faults and undulations. The Grant limestones (No. 6.) are apparently, about the middle of this formation, and may be paralleled with the Forbes, McLellan and Robertson limestones (7, 8, 9).

On the West Branch, a short distance above the forks, is a limited exposure of gypsum, which is associated with gray arenaceous limestone, and a series of thick bedded sandstones, holding Calcopyrite casts of plant remains. Similar limestones are met on the extension of the strike of these measures to the East Branch, and a bed of limestone (No. 10) several feet thick, composed of minute fragments of fossils, which give a rough pumice-like surface on weathering. This is, probably, the limestone referred to in "Acadian Geology" (p. 318), as showing in slices under the microscope, that it is made up of small fragments of shells, with entire specimens of very minute species.

Some of the limestones are well defined and persistent. At other points they are quite local. It sometimes appears as if there had been a local accumulation of calcareous matter (of shells or of a coral growth) which rapidly thinned from a central point, until lost in argillaceous or arenaceous matter.

The gypsum at the Forks may be considered as marking an horizon very near the summit of the Marine Limestone formation. It is difficult to arrive at any exact estimate of the total thickness of this formation in the district under consideration, starting from the basal limestone of McPhee's, and ending at the Forks. The longest continuous section that I have been able to measure, did not exceed 1,040 feet, but from all available data, the total thickness may be estimated at about 2,750 feet.

Below the forks of the river, measures referred by the officers of the Geological Survey to the Millstone Grit, are met as far as the base of the Productive Coal Formation, a short distance north of McKay's Brook, As yet, no fixed line can be drawn dividing these subdivisions. These millstone grit measures, it may be remarked, are distinguished from the corresponding horizon in other parts of the province by their highly calcareous nature—there being numerous beds of limestone, not usually equal in purity to those already noted, and the cementing material of the sandstones being often calcareous.

The Marine Limestones and their associated strata, become obscured as they approach the south side of the Coal Field on the east side of the East River, probably by east and west faults of great magnitude, similar to those which have on all sides limited the productive Coal Measures by an unconformable frame of Millstone Grit. Approaching Sutherland's River, they reappear and are noted for holding important deposits of spathic ore.

In this district I am not aware of any exposures of the peculiar "shell" limestone of Windsor, Shubenacadie, and Brookfield, referred by Sir J. W. Dawson, to Subdivision E of the Marine Limestone series, and parallelled by him with limestones belonging to the upper part of this section. This limestone is a mass of shells, principally casts, the delicate spirals of Spirifer and Athyris being frequently preserved intact. This characteristic limestone is largely quarried at Brookfield, as a flux for the Londonderry furnaces, and I am indebted to Mr. J. Sutcliffe, of the Londonderry mines, for the analysis of it, given further on, placed for comparison with one of the same rock from Windsor.

The analyses which I submit of East River limestones, were made by me sometime ago, when engaged in an enquiry into the question of fluxes for the extensive iron ore deposits of the district, some of which have been incidentally alluded to in my remarks.