

## CHAPTER I.

### The Evidence of Continental Elevation during the Formation of the Valleys of the Great Lakes.\*

IF, in the growth of the American continent, the moulding of the land features had not largely depended upon its projection above the sea, favoring or retarding the action of rains and rivers in sculpturing its surface, there would be little interest as to what was its relative height, before the commencement of the Pleistocene period. But we find valleys vastly greater than the meteoric agents could have produced under existing conditions. Thus, there are not only deep cañons, but also vast depressions, descending to levels far below the sea, which are now filled with the earlier drift accumulations, or form channels submerged beneath ocean waves, or constitute basins occupied by lakes. Hence, in the study of the drift itself, in the investigation of the lake history, or in the research upon the growth of modern rivers, we necessarily inquire what was the altitude of the continent that would permit of the mouldings and channelings of the original rock surfaces.

Following the period of high continental elevation, the geologist sees in the valleys and old channels, still below the level of the sea, and in the high level beaches, extensive submergence, succeeded by a re-elevation, but not to the original height, when the continent was being chiseled out by the ancient rivers. That this re-elevation is still going on is shown by the northward tilting of the comparatively recent marine accumulations along the St. Lawrence valley and Gulf coast, and the raised beaches in the lake region, as well as by the shoaling of the waters of Hudson's Bay during the present period of observation.

As general statements do not satisfy investigation, it becomes necessary to search for definite measurements of the former height of the continent among the archives of the geological past. Let us first seek for the testimony recorded by the Mississippi river.

\* Reprinted from BULL. GEOL. SOC. AM vol. I, pp. 65-70, 1889, where the text appears under title of "THE HIGH CONTINENTAL ELEVATION PRECEDING THE PLEISTOCENE PERIOD."