CANADA
DEPARTMENT
OF
MINES AND TECHNICAL SURVEYS

GEOLOGICAL SURVEY OF CANADA

GEOLOGICAL SERIES

SHEET 11 F/15

LEGEND

Uncoloured areas are drift-covered areas in which the character of the underlying rocks is uncertain

PENNSYLVANIAN

11 — *Sandstone, shale, conglomerate;* **11a**, *Riversdale group: sandstone shale;* **11b**, *Morien group: sandstone, shale, coal*

MISSISSIPPIAN (?)

10 — *Gabbro*

MISSISSIPPIAN

WINDSOR GROUP (8, 9)

9 — *Marginal basin beds: conglomerate, gypsum, sandstone, limestone, shale; includes undifferentiated Grantmire formation;* **9a**, *Grantmire formation: conglomerate, sandstone*

8 — *Central basin beds: limestone, siltstone, sandstone, shale*

HORTON GROUP

7 — *Sandstone, siltstone, shale*

DEVONIAN

6 — *Andesite, basalt; minor diorite, quartz diorite, gabbro*

5 — *Granitic rocks;* **5a**, *granite with inclusions of George River group(1)*

CAMBRIAN

MIDDLE CAMBRIAN

4 — *MacMULLIN FORMATION: quartzite, shale, conglomerate;* **4a**, *includes some undifferentiated Upper Cambrian beds*

BOURINOT GROUP

3A, 3B — **3A**, *Volcanic tuff, breccia; lavas; sandstone, shale; minor greywacke*
3B, *Greywacke; volcanic tuff, breccia; minor lavas*

FOURCHU GROUP

2 — *Volcanic breccia, tuff, lavas, chlorite schist;* **2a**, *chlorite schist, altered sedimentary rocks; possibly equivalent to 1*

GEORGE RIVER GROUP

1 — *Hornfelsic shale, paragneiss, crystalline limestone*

PALÆOZOIC

ARCHÆAN PROTEROZOIC

Rock outcrop, gypsum outcrop or indication
Bedding (horizontal, inclined, vertical, overturned)
Bedding (direction of dip known, upper side of bed unknown)
Schistosity
Fault (defined, approximate, assumed)
Glacial striae
Fossil locality
Gypsum quarry
Mineral prospect or occurrence (manganese, lead, zinc) Mn, Pb, Zn

Geology by L. J. Weeks, 1948, 1949; geology of North Mountain from Map 233A, by T. D. Guernsey, 1928

Cartography by the Geological Cartography Division, 1954

Main highway
Road and buildings
Road not well travelled
Trail
Telephone line
Church, cemetery
School
Post Office
Lighthouse
Wharf
Triangulation station
Survey monument
County boundary
Indian Reserve boundary
Intermittent stream
Marsh
Sand or gravel
Contours (interval 50 feet)
Depression contour
Height in feet above mean sea-level 300

Base map surveyed and drawn by the Surveys and Mapping Branch

Air photographs covering this map-area may be obtained through the National Air Photographic Library, Topographical Survey, Ottawa, Ontario

Approximate magnetic declination, 25°24' West

INDEX MAP

PUBLISHED, 1955

MAP 1040A

GRAND NARROWS

CAPE BRETON, RICHMOND, VICTORIA AND INVERNESS COUNTIES
CAPE BRETON ISLAND
NOVA SCOTIA

Scale: One Inch to One Mile = 1/63,360

Miles 1 ¾ ½ ¼ 0 1 2 3

DESCRIPTIVE NOTES

The area is a tilted and somewhat warped plateau that dips to the southeast and is at sea-level some 10 miles to the south and east of the map-area. Areas of competent rocks attain elevations of about 700 feet in the north of the map-area, whereas those of less resistant, late Palæozoic strata are marked by lowlands and by the great depression of Bras d'Or Lake.

The oldest rocks in the area, those of the George River group, comprise, in the area north of East Bay, fine clastic sedimentary beds and crystalline limestone(1). Rocks of this group on North Mountain, as described by Guernsey[1] are mainly similar, but may include greywacke and volcanic rocks. They are all probably of Archæan age.

The Fourchu group(2) is nowhere in contact with George River rocks, but farther east is conformably overlain by Cambrian beds, and is believed to be late Proterozoic in age. The rocks are mainly pyroclastic, with minor clastic sedimentary beds. On Sporting Mountain, chlorite schists are associated with rather more sedimentary rocks than are elsewhere found in the Fourchu, and it is possible that these rocks(2a) are equivalent to the George River group, even though none of the crystalline limestone characteristic of that group was observed.

Rocks of the Bourinot group northwest of East Bay(3A) comprise sedimentary strata, lavas, and pyroclastic rocks. They overlie the George River group unconformably, and on faunal evidence are assigned an early Middle Cambrian age. Southeast of East Bay a series of beds comprising greywacke and pyroclastic rocks with minor lavas(3B) is correlated with the Bourinot, and farther east overlies Lower Cambrian beds. The whole assemblage(3A, 3B) is believed to comprise a stratigraphic unit, and to have been laid down under tectonic conditions.

The MacMullin formation(4) conformably overlies the Bourinot group northwest of East Bay, and comprises beds laid down under shallow geosynclinal conditions. Upper Cambrian shale occurs with MacMullin beds at one locality(4a), but could not be differentiated on the scale of the map.

Granitic rocks(5) intrude all the Cambrian and older formations of the map-area, and range in composition from alaskitic granite to granodiorite. On North Mountain, a contact zone(5a) between George River rocks and granite is characterized, according to Guernsey[1], mainly by abundant inclusions of the George River in the adjacent granite. Diorite and gabbroic rocks(6) are mostly fine grained, and are probably relatively younger than the granitic rocks, but together with them are believed to be related genetically to the Acadian orogeny of early Devonian time.

Separated from all older rocks by a great erosional unconformity are beds of the Horton group(7), comprising continental strata that are mainly sandstone, siltstone, and shale within the map-area and conglomerate and sandstone farther south. The group probably accumulated in large, land-locked basins, which, at the close of Horton time, were entered by the Windsor sea, and marine Windsor central basin beds(8) laid down in conformable succession to the Horton strata. At a later, but still Windsor time, the sea transgressed these basins, and marginal basin beds(9) were laid down on pre-Horton basement rocks. The basal member of this latter succession is a coarse, ill-sorted conglomerate that varies in thickness from a few feet to some thousands of feet, and is termed the Grantmire formation(9a). Both Horton and Windsor strata are intruded by small, irregular bodies of gabbro(10), which are not known to intrude Pennsylvanian rocks, and are assumed to be of late Mississippian age.

Undivided Pennsylvanian beds(11) overlie Windsor strata in the so-called Salmon River basin. Sandstone and shale east of Sporting Mountain are correlated with the Riversdale group (11a) on faunal evidence obtained a short distance south of the map-area. The uppermost beds of the Salmon River basin(11b) are coal-bearing, and are correlated with the Morien group of the Sydney coalfield.

Gypsum is plentiful in the peninsula between Grand and Little Narrows, and is being actively mined from two quarries near the north boundary of the area. Manganese occurs as fissure fillings, and as interstitial material in conglomerate, at Enon and on McCulish Brook respectively, and, apparently, as a spring deposit in overburden west of Terra Nova. Coal occurs in the uppermost beds of the Salmon River basin, and has been mined from an adit near Gasperaux River. Lead and zinc sulphides occur replacing limestone and conglomerate 2 miles east of Little Narrows.

[1]Guernsey, T.D.: The Geology of North Mountain, Cape Breton; Geol. Surv., Canada, Sum. Rept. 1927, pt. C, pp. 47-83 (1928).

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