

the first synclinal, which is that of the great Pictou coal-beds, has recently been worked out in much detail by Sir W. E. Logan and the late Mr. E. Hartley.

The second or middle synclinal (No. 2 in the Section) extends from New Glasgow to Carribou Harbour, and centres in the deep indentation of Pictou Harbour. On its southern side it contains, north of New Glasgow, the depauperated equivalent of the Middle Coal-formation; and the remainder of it is occupied by the Newer Coal-formation, whose newest beds, however, are not represented in this trough. The low anticlinal which separates it from the third trough brings up nothing older than the lower part of the Newer Coal-formation.

The third synclinal (No. 3 in the Section) extends from Carribou Harbour to Cape John, and, stretching westward through the Cumberland Coal-field, shows in its centre the newest beds of the Upper Coal-formation.

It is to be observed that in these synclinals the north-west sides have steeper dips than the south-east sides, and consequently occupy a less breadth on the map. The south-east sides also show the best and most continuous sections; and for this reason I shall select the section from New Glasgow to Pictou Harbour, and that from Carribou Harbour towards Cape John, as typical of the lower and upper parts of the Upper Coal-formation.

1. Section on the East River of Pictou.

1. On the river-section, below New-Glasgow bridge, the conglomerate is succeeded in ascending order by a grey concretionary limestone 20 feet thick, associated with sandstone and shale, and containing in some layers great numbers of the *Spirorbis* which I have described as *S. arietinus**, and whose habits of life were probably not dissimilar to those of *S. carbonarius*, so abundant in the Coal-measures. This limestone does not appear in the immediate river-section, but on the flank of the conglomerate east of New Glasgow.

2. Above this is a series of black shales and underclays with grey sandstones and some reddish and purple shales, and thin seams of bituminous shale and coal. These beds contain *Stigmariæ*, *Lepidodendra*, Entomostracans and fish-remains, the fossils and the mineral character of the beds alike corresponding with those seen in the upper part of the Coal-measures south of the conglomerate. The thickness of these beds is about 400 feet.

3. This series is succeeded by a thick grey sandstone holding *Calamites*, *Calamodendron*, trunks with aerial roots (*Psaronius*), &c., 30 to 50 feet thick. This appears at the mouth of Smelt Brook and in several quarries to the eastward of that place.

4. Above this is a second series of dark shales and under-clays,

* 'Report of Geol. Survey of Canada.' This limestone may be compared with the "*Spirorbis*-limestone" of the Shrewsbury, Lancashire, and Warwickshire Coal-fields in England. See Hull 'Coal-fields of Great Britain.'