

Corner in a sheet of outwashed detritus, the position of which on the clays shows its more recent deposition. The precise age of these gravels and sands can be fixed in terms of the glacial retreat with precision, for the northern margin of the coarse detritus in the 100 foot plain at North Haverstraw shows clearly, by the ice contact slope of the terrace, that the deposits were along that line banked up against the edge of the glacier which still lay in the Hudson gorge. The age of the terraced remnants of the old delta is therefore fixed as nearly the same as that of the moraine at Haverstraw and earlier than all the various frontal deposits yet farther up the river in the line of retreat.

While the Cedar pond brook deposits are thus considered here as connected with the Croton point stage of the retreat it has to be recognized that the ice edge on the west side of the river had retreated from the moraine at Haverstraw station to the northern edge of the delta at North Haverstraw, a distance of 2 miles.

The clays underlying the Haverstraw gravels and sands are normal glacial deposits, evidently made in more or less open water the surface of which must have been at least 50 feet above the present sea level, but as the clays are overlain by the delta deposits made at the time the ice sheet pressed against the gravel bank at the North Haverstraw station, they can not be associated with deposits made at a later time when the river was freed of ice as far north as Albany. The precise age of the clays at Haverstraw is necessarily somewhat in doubt. North of the old delta with its ice contact at the North Haverstraw railroad station clays lie in the low grounds quite up to the south side of Stony Point. The clays rise up in the small hillock south of that point and evidently have there been much eroded. South of them rises the bluff of gravels in the North Haverstraw delta on which clays have not been deposited. Everything in this locality points to the conclusion that the clays are here older than the Cedar pond brook delta and that the ice sheet rested on these clays when the delta began to build. It is not so clear that the upper clays south of the Cedar pond brook were also in existence before the ice sheet retreated to the north shore of Cedar pond brook.

As previously shown on page 80 clays will begin to deposit along an ice front somewhat in advance of the sands and gravels