while the body of water in a shallow lake absorbs heat more rapidly than that in a deep lake, it also loses heat more rapidly, and therefore the quantity of heat stored up in the waters of a deep lake may not be less than that stored up in the waters of a shallow lake, as Delebecque† seems to think. From a preliminary study of our temperature observations in the Scottish lochs we believe the reverse to be the case. For instance, Loch Katrine and Loch Leven are comparable as regards superficial area, but Loch Katrine is six times as deep as Loch Leven, and contains twelve times as much water; if the temperature of the water in the two lochs were taken simultaneously before and after a definite interval in summer, it seems probable that, while the temperature in Loch Leven might have been raised much higher than in Loch Katrine, the amount of heat stored up, as represented by the number of cubic feet raised 1° , would be found to be greater in Loch Katrine than in Loch Leven, and that the difference would bear some relation to the ratio between the bulk of water and the area of surface exposed to the rays of the sun. We shall endeavour to work this matter out in greater detail as our temperature observations accumulate, and we may return to the subject in a later paper.

Biology —Tow-net and other observations show that the nature and

* We understand that the temperature of the water of Loch Leven has been taken at the pier once a day (at 12 noon) during the five months of the fishing season for the past twenty-five years, but we have had no opportunity of examining the observations.

† “La quantité totale de chaleur emmagasinée dans un lac variera d'autant moins que ce volume sera plus grand par rapport à cette surface” (*Les Lacs français*, p. 150).