

imagines a great overturn of the whole series in question. In this we have been misled by the language of Mr. Emmons, which has caused him to be misinterpreted by others as well. In speaking of the succession of rocks, he uses the term "inverted strata," and Mr. Barrande has spoken of the "overturn (*renversement*) of the whole system." Mr. Marcou, apparently as the interpreter of Emmons, speaks of the strata in question as having been "overturned (*renversées*) on each side of the crystalline and eruptive rocks which occupy the centre of the chain, presenting thus a fan-shaped structure, and all the accidents which accompany a complete overturn of a whole system of strata," so that in going eastward towards the centre of the chain, we find that the most recent strata appear to be placed beneath the most ancient, "in consequence of an overturn (*renversement*)."*Comptes Rendus de l'Acad.* xliii. 804.

Now in justice to Mr. Emmons it should be said, that despite his use of the expression "inverted strata," he has never maintained any inversion or overturn, as a careful examination of his descriptions will show. (*Taconic System.* p. 17). He supposes that during the accumulation of the Taconic rocks, the gneiss which formed the eastern limit of the basin was progressively elevated, so as to successively bring the older members above the ocean from which the sediments were being deposited; and that the upper parts of the formation, such as the black slates, were thus confined to a narrow basin, and never extended far eastward; at the same time he conceives that denudation may have removed large portions of the upper beds. At a subsequent period a series of parallel faults, with upthrows to the eastward, is supposed to have broken the strata, given them their eastward dip, and caused the older beds to overlap the inner; thus giving rise not to an inversion of the strata, but to an apparent inverted succession. Now we find in Canada abundant evidence that the slates which Emmons regards as the newest, are really near the base of the series, and cannot consequently admit his hypothesis to explain an order of things which we conceive to have no existence.

The careful study of the region in question shows, that although such a great upthrow and overlap does bring the Quebec group to the surface from beneath the higher rocks, to the east of this fault undulations, overturns, and downthrows to the eastward, diversify, with eastern upthrows, the structure of this complicated region. The gneiss of the Green Mountains, like that of the Scottish Highlands and like the granite of the summits of the Alps, is the newest