

Esopus creek, draining the southern field of the Albany clays, shows less signs of this change of level, and its delta is one of the marked recent alluviums of the Hudson river.

On the other hand Roeliff Jansen kill, which comes in from the southeast and enters the Hudson below Catskill from a region of clays and, higher up, sands, has a broad reentrant mouth, showing excavation at a preceding stage.

The Catskill is a large stream with a narrow gorgelike mouth in the clay terrace and possibly is not on its original path where it joins the Hudson.

Stockport creek is another broad creek valley now largely silted up but indicating broad erosion below the present sea level, subsequent to the deposition of the Albany clays.

From the mouth of Patroon's creek at Albany $42^{\circ} 40'$ north latitude, the relation of side streams to the Hudson gorge changes and above that point in the river the tributary streams have prolonged courses over the bed of the old channel. Lateral embayment of the mouths of these streams no longer takes place, and evidence of uplift or of excavation of the river bottom everywhere manifests itself in the rock floor of the ancient gorge by the behavior of the main stream and its tributaries.

If the northern Hudson valley is or has been rising and the southern part of the valley is or has been sinking, somewhere between the two areas must lie a line of no change of level. It has already been noted that a marked change in the character of the side streams in their relation to the gorge and its florded waters takes place at Albany which is near the head of tide. The actual delta of the Hudson river, as pointed out by Hayden¹ as early as 1820, occurs in this part of the river extending from near Albany southward probably as far as Coxsackie in the form of alluvial islands and shoals with ever increasing swampy mud flats.

It is presumable that the axis of rotation in the uplift of this region coincides with the present head of the delta or the vicinity of Albany, for, if this axis lay to the south of this point, marks of uplift in the side streams should appear farther south than they do and, if the axis lay to the northward at an appreciable distance, marks of depression in the mouths of side streams should manifest themselves instead of the signs of apparent uplift.

¹H. H. Hayden in *Geological Essays*. Baltimore. 1820. p.35.