lands, with lagoons, estuaries, and lakes, but throughout the heart of the Old World, from the Pyrenees to Japan, the bed of the early Tertiary or nummulitic sea was upheaved into a succession of giant mountains, some portions of that sea-floor now standing at a height of at least 16,500 feet above the sea.

During Tertiary time also there was an abundant manifestation of volcanic activity. After a long quiescence during the succession of Mesozoic periods, volcanoes broke forth with great vigor both in the Old and the New World. Vast floods of lava were poured out, and a copious variety of rocks was produced, ranging from highly basic to rhyolites, quartz-felsites, and granites.

The rocks deposited during these periods are distinguished from those of earlier times by increasingly local characters. The nummulitic limestone of the older Tertiary groups is indeed the only widespread massive formation which, in the uniformity of its lithological and palæontological characters, rivals the rocks of Mesozoic and Palæozoic time. As a rule, Tertiary deposits are loose and incoherent, and present such local variations, alike in their mineral composition and organic contents, as to show that they were mainly accumulated in detached basins of comparatively limited extent, and in seas so shallow as to be apt from time to time to be filled up or elevated, and to become in consequence brackish or even fresh.[4] These local characters are increasingly developed in proportion to the recentness of the deposits.

The climate during Tertiary time underwent in the northern hemisphere some remarkable changes. Judging from

[4] The peculiar characters of the Tertiary rocks of the Western Territories of North America are, however, displayed over areas which in Europe would be regarded as enormous.