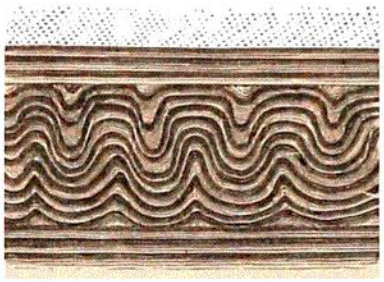
a layer thus plicated, from the Quaternary of Booneville, N.Y. Vanuxem illustrates the facts there observed by him, with this and other figures (N. Y. Geological Report), and attributes the plications to lateral pressure while the layer was in a softer state than those contiguous.

In parts of the shores of western Patagonia, where the soil is always wet, the soil-cap is always slipping downward over the basement rock; and it carries along not only its covering of trees and shrubbery, but also a "moraine profonde" of rocks, stones, tree-trunks, peat and mud, denuding the hills, filling valleys, and feeding the ocean. (R. W. Coppinger, 1881.) Areas on the Falklands, called "stone rivers," may have the same origin. (W. Thomson.)

188.



Plicated clayey layer. Vanuxem.

Soil-cap movements and land-slips sometimes dam up valleys and make lakes. But loading with waters is only one of the methods of producing such movements.

Amount of absorbed water within the earth. — The amount of absorbed water in the earth has been increasing from the time of the earth's consolidation. The thickening of the supercrust, by the addition of sedimentary strata, has been attended by a continued addition to the amount. Ejected igneous rocks take in water on cooling. Other sources of augmentation are the making of hydrous iron oxides through oxidation, of clays through the decomposition of feldspar, and of gypsum and other hydrous minerals.

If the thickness of the supercrust over the continental portion of the globe average 10 miles, and the average volume of moisture in the formations, both metamorphic and unaltered, be 2·5 per cent, the whole amount of water absorbed and confined would be $\frac{1}{40}$ of 10 miles, or about 1300 feet in depth, for the area of the continents. The deposits over the oceanic basins have relatively little thickness. Whatever reasonable allowance be made for them, the whole loss to the ocean waters, in depth, from this source, will not exceed 800 feet. The confined water of the rocks, while a feeble agent of change at the ordinary temperature, is one of immense importance when much heat is present.

II. THE OCEAN AS A MECHANICAL AGENT.

The working agencies of the ocean of a mechanical kind are, as has been stated, those of (1) the tidal wave; (2) the wind-made waves and currents; and (3) earthquake waves. Besides these agencies, the sun's heat, by varying the temperature and density of the water, affects the ocean's movements.

In mechanical work, the waters of the ocean have an advantage over fresh waters in being of greater specific gravity by $\frac{1}{35}$ to $\frac{1}{40}$. They have also the important quality of depositing sediment more rapidly, because less viscous, owing to the saline condition of the waters. A fine sediment,