

spond. It is to be anticipated, however, that the kettle phenomena should be very irregularly spaced from north and south and more likely to be found in areas of frontal or strong marginal ice drainage than elsewhere.

Furthermore there may be more than one line of pitted plains and terraces at varying distances and elevations from the main drainage channel as has been explained in the preliminary account of glacial drainage.

The plotting of the known kettles gives an example in the moraine at Brooklyn at about 100 feet; some at the foot of Crow's Nest Mountain at 160 feet; and other shallow pits south of Poughkeepsie near Mine Point at about 170 feet, all of which fall fairly closely into a southward tilted plane, and all three lying above the water levels in that part of the Hudson river valley.

North of the above described kettles on the Rhinebeck sheet and the southern part of the Catskill sheet are small groups of high lying kettle deposits, probably marking earlier marginal deposits than those nearer the river when the Hudson river glacier had shrunk to smaller dimensions. The lowest of these depressions inclosed by the 240 foot contour near Elizaville overlooks a flat of water-laid deposits at about the upper limit of signs of standing water after the disappearance of the ice from this part of the valley.

On the whole the kettle holes on the Rhinebeck and the southern third of the Catskill sheet are above the general level, and those on the north and south are much above the levels marked by terraces or deltas indicating open, standing water.

Very few kettles obtrude themselves on our notice in going north to the southern part of the Troy and Albany sheets. Excepting one low kettle on the Troy sheet near Teller hill at 240 feet, the kettles from near Albany southward to the middle of the Catskill sheet fall along a tilted line which is about one half that of the tilt of the upper marine limit in the Champlain district. The actual tilt is at the rate of 2.8 feet a mile for about 50 miles.

Here again comes a decided break in the kame kettle deposits. From the northern middle portion of the Troy sheet to the northern part of the Schuylerville, there are none of these signs of deposition in the presence of ice near the Hudson river at levels