mountains may have great cavities beneath them, through a parting and opening in the crustal terranes underneath, when they were elevated; and it is stated in corroboration that by means of the plumb-line it is proved that the Himalayas have not the density of a solid mass. So also some volcanic peaks have been proved by pendulum experiments to be hollow. If volcanic mountains generally were shells over a cavity that was emptied in making them, the fact that they could stand on a thin crust would be no marvel. But the pendulum experiments of E. D. Preston at the Hawaiian islands have shown that this is not so. He found, in 1892, that Haleakala, on east Maui, 10,000 feet high, has a density of 2·7, or that of the mass of rocks at the surface; and that Mount Kea, on Hawaii, nearly 14,000 feet high, while hollow above, — the density there being only 2·1, — has a density below of 3·7 (page 290). Yet these mountains stand, and, no doubt, under adjusted gravitational pressure; but how so, if on a thin crust, is an unsolved mystery.

Isostasy is earth-shaping in its action, without being mountain-making. It has been in all time conservative of existing conditions of equilibrium. Subsidences made by loads have caused elevations somewhere around the subsided region; but the mean level, according to the principle, must have been retained. Loads over the bed of a Mexican Gulf should cause, in accordance with it, a subsiding, but not a deepening, for the subsidence just equals the load; and on the border of the ocean they should cause a subsiding of the coast region, and not a sinking; for the subsiding could not exceed the filling contributed.

The ice of the Glacial period, which covered a large part of northern North America and Europe to a depth of one or more thousand feet, was a load laid over the surface by moist aërial currents; and to this load has been attributed by Jamieson (1865), Warren Upham, and others, the succeeding subsidence of the same glaciated regions, or that of the Champlain period. (See further, page 1020).

3. *Continental plateaus and oceanic depressions.* — According to the principle of gravitational equilibrium, the earth's greater unevenness of surface, exhibited in the existence of oceanic depressions and continental plateaus, should be an expression of some difference in the density of the rocks. Perhaps the fact that the prevailing rocks of the oceanic volcanoes are basaltic, and of the continental, andesytic and trachytic, explains how it is that the oceanic crust is made the denser. The difference in the mean densities of the basaltic and andesytic rocks is about one tenth. The depressions, on this view, were made in the earth's cooling.

This origin of the oceanic basins was suggested in 1860 by Archdeacon J. H. Pratt, in his memoir on the Figure of the Earth, where he attributes the existence of continents and these basins to unequal contraction, refers the formation of mountains to lateral pressure, and concludes that "the crust beneath the oceans is of greater density than the average portions of the surface"; that is, that where the contraction was greatest the density of the rock material below is greatest, and proportionally so.