Geological functions.—Among the geological functions discharged by lakes the following may be noticed:

1st. Lakes equalize the temperature of the localities in which they lie, preventing it from falling as much in winter and rising as much in summer as it would otherwise do.[193] The mean annual temperature of the surface water at the outflow of the Lake of Geneva is nearly 4° warmer than that of the air.

2d. Lakes regulate the drainage of the area below their outfall, thereby preventing or lessening the destructive effects of floods.[194]

3d. Lakes filter river-water and permit the undisturbed accumulation of new deposits, which in some modern cases may cover thousands of square miles of surface, and may attain a thickness of nearly 3000 feet (Lake Superior has an area of 32,000 square miles; Lago Maggiore is 2800 feet deep). How thoroughly lakes can filter river-water is typically displayed by the contrast between the muddy river which flows in at the head of the Lake of Geneva, and the "blue rushing of the arrowy Rhone," which escapes at the foot. The mouths of small brooks entering lakes afford excellent materials for studying the behavior of silt-bearing streams when they reach still water. Each rivulet may be

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[193] The lakes of Sweden, which cover one-twelfth of the surface of the country, exercise an important influence on climate according as they are frozen or open. See Prof. Hildebrandsson on the freezing and breaking-up of the ice on the Swedish lakes. Ann. Bur. Central Meteorol. France, 1878.

[194] Winds, by blowing strongly down the length of a lake, sometimes considerably increase, for the time being, the volume of the outflow. If this takes place coincidently with a heavy rainfall, the flood of the escaping river is greatly augmented. These features are noticed in Loch Tay (D. Stevenson, "Reclamation of Land," p. 14). Hence, though on the whole lakes tend to moderate floods in the outflowing rivers, they may, by a combination of circumstances, sometimes increase them.