

of the Geological Staff at that time employed in the Province were, in the year above mentioned, directed by the Government of Canada to see what definite information could be obtained upon the subject. The result of the enquiries thus made was to show that the rocks of the Grand Lake coal-field are disposed in the form of a very shallow basin, having a maximum depth of not over 400 feet, and having, on at least three of its borders, rocks older than the coal-formation coming to the surface. The employment of a diamond drill, under the direction of Mr. Ells, gave further confirmation to the results thus obtained, by showing that at many different points, and at depths averaging about 200 feet, similar Pre-Carboniferous rocks were penetrated, and that without passing through any additional seams of coal. Thus, for this particular district at least, the facts ascertained would appear to be decidedly unfavorable to the belief in the existence here of any considerable thickness of coal-rocks or of any great productive capacity. At the same time, however, the remarkable fact was brought to notice, and was subsequently confirmed in other parts of the Province, that the rocks of the coal-formation are unconformable not only to the Devonian, Silurian and other older formations, but to the Lower Carboniferous as well, and may rest directly upon either of these, without the interposition of the others. It may hence follow that the coal-rocks, being deposited horizontally over a folded and eroded surface, may differ greatly in thickness in different localities, and while evidently shallow in the Newcastle region, may elsewhere attain greater volume. So far, however, as observations have yet been made, but little has been found to confirm this belief.

The only other point to which allusion need here be made, in connection with the Carboniferous system, is the reference of considerable portions of that system, in New Brunswick, as well as in Prince Edward's Island, to the Permian Group by Dr. R. W. Ells. The grounds for this reference will be found in the Report of the Geological Survey for 1883.

It may be in place to observe that, in connection with the identification of our different geological formations, and the study of their distribution, character and contained fossils, endeavours have been made to employ these data as a means of working out the varying geography of the periods which they represent, and thus of tracing the historical and physical growth of this portion of America. Among articles bearing upon this subject are some by Mr. Matthew relating to Quaternary changes in the vicinity of St. John, one by the present author relating to ancient erosion in New Brunswick, and another on the history of the St. John River in the same Province, both published in our Transactions; the paper by Prof. Shaler on the geology of Cobcook Bay previously referred to; and finally, an elaborate paper by Sir W. Dawson on the Eozoic and Palæozoic rocks of the Atlantic coast of Canada (*Quarterly Journal of Geological Society*, November, 1888.) From the observations thus made, the following general conclusions may be regarded as fairly established :—

(1.) The origination of an Acadian basin, as distinct from the other great basins of the continent, by a series of great uplifts antedating the opening of the Cambrian era. While on the north the basin was chiefly limited, as now, by the great chain of the Laurentide hills, with possibly a few outlying islets in the Gaspé peninsula, it was, upon the south, similarly but less completely limited, and separated from the Atlantic, by a series of long and probably low ridges stretching along the southern coast of New