

pre-glacial uplift, and subsequent erosion. This fits well the modern theory which attributes glacial periods to impoverishment of the carbon dioxide of the atmosphere, due to previous uplift and extensive erosion with resulting carbonation of fresh rock-material.

(vi.) There is evidence that during the Pleistocene the sea stood at least six hundred feet higher than now, and perhaps a thousand. The main valleys were then occupied by ice which extended below the sea-level. Where the valleys widened near their mouths the spreading of the ice caused a corresponding decrease in depth and erosion was less intense. The valleys were consequently shallower near their mouths than farther up. When the ice withdrew and the land rose they at first probably contained lakes—dammed by rounded rocky barriers across the lower part, over which the streams cascaded, as the outlet of Lake Buntzen does. They have now cut through these barriers picturesque gorges, of which those of the lower Capilano and Seymour Creeks are good examples.

Co-ordinate with these cuttings* in the bottoms of the major valleys, are the cirques formed by still existing neves and glaciers on the higher slopes of the range. These are often very extensive and have reduced the original surfaces of the summit level to a system of very narrow branching divides which project above the snow along the top of the range. The withdrawal of the ice from the lower valleys to its present position on the slopes above the 5,000-foot level appears to have been a gradual movement, and many evidences of comparatively recent glaciation are to be found outside the present limits of ice-action.

Superimposed upon several of the topographic features already described are the volcanic cones and lava-flows of the Pleistocene period of vulcanism. The large volcanic cones of Garibaldi and Red Mountain stand above the planated surface which extends eastward from the edge of the Cheakamous valley and lies at an elevation of 5,000 feet and upward. This flattish surface has been dissected by the valleys of Stony and Swift Creeks, which are tributary to the Cheakamous. Above it rise the Table, and Black Tusk Mountains, capped by post-Eocene lavas, a fact which fixes the age of this surface as probably Pliocene. The volcanoes can therefore be of no greater age than the Pliocene. The valleys below it are certainly newer, probably late Pliocene or Pleistocene.

Mount Garibaldi, viewed from the north, can be clearly distinguished to be a cone standing above this surface of planation, which passes under it with a gentle slope upwards toward the east. The cone itself is

*Stehekin stage of uplift of Smith and Willis.