Geologically speaking, the district embraces two divisions, the Carboniferous and the Silurian, the latter resting on strata provisionally considered to be of pre-Cambrian age. As no geological survey has yet been made of this county, except in the coal-field, the boundary lines of the various horizons cannot be indicated with absolute accuracy.

From New Glasgow northward to Pictou are met the measures of the Upper Carboniferous (embracing the upper part of the productive measures). These strata are considered by geologists to mark the transition from the Carboniferous into the Permian, and the term Permo-Carboniferous has been applied to them. The town of New Glasgow lies on the northern outcrop of the coal-measures, which extend from Sutherland's River to Middle River, and are bounded by heavy faults, bringing the different Carboniferous subdivisions into close contact with each other. The Millstone-Grit occupies an irregular tract of country lying to the south of the coal-field. The sections which have come under my notice do not show any clearly defined boundary to this formation, which appears to pass insensibly into the coal-measures above and the Marine limestone beneath.

The latter formation, which is of interest in this connection, as it holds numerous beds of limestone, iron-ores, etc., is presented in an irregular band, extending from Glengarry to Sutherland's River, and projecting to the south up the East River in a narrow tongue. The lowest division of the Carboniferous, represented elsewhere in the Province by dark-colored bituminous shales or by heavy beds of conglomerate, does not appear in this district.

The various members of the Carboniferous system rest on two divisions of the Silurian. The upper division has for its western boundary the East River, and occupies the highlands, already referred to, as extending from that point to the eastward. The beds making up this series are gray and olive slates, in places passing into coarse grits and sandstones, and containing a few calcareous bands. The fossils they yield are considered by Dr. J. W. Dawson to be the equivalents of those characterizing the Lower Helderberg of United States geologists. Passing downwards, underlying strata are met, which, in the absence of the Niagara limestone may be regarded as of Clinton age. These ferriferous strata are now presented in synclinal folds, irregular in shape, and frequently broken by faults, and rest on nacreous and chloritic schists with immense masses of an indurated slaty breccia, rising into prominent hills.