

on the sea border, within which the waters, shut out from free communication with the ocean and brook and Sussex in Kings County); others are limestones containing marine forms of life, and, finally, with these occur enormous deposits of gypsum. These latter are extensively worked at such localities as Hillsboro, N. B., Windsor and Cape Breton, N. S., and the product used partly as land plaster and partly in the manufacture of plaster of Paris. The deposits probably owe their origin to the formation of isolated shallow basins subjected to evaporation beneath a tropical sun, deposited their contained salts, of which sulphate of lime or gypsum is always one. More than 352,000 tons of gypsum have been removed from the deposits of Hillsboro alone in the last ten years. They are the finest deposits in America.

But resting directly upon the gypsum beds we come to strata of quite a different character and which introduce us to a new order of things. They are again conglomerates or pebble-beds and sandstones, but they are much finer than those previously noted, and they are grey instead of red, while imbedded in them, often in large numbers, are found what are evidently the remains of old tree trunks, sometimes of large dimensions. It is from these beds and their equivalents found elsewhere in the provinces, that the fine building stones, formerly so largely exported from New Brunswick and Nova Scotia and of which many large public buildings, such as the Parliament Building in Fredericton and the building occupied by the Department of the Interior, in Ottawa, have been constructed, were obtained. They also furnish valuable millstones (Grindstone Island in the Bay of Fundy derives its name from this fact) and this portion of the coal formation is often known to geologists as that of the Millstone Grit. It is evident that these beds were formed in shallow waters, subject to shifting currents and where these could receive floating logs and other debris from adjacent land. They indicate that the latter was again rising, and through that rising we are brought to the conditions which distinguish the Coal Era proper.

Did any of my readers ever visit the celebrated Joggins shore in Nova Scotia? If not let them take the first opportunity, for probably no more interesting section, or one in which so marvellous a

story is unfolded, is to be found in any part of the world.

The entire thickness of the beds exposed in this section is nearly 15,000 feet. That is to say, if the beds were still in their original horizontal position, they would represent a pile of strata the vertical height of which would be between two and three miles. The upper beds, moreover, would necessarily cover and conceal the lower, and as all the beds were laid down, as shown by their character and fossils, near the sea level, the lowest beds must at some time have been nearly 15,000 feet below it. The fact that we can now see and study the whole series is the result of the fact that they have since been uplifted or thrown on edge, just as we can see at once all the leaves of a book if the latter be placed in an inclined position. The larger part of the rocks are sandstones and shales, in other words hardened sand and mud beds, and must have been accumulated under water, as similar beds are to-day. But these strata are lacking in marine fossils, and there is little or no evidence of the presence of the sea. They are rather swampy or estuarine deposits and the material composing them must have been mainly or wholly due to the action of considerable rivers bringing down sand and mud from the interior and subject to periodical inundations. The only existing river competent to produce such results is the St. Lawrence, and as similar strata are upon every side of the Gulf as well as in Prince Edward Island and the Magdalen Islands, these swamps must have spread over the entire area now occupied by the Gulf.

But the most interesting features afforded by the section remain to be described. They are to be found in the coal seams which here and there lie between the other rocks, and of which in the entire section not less than seventy-six have been observed, many, it is true, of inconsiderable thickness, but in several instances large enough to be economically worked. What do these coal seams mean? Well, coal, as shown alike by its chemical constitution, by its microscopic characters and by its associations, is undoubtedly of vegetable origin, representing accumulations of vegetable matter produced somewhat after the same manner as those of modern peat. But while peat is made up mostly of mosses and is a product of cold latitudes, coal was made up largely from higher plants, such as ferns, club-