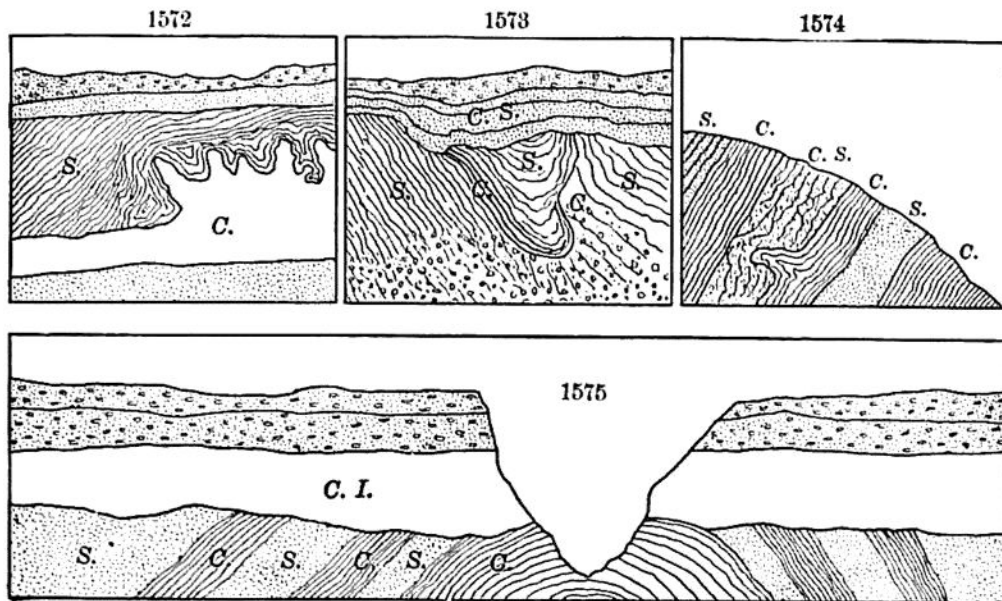


overlying beds, which shoved aside and forced out the wet and mobile clay. At many places along the coast the clay has been forced out in this way and now covers more or less of the slope below; and in the clay-pits, sinking and exclusions are not uncommon. At the Holmes clay-pit on Fresh Pond, near Northport, there were cracks in 1875 at the top of the bluff where the sinking was in progress, and where, as the proprietor stated, it had amounted to 16 inches in 20 months, and the movement, he added, was all the time going on. A clay-bed is made to vary greatly in thickness in the face of a bluff because locally squeezed out.

1572-1575.



Sections of the Cretaceous and overlying beds on the north side of Long Island. Figs. 1572, 1573, Sections near Brown's Point, Petty's Bight; 1574, Section $3\frac{1}{4}$ miles south of Oyster Point; 1575, Section exposed by a storm 200 yards south of Brown's Point. W. W. Mather.

In the case represented by Fig. 1575, the position of the beds plainly proves, as Mather states (page 249), that an upturning and a subsequent denudation had taken place after the lower beds of alternating clay and sand had been formed, and before the deposition of the overlying clay-bed and the higher deposit of "coarse materials and boulders" or drift. The tilting in Figs. 1572-1574 probably had the same origin. The age of the clay-bed C. I. in Fig. 1575 is left uncertain; but the upturned beds are Cretaceous. Mather states that in all sections the overlying drift deposits have the same horizontal position, and that some of the boulders contained in them have great size. "Blocks of 50 to 500 tons are not uncommon on the island" (page 174); and he reports one having an estimated weight of 2000 tons.

The upturned beds in Desor's Nantucket section, referred to on page 983, are covered by others in horizontal position, and are probably of the same age and origin with those of Long Island.

On Martha's Vineyard, according to Shaler, the upturned beds, which include the Cretaceous and Tertiary, bear evidence in their erosion that the chief upturning preceded the Later Glacial epoch, if not partly at least the earlier. Lyell, in his *Travels in North America* (1845), describes the sections at Gay Head and Chilmark, figures the former (i, 204), and states that the upturning occurred between the Miocene Tertiary and the "Boulder" or Drift period.

There is grandeur in the simplicity as well as vastness of the movements by which the earth was made ready for its latest stage. Equally simple and