



LEGEND

- CARBONIFEROUS**
- PENNSYLVANIAN**
- 14 MORIEN SERIES, *Ptychocarpus unicus* zone (*Anthracozygia* zone): grey sandstone and shale, thin beds of freshwater limestone, intercalated red beds, workable coal seams
- 13 MORIEN SERIES, *Linopteris obliqua* zone: grey sandstone, shale, some conglomerate, a few red beds, thin coal seams
- 12 MORIEN SERIES, *Lonchopteris* zone: grey arkosic grit and sandstone, some conglomerate and shale, a few red beds, thin coal seams
- 10 MISSISSIPPIAN WINDSOR SERIES: dolomite, limestone, sandstone, conglomerate
- ORDOVICIAN AND CAMBRIAN**
- 7 Shale, sandstone
- PRECAMBRIAN (?)**
- 3 Pyroclastics, rhyolite, andesite, conglomerate, cherty sediments

- Geological boundary (approximate).....
- Bedding (inclined, vertical, overturned).....
- Glacial striae.....
- Rock outcrop (attitude not determined).....
- Coal seams (defined, approximate, assumed).....
- Anticlinal axis (approximate).....
- Synclinal axis (approximate).....
- Fault (defined, assumed).....
- Bore-hole.....
- Prospect pit.....
- Slope.....

Geology by A. O. Hayes, 1917-1919, W. A. Bell, 1921, 1930, 1931, and E. A. Coranson, 1930, 1931.

GENERAL GEOLOGY

The oldest rocks (3) in the area are well exposed along the south shore of Mira Bay from Bateston east to Moque Head and on the shores of Scatarri island. The group consists essentially of pyroclastic rocks, finely banded rhyolitic flows and some bedded sedimentary rocks. Altered amygdaloidal andesites (7) are locally exposed on Scatarri island. The pyroclastics are commonly strongly jointed and are locally slightly schistose. The sediments are mostly very fine-grained and cherty and are strongly cleaved in a northeast direction. In part they are interbedded with the pyroclastics through one member, 400 feet thick, either overlies the group or is a unit occupying an intermediate position within the group. Some conglomerate, seemingly closely associated with the fine sediments, is exposed near the shores in a north central and south central part of Scatarri. The kind and variety of rocks in the volcanic group suggest volcanism from a single vent or from a number of vents rather than from fissures.

The arenaceous and argillaceous marine sediments (7) of middle Cambrian to early Ordovician age are mainly drift-covered within the area.

The Windsor series (10) consists of dolomite, limestone and sandstone above a basal conglomerate. They rest unconformably upon rocks of the volcanic group (3) near Bateston and are faulted against rocks of the Morien series. The Windsor rocks near Bateston are all of Upper Windsor age and indicate an Upper Windsor overlap in the Mira Bay district.

The Morien series (12, 13, 14) is the productive coal-bearing group. It is divided into three zones on the basis of fossil content although the boundaries between them were arbitrarily chosen. The basal or *Lonchopteris* zone (12) has several thin unworkable coals in addition to the Tracy seam at its summit. The greater part of the zone is grey sandstone and arkosic grit and near the base of the zone these are accompanied by lenticular beds of intraformational limestone conglomerate. The base of the zone is nowhere exposed and south of Mira river faulted against Upper Windsor strata. The zone is more than 3000 feet thick. The middle or *Linopteris obliqua* zone (13), 2300 feet thick, has considerable shale in addition to sandstone, in contrast to an arkosic grit composition throughout this zone in the Bras d'Or map-area. Accompanying the greater shale content there is more coal although the coal seams except the Gardiner, McRury and Emery, all of which lie near the top of the zone, are mostly too thin to be of economic value. The upper or *Ptychocarpus unicus* zone (*Anthracozygia* zone) (14) is the main coal-bearing one. About 1200 feet of this zone is represented in the land area of the Glace Bay district and about 900 feet in the Morien district. The Cap Percé anticline that separates these two districts is a post-Morien fold and deposition in the area of the anticline was as great as in the area of adjoining synclines.

ECONOMIC GEOLOGY

Coal is the rock of major economic importance within the map-area. Of those coal seams that outcrop in the land area there are 11 that are locally 3 feet or more thick. Different names have been applied to equivalent seams in the two coal-producing districts of Morien and Glace Bay. In descending order of stratigraphic position these major coal seams are: (1) Hub seam, 9 to 12 feet thick; (2) Harbour or Blockhouse seam, 4 to 10 feet thick; (3) Bouthillier seam, 1 to 4 feet thick; (4) Backpit seam or Trunneshed seam, 2 to 4½ feet thick; (5) Phalen or Gowrie, or McAulay seam, 3 to 8 feet thick; (6) Emery, or Spencer, or Wilson seams, or South Head seams, 1 to 6 feet thick; (7) McRury seam, 0 to 3½ feet thick; (8) an unnamed seam in Morien district, 1 to 3½ feet thick; (9) Odell seam, (20 feet to 70 feet above Gardiner seam), 0 to 4½ feet thick; (10) Gardiner or Long Beach seam, 1 to 5 feet thick; (11) Tracy, or Broughton seam, 1 to 5 feet thick. Of these seams the Hub, Harbour, Phalen, Emery, Gardiner and Tracy have all been mined to greater or less degree. Present active operations are limited to the Phalen, Harbour and Emery seams, particularly to the former and mainly in submarine workings, which in the Bridgeport basin extend more than three miles from shore.

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MAP 362A
GLACE BAY SHEET
 CAPE BRETON COUNTY
 NOVA SCOTIA

Scale, 63,360 or 1 Inch to 1 Mile
 Miles
 Kilometres
 Approximate magnetic declination, 25° 51' West.

- LEGEND
- Road.....
- Road (not well travelled).....
- Trail.....
- Post office.....
- Bridge.....
- Abandoned railway.....
- Lighthouse.....
- Power line.....
- Sand bar.....
- Contours (interval 50 feet).....

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