

## GENERAL GEOLOGY

The oldest rocks (7) in the area occur only in the southeastern corner where argillites and arenaceous sediments are for the most part heavily drift-covered. The Windsor series (10), almost entirely drift-covered in the southwestern corner of the area, is exposed at many places on Point Edward peninsula. Thick deposits of chocolate-red conglomerate at the base are capped by 750 feet of alternating marine limestone, red conglomerate and red shale. The limestones are all of Upper Windsor age.

The Canso series of basal Pennsylvanian age is represented by the Point Edward formation (11) which is 750 feet thick on Point Edward peninsula. An additional 500 feet are concealed in Sydney harbour. The Point Edward beds conform in attitude to strata of the underlying Windsor series and overlying Morien series, however, is a surface of pronounced erosion and over a large part of the area the Point Edward formation, if ever present, was wholly removed prior to deposition of the Morien series. The beds of the Point Edward formation are mainly red shales and sandstones. Intercalations of grey argillaceous shales carry a small freshwater fauna that includes species of *Levia*, *Estheria* and *Carbonicola*.

The Morien series (12, 13, 14) is subdivided into three zones on the basis of fossil content and lithology though the boundaries between them were chosen arbitrarily. The uppermost or *Psilocarpon* zone (*Anthracozya* zone) (14) is the main coal-producing zone and is at least 1,300 feet thick. It fringes the coast in the synclinal areas and the land area is small as compared to the inferred submarine area. The best coal lies in, and on, both flanks of the Bridgeport anticline. The clastic deposits are shale and sandstone. The middle or *Linopteris* zone (13) in Sydney harbour is mainly grey sandstone; east of the harbour, shales, both grey and red, increase in quantity. There are a number of thin coal seams in this zone in the Bridgeport area and southeast of Sydney; those lying below the Mullins seams do not extend west of the harbour. The Mullins and some overlying seams of this zone, including the Emery seam, are present west of the harbour in the Sydney Mines district although they are mainly thin and unimportant there and farther west disappear. The maximum thickness of the zone is about 2,300 feet. The *Lonchopteris* zone (12) is thickest in the southeastern part of the map-area and the clastic sediments become coarser and more arkosic to the northwest. West of Grand lake the zone is practically devoid of coal. The maximum thickness of the zone is more than 3,000 feet.

## ECONOMIC GEOLOGY

Coal and limestone are the most important economic rocks. Limestone with the exception of a few freshwater beds in the Point Edward formation and in the Morien series is confined to the Windsor series. In the vicinity of Point Edward peninsula there are four main limestone members. In ascending stratigraphic order these are the Point Edward, Crawley Creek, Rudderham Point and Dixon Point, limestones. Of these the Point Edward limestone, west of the map-area, alone has been extensively quarried.

There are 15 coal seams that are locally 3 feet or more thick. Individual seams have been assigned different names from place to place. In descending stratigraphic order the principal seams are: (1) Point Aconi seam, 2 to 4 feet thick; (2) Lloyd Cove, or Point or Carr seams, 7 to 8 feet thick; (3) Chapel Point, or Crandall and Lyle, or Barachois seams (= Hub seam of Glace Bay map-area), 4 to 8 feet thick; (4) Sydney Main, or Victoria, or David Head seam (= Harbour seam of Glace Bay map-area), 5 to 7½ feet thick; (5) Edwards, or W. Frazer, or Fairhouse, or Bouthillier seam, 1 to 4 feet thick; (6) Indian Cove, or Greener, or Number Three, or North Head seam (= Backpit seam of Glace Bay map-area), 4 feet thick; (7) Hugh McGilvary, or Lingan, or Phalen seam, 5 to 8 feet thick; (8) Collins or Stony seam, 1 to 3 feet thick; (9) Dan McGilvary or Emery seam, 1 to 4½ feet thick; (10) Odell seam, 1 to 4½ feet thick; (11) Gardiner seam, 0 to 4½ feet thick; (12) Clarke or Upper Lorway seam, 0 to 4 feet thick; (13) Lower Lorway seam, 0 to 4½ feet thick; (14) Mullins or Martin seam, 1 to 6 feet thick; (15) Fitzpatrick, or Broughton, or Tracy seam, 0 to 4½ feet thick. The uppermost nine seams, Emery to Point Aconi inclusive, are contained in the upper 1,500 feet of the Morien series. The remaining six seams are contained in the underlying 2,250 feet of the series. Collieries are located on the Sydney Main or Victoria, Indian Cove or Greener, Lingan or Phalen, Emery and Mullins seams.

## LEGEND

### CARBONIFEROUS

#### PENNSYLVANIAN

14 MORIEN SERIES, *Psilocarpon* unitus zone (*Anthracozya* zone): grey sandstone, shale, thin beds of freshwater limestone, intercalated red beds, workable coal seams

13 MORIEN SERIES, *Linopteris* zone: mainly grey sandstone, grey and red shale, thin coal seams

12 MORIEN SERIES, *Lonchopteris* zone: grey arkosic grit and sandstone, some conglomerate and shale, a few red beds, thin coal seams

11 CANSO SERIES, POINT EDWARD FORMATION: mainly red shale and sandstone

10 MISSISSIPPIAN  
WINDSOR SERIES, chocolate-red conglomerate, limestone, red shale

#### ORDOVICIAN AND CAMBRIAN

7 Shale, sandstone

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

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



## MAP 361A SYDNEY SHEET (EAST HALF) CAPE BRETON COUNTY NOVA SCOTIA

Scale, 63360 or 1 Inch to 1 Mile  
Miles

Scale, 1 Kilometre to 1 Mile  
Kilometres  
Approximate magnetic declination, 25°55' West.

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

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