*Chapter 2*

## RETREAT OF THE WISCONSIN ICE SHEET FROM EASTERN NEW YORK

In this and the following chapters which deal with the evidences of the retreat of the ice sheet from the Hudson and Champlain valleys, the aim has been rather to determine the conditions of the drainage and water levels at the front of the ice sheet than to attempt a presentation of a full account of the successive stages of the ice retreat. Many additional facts, such as are presented here, concerning gravels and sands deposited about the ice margin in the Hudson and Champlain valleys remain to be described and located on maps.

The data concerning water levels derived from deposits made at successive stages in the retreat of a glacier must necessarily pertain to a series of water bodies whose levels may or may not have been permanent as the water extended itself into the area abandoned by the retreat of the ice front.

In relation to the very beginning of the ice retreat, there are two classes of evidence bearing on the position of sea level at the mouth of the Hudson river, one of these categories of fact lies outside the glaciated area, the other lies inside that field and forms the body of matter with which we are concerned.

**Extraglacial evidence of water levels.** At the time of the culmination of the late Wisconsin epoch when the ice sheet stood farthest south and at New York Narrows, the question arises whether the sea was where it now is, or whether the land stood higher or lower in relation to sea level. Of the geologic evidence outside of the glacial deposits of this epoch, there are three localities within a few miles of New York city which were examined critically with reference to this question. These localities comprise the vicinity of Cheesequake creek, on the Monmouth county shore of New Jersey, the small unglaciated area of Staten Island N. Y., and the ridge which extends through Far Rockaway on Long Island N. Y.

*Terrace at mouth of Cheesequake creek, Monmouth county, N. J.* Cheesequake creek occupies a valley about 2½ miles long and with an average width of 1 mile from near its mouth on the beach of Raritan bay to its head. Except for small streams entering on the northwest near its mouth and on its eastern side from the