of former emerged land. Moreover, the eddying of the wave-and-current flow about islands has made long spits as prolongations of their points or capes.

7. *Action of the oceanic waters over a submerged continent, and during a progressing submergence or emergence.* — Were a slowly progressing submergence of a continent, or of any large part of one, in progress, the waves and marine currents would work over the loose earth, gravel, and alluvium of the surface, thereby changing them into marine deposits; the living species of the land and the fresh waters would be destroyed, and marine life would be introduced; and the general *features of the surface would be changed through a wearing off of heights and a filling of preëxisting valleys, and not by the excavation of valleys.* It might be supposed, at first thought, that the ocean would wash through the valleys with great excavating force, and make deep gorges over the surface. But from the present action on seacoasts, it is learned that with each foot of submergence, the seabeach would be set a little farther inland, so that the whole would successively pass through the conditions of a seashore. The salt waters, in fact, enter the river-valleys of a coast but a short distance, because they are excluded by the outflowing stream. During a progressing submergence, therefore, the ocean would have no power of excavating narrow valleys, unless they happened to be open at both ends and of great breadth and depth, so as to allow the oceanic currents to sweep through.

In a subsequent emergence, the mountains and ridges would be still further degraded, and the valleys filled by their debris. The laws of seacoast action would again come into play, and the wear of all new headlands and the filling of bays would continue to be the result, so long as the emergence was in progress.

If the continent were to a large extent without mountains, as was the fact in early geological time, the broad flat surface might then lie slightly above or below the tide-level at once, or nearly simultaneously, so that, under a small change of level, the waves might sweep across the whole area and the deposits have a continental extent. Through continental oscillations, causing slight emergences of large areas to alternate with varying submergences, variations in the formations would be produced, differences of depths and differences of currents causing transitions from arenaceous to argillaceous or to pebbly accumulations, or to clear waters fitted for corals and the other life which has contributed to limestone-making.

Evidence of emergence or elevation is to be looked for in the presence of stratified beds containing marine fossils; and when no such evidence exists over a country, the proof is defective, so much so, that facts from elevated, beach-like accumulations or terraces of sand or gravel are not worthy of much consideration, unless on land fronting the seashore. The sea-border animal life readily moves in when a submergence is in progress; for each species has its limits in depth and must move or die, and ova float landward with the waves and currents; hence fossil-bearing, sea-border deposits would