

examining the edges of these, very delicate thin lines are perceptible, showing a laminated structure, like those observable in the coal-shales. Judging from these layers, the annual deposits appear to vary considerably, but the average thickness is little more than a quarter of an inch.*

Where a river terminates in an extensive estuary, the sea throws over the layer of mud brought down by the river, a covering of sand: and frequently these alternate with the greatest regularity, the receding of the tide allowing the fresh water to deposit its mud, and the advance of the sea discharging sand and marine exuviae over the surface.

32. RIPPLED SAND.—And here we may notice another phenomenon. Every one must have observed, when walking by the banks of a river at low water, or on the sands of the sea-shore, that when the water has been agitated by the wind, the surface of the mud, or sand, is undulated, or furrowed over by the rippling of the waves, the marks presenting various appearances, according to the force and direction of the currents. Frequently too, the vermes and molluscous animals mark the surface with meandering lines, and ridges; and these varied markings on the sand are preserved, if a thin layer of mud happen to be deposited over them before the next advance of the waves. I shall have

* Letter to Professor Silliman from an American who visited Egypt in 1834.