extending from the southern end of each nodule, marking the space where the softer rock has been protected for a short distance from the triturating action which ground down the whole.

Mr. George E. Hayes of Buffalo showed me large specimens of the polished rock, on which these markings were conspicuous; and he and Mr. Haskin have ascertained that the general direction of the grooves in this region is N.E. and S.W., or N. 35° E. They are traced over the broad platform of the Niagara limestone No. 3 (see Frontispiece and Map, Pl. III.), retaining the same course wherever the drift is removed; and, what is still more remarkable, as Mr. Hall pointed out to me, near Lewiston and Lockport they are imprinted at different levels on the projecting shelves formed by the more solid rocks of the great escarpment. Suppose, for example, the drift *d* (*fig.* 12, p. 81) to be removed from the ledge of quartzose sandstone, *a*, and from the surface of the upper edge of Clinton limestone, *b*, and from *c*,—we should find everywhere grooves running nearly in the direction N.E. and S.W.

Some geologists have considered these facts as very difficult to reconcile with the glacial theory. To me they appear to indicate the following succession of events. First, the country represented in the frontispiece (Pl. I.) acquired its present geographical configuration, so far as relates to the outline of the older rocks, under the joint influence of elevatory and denuding operations. Secondly; a gradual submergence then took place, bringing down each part of the land successively to the level of the waters, and then to a moderate depth below them.