

sands, not only on the river banks, but carrying them to these lakes and to the ocean in vast quantities; the ocean and lakes were themselves not only great factors in erosion on their coasts, but were the distributors of sands and clays over great areas of their floors; whilst added to these eroding powers were the ceaseless forces of the atmosphere in the heat of summer, in the frosts of winter, in the downpours of rain, and in the blasts of the storm—each contributing its measure of energy in the wearing down of mountain sides and cliffs, the carrying away of soil, and exposing of vegetation to decay—an energy not especially visible in its effects in a single year or in a decade of years, but productive of vast results in the course of centuries. And this growth, disintegration and decay going on ceaselessly from century to century, and from age to age, must have created immense deposits of boulders, gravel, sand and clays, in every part of the country, prior to the advent of the glacial period. If Croll's view were accepted, that since a previous glacial epoch, which he appears to suggest occurred during the Eocene age, a period of 2,500,000 years has elapsed, we can form some conception of what must have been the results of denudation during the enormous time previous to as well as since that age. These deposits were no doubt largely added to, and in many cases re-arranged, but the denuding effects of the glaciers, considerable as they may have been on the superficial features of the country, have been greatly exaggerated.

Again, some geologists have been too ready to accept existing levels as the basis on which to found conclusions regarding the levels of the country in its different sections in past times, without any reference to warpings of the strata which have since affected local or wide areas. These warpings are known to have cut through the channels of rivers, created new watersheds, opened up new river valleys, and reversed the currents of lakes. Spencer has recently drawn attention to such warpings in the Mississippi Valley and south of Lake Ontario.