

The frontal margin runs out into a long spur on the western side ending at about 20 feet above the present sea level. In front of the plain is a flat of fine sands. A well sunk in April 1901 southwest of the railroad station reached rock at 67 feet. Above the rock was "hardpan," and above that about 10 feet of clay.

*Van Cortlandt park plain.* The parade ground at Van Cortlandt park on Tibbits brook in the northern part of New York city is a somewhat modified natural plain or terrace whose surface is about 20 feet above sea level. It is composed of glacial sand and gravel and is of either late glacial or early postglacial date. The surface of the plain now shows no trace of kettle holes, and the slope to the stream on the east and south has no decisive character except it be nearly in front of the ancient manor-house where the slope is marked by a few headstones and also along the southern end of the plain. A few coarse angular pieces of drift rock lie on the slope near the old gravestones. This fact and the manner of ending of the plain in this direction on the broad open valley of a sluggish tidal creek suggest that the plain may have been built in waters confined by a melting remnant of the glacier. It should be borne in mind, however, that direct evidence of the deposition of such gravels and sands in some part of their margin against masses of ice does not in such a situation as that of the Cortlandt park plain exclude the possibility of the water level, if such there was to control its upward growth, having been at sea level.

Certainly the sudden ending of the deposit on the south in a terrace without delta lobes and without evidence of having been brought to this form by the excavation of the drift in the valley below this point makes it probable that the valley toward the Hudson was ice filled, and thus entirely possible that the deposit was made above sea level. In short, the plain at Van Cortlandt park does not demand a higher stand of the sea than that now existing.

*Tappan moraine* [see pl. 2]. The first definite morainal accumulation in the Hudson valley north of the Narrows is encountered on the west side of the Palisades immediately north of the New Jersey boundary in the village of Tappan. At this point the Palisade trap ridge is deeply dissected on a northeast-