

water-sheets, a few inches deep, in the wet season, where smooth plains of barren sun-baked mud, or "playas," remain in the dry months. The old shore-lines, marked by cliffs, bars, and deltas in the Great Salt Lake region of Utah and in north-western Nevada, indicate a past humid climate, and show that formerly these basins held large lakes that rose nearly a thousand feet on the adjoining mountain flanks.

Lake Bonneville.

The Great Salt Lake of Utah is a relic of the much larger lake which has been given the name of Lake Bonneville. In superficial area Lake Bonneville was probably nearly equal to Lake Huron, and had a maximum depth of 1000 feet. Of this pristine lake the western limit may still be regarded as undefined, though the principal divisions were probably as follows:—

- (1) The main body, covering the area of the existing Salt Lake and its shores eastwards to the Wasatch Mountains, and westwards to beyond the 114th meridian.
- (2) Cache Bay, covering the present Cache Valley in Utah and Idaho.
- (3) Utah Bay, occupying the valley of the present Utah Lake in the east-central part.
- (4) Sevier Bay, and (5) Escalante Bay, both to the south.

The topographical elevations of the Bonneville area, once existing as islands and archipelagoes, now appear as hills and mountain spurs, with valley passes in place of the old-time straits. On the Great Desert the hills are half buried in lacustrine sediments, and rise from the lake-floor as sharply as do the present islands from the water-level of the Salt Lake.

As the waters of Lake Bonneville fell, the lake was divided into separate bodies, and the after-history of each lakelet was determined by its own conditions of local supply and evaporation. In many of the lakelets evaporation has resulted in complete desiccation, and in the deposition of rock-salt, usually associated with gypsum. The gypsum is occasionally found as small free crystals, which on the Sevier Desert are drifted by wind action into great glistening dunes. Professor Russell estimates that the dunes in one locality contain about 450,000 tons.¹

Most of the Bonneville lakes are alkaline, or salt, though a few fresh-water bodies of small dimensions do occur, including:—

Utah Lake, 27 miles long, 12 miles broad, having an area of 127 square miles. The overflow from this lake is conveyed by the Jordan River to the Great Salt Lake in Utah; hence it is fresh.

Bear Lake, discharging through Bear River into Great Salt Lake. Among the salt and alkaline lakes of the Great Basin are:—

¹ Talmage, "Lake Bonneville," *Scott. Geogr. Mag.*, vol. xviii. p. 471, 1902.