

half a century by numerous observers whether amateurs or official geologic surveyors has failed to bring to light *postglacial* marine fossils above the level of the sea at the mouth of the Hudson.

The comparison of the extreme ends of the great Hudson-Champlain depression speaks eloquently of marine submergence on the north during a time when the region on the south about the mouth of the Hudson at least was as it now is above the level of the sea.

SUMMARY OF GEOLOGIC HISTORY BEGINNING WITH THE RETREAT OF THE
WISCONSIN ICE SHEET

From the foregoing more or less detailed but as yet incomplete account of the successive frontal moraines in the Hudson and Champlain valleys, it follows that the ice front after receding from the moraine at New York Narrows became more and more irregular in outline, more and more reduced to a long loop projecting southward in the Hudson valley and receding northward over the highlands which formed a wall on either side of it. When the ice had so far dwindled away as not to be able to surmount the Archean ridge of the Highlands, it still pushed southward through the Hudson canyon in this elevated district a narrow tongue of ice which has left its marginal deposits of stratified gravel, sand and clay, at Croton Point, North Haverstraw, about Peekskill, and in the vicinity of West Point. During this stage of the waning Wisconsin epoch, the land from the Highlands southward through the lower Hudson valley appears to have been occupied by standing water about the margin of the receding ice. The level of this body of water is now marked by proglacial deltas which rise to the north at the rate of about 2.6 feet a mile;¹ an inclination very close to that found by Kummel for the shore lines of Lake Passaic in New Jersey.

When the ice disappeared from the Wallkill valley about the northern slopes of the Highlands, it formed a long tongue from Newburg northward covering the greater part of the width of the floor of the Hudson valley. About its margins were accumulated stratified gravels and sands now in the form of terraces, with kettles and ice-block holes, extending on its eastern margin north-

¹This estimate is obtained by taking the distance, 34.5 miles, from the College Point delta with an elevation of 30 feet, to the terrace used for a state military camp at Peekskill with an elevation of 120 feet.