

adjoining land is small in quantity. In salt lakes, again, there may be a chemical precipitation of salts on the floor of the lakes.

In addition to a rise and fall of the surface of the lake due to Motions. the varying amount of rainfall in the region, there may be a rise at one end of a lake produced by the heaping up of water through strong winds and gales, and, in addition to the ordinary waves, standing waves, called seiches, have been detected in most lakes. At the boundary-line separating layers of water of different temperature and density, what are called "temperature seiches" have been discovered in the Scottish and other lakes.

Lakes are inhabited by a great variety of organisms, but both Organisms. species and genera are much less numerous than in the ocean, and some whole classes—the Echinoderms, for example—are unrepresented. The ocean was almost certainly the original home of living beings, and relatively few species have been able to establish themselves in the less congenial fresh water.¹ In very deep lakes the bottom fauna is represented by only a few species, or life may be wholly absent, with the exception of bacteria. In temperate regions there appears to be active vertical circulation of the water, even in the deepest lakes, at least twice a year, when the maximum density point (39°·1 F., 4° C.) is reached at the surface. In tropical regions, however, it is probable that, owing to an absence of, or much less active, vertical circulation, there may be insufficient oxygen to support animal life at the bottom of very deep lakes. There is a well-marked cosmopolitanism in the plankton organisms of lakes. Indeed, the fresh-water plankton is regarded as the oldest community of organisms on the earth.

Lakes may be compared to oceanic islands. Just as an oceanic Compared with oceanic islands. island presents many peculiarities in its rocks, soil, fauna, and flora, due to its isolation from the masses of continental land, so does a lake present individuality and special peculiarities in its physical, chemical, and biological features, owing to its position with reference to the drainage from the surrounding land, and its separation from the mass of waters represented by the great oceans.

The surface of the earth, with which we are daily in direct contact, is composed of lithosphere, hydrosphere, and atmosphere, and these Hydrosphere. all interpenetrate. Lakes, rivers, underground water, the water of hydration in the lithosphere, and the water-vapour of the atmosphere, must all be regarded as belonging to outlying portions of the hydrosphere, which consists mainly of the waters of the great ocean basins.

Lakes may be classified in a great variety of ways, but no method

¹ R. Quinton, *L'eau de mer milieu organique*, Paris, 1904.