(3) its latitude, (4) its orientation, (5) its surroundings, and (6) its general shape.

(1) **The Effect of Depth and Superficial Area.**—The part which the size of a lake plays in the determination of the temperature of its waters may easily be understood by imagining two lakes situated side by side, and thus subjected to similar external influences. In the first place consider the case of two lakes of the same surface area, but of unequal depths. For present purposes it may be assumed that the only channel by which heat enters or leaves a lake is by the surface, so that the two lakes which are to be considered have equal opportunities of gaining or losing heat. But if one lake is deeper than the other it contains a greater quantity of water, the temperature of which will be raised or lowered by the heat entering or leaving the lake by the surface. A concrete example will illustrate my meaning. Assume that the lakes have rectangular basins and that the deeper of the two is 400 feet deep and the shallower 200 feet deep. Further, assume that at the time when they begin to gain heat the waters of the deeper lake have a uniform temperature of 40° and the waters of the shallower lake a temperature of 37°. By the time the water of the deeper lake has an average temperature of, say, 50°, there must have entered through the surface 10V units of heat, where V represents the volume of the lake. As the surface of the shallower lake has the same area, the same quantity of heat should have entered its waters; but as the volume of the shallower lake is only V/2, its mean temperature will have been raised 20° by the 10V units of heat which have entered at the surface. That is to say, its mean temperature will be 57°. This example is very crude and has not much reference to actual facts, but it is sufficient to show the importance of depth in determining the temperature of a lake. In the same way a rough measure of the importance of surface area can be obtained. Consider two lakes similarly placed and of equal volume, but the surface area of the first double that of the second. As the heat is supposed to enter solely by the surface, the first lake will receive twice as much heat as the second; and as the volume of the two lakes is the same, a rise of 20° in the mean temperature of the first lake would correspond to a rise of 10° in the mean temperature of the second. This is, of course, an extreme case, but it serves to illustrate the importance of surface area in determining the temperature of a lake.

The size of a lake has another effect, which is well illustrated by some of the observations in Scottish lakes referred to at the end of this paper (see page 135). The longer and the straighter the axis of a lake is, the more effect has a wind blowing along its surface in mixing the water and producing currents. The ratio of depth to length in a