

GEOLOGICAL SURVEY OF CANADA
DEPARTMENT OF MINES AND TECHNICAL SURVEYS

SHEET 11 1/2 (West Half)

LEGEND

PRELIMINARY SERIES



DESCRIPTIVE NOTES

Most of the map-area is covered with mixed coniferous and deciduous forest. Extensive lumbering and pulp cutting have resulted in many woods roads and also in impenetrable slash piles. A large barren, the result of a forest fire at the turn of the century, occurs at the headwaters of North Nelson River. Farming is restricted to strips along the main roads in the northern part and southwest corner of the map-area. The region is accessible by roads that follow the main stream valleys, and by the railway that crosses the northern part from east to west. The area is covered with varying thicknesses of glacial deposits so that outcrops are limited almost exclusively to the river valleys. The small lowland in the southwest corner consists of easily eroded Windsor rocks capped by glacial deposits. Elsewhere, the topography reflects the type of bedrock, with local modifications by glacial drift. Stratified gravel deposits up to 80 feet thick are numerous.

The oldest rocks of the map-area, the Ordovician Meguma group, are best exposed along Cox Brook. They are composed of the Goldenville formation (1), which consists of greenish grey quartzite and minor slate, and the overlying Halifax formation (2), which consists of black slate with minor pyrite blebs, medium greenish grey quartz wacke, greywacke, phyllite, and medium grey andalusite schist. The exposures may lie near the axial zone of a syncline that plunges gently southwestward.

Light grey medium-grained granite (3) of Devonian age appears to have intruded the older rocks and to have caused the development of the andalusite schist in unit 2. The granite is exposed at only one locality, but judging from the many frost-heaved granite boulders strewn across the southeast corner of the map-area, its composition varies from a biotite-rich facies to a muscovite-rich facies. Colourless to white quartz and white potash feldspar constitute more than 75 per cent of the rock.

Lower Mississippian sediments of the Horton group (4) underlie the central third of the map-area. Their continental origin are confirmed by the fossil plants they enclose. These sediments are commonly characterized by the presence of mica, along the bedding planes, angular quartz and feldspar grains, and more than 10 per cent argillaceous matrix. They are partly divisible into three stratigraphically significant lithologic units, which are, from oldest to youngest: medium to dark grey siltstones, shales, and fine-grained sandstones (4a); light grey, medium- to coarse-grained quartz-feldspar arenite with minor grey shale, siltstone, and pebble-conglomerate (4b); and red and green mudstones and siltstones with minor pinkish-grey quartz wacke (4c). The siltstone unit (4a) is separated from the Riversdale group (7) to the north by a fault. It is overlain to the south by the arenites (4b), which are in turn overlain by mudstones (4c) that occupy a synclinal structure. The entire group has been closely folded; this has resulted in the repetition of many beds. The arenites (4b) are downfolded in a narrow syncline into the siltstones (4a) just north of Steviacke River. Owing to lack of exposure at the eastern boundary of the map-area, it is not known whether these units continue that far. The presence of a volcanic band in the siltstone unit (4a) is suggested by the occurrence of two concentrations of dark green amygdaloidal basalt boulders about 1.5 miles from the mouth of the Big Steviacke. The Horton group is best exposed along Pembroke River and in a section along Steviacke and Big Steviacke Rivers. It is at least 5,500 feet thick. No complete sections occur in the map-area.

Windsor strata (5) probably unconformably overlie the Horton and Meguma groups in the southern part of the map-area. The contact relationships are obscure, but basal Windsor red pebble-conglomerate is unconformably on Meguma quartz wacke. The conglomerate is overlain elsewhere by grey to black, fossiliferous and fragmental, subzone-B limestone. White gypsum, in beds up to 80 feet thick, is associated with light grey anhydrite in much of the area underlain by the Windsor group. Red and grey calcareous shale and argillaceous limestone, of subzone-C, overlie both the subzone-B limestone and the gypsum. Brachiopod, pelecypod, and gastropod fossils were found in the limestone.

The Canso group (6) consists of red, green, and grey mudstone, siltstone, and shale—all of continental origin. Calcareous layers 1 inch to 2 inches thick, which lie within some siltstone beds, produce peculiar, tan and dark grey, weathered surfaces. Near fault zones that bound the Canso group, the rocks are more highly indurated, and the most common type is argillite. The strata are highly folded and are cut by several minor faults. These strata are assigned to the Mississippian Canso group on the basis of pelecypods found in them beneath the bridge over Middle River, 2 miles north of Glengarry Station.

The Riversdale group (7) bears a strong lithologic similarity to the adjacent Horton siltstone unit (4a). Medium grey to black siltstone, and shale with minor grey quartz wacke, are the predominant rock types. Less mica is present than in the Horton rocks and the Riversdale rocks are generally less disturbed structurally. Primary bedding features such as ripple-marks are common. The bedding attitudes suggest that the Riversdale group forms an anticline with the axis near the north contact. Plant remains from a single locality are of Riversdale age.

The youngest exposed rocks are brown and grey sandstone and mudstone, red conglomerate, and black carbonaceous shale of the Pictou and/or Cumberland groups (8). Spore analyses of specimens from two outcrops suggest correlation with the Pictou group, and the fossil plants contained by these rocks indicate that correlation with the Pictou group is more likely than with the Cumberland group. However, on the small stream west of Ben Lake, there is an occurrence of coal that resembles coal of the Cumberland group at Kemprow 5 miles to the west; this occurrence suggests that both the Pictou and Cumberland groups are present. The observed lithologies support this suggestion.

The area has undergone at least two periods of deformation. Folding of the Meguma rocks resulted from deformation in pre-Mississippian time. This folding was probably related to the Acadian orogeny, which was also accompanied by granitic intrusion. Uplift took place intermittently during early Mississippian time, possibly by resumption of movement along old faults. The land was depressed during Windsor time and evaporite deposits formed in isolated basins that may have resulted from continuing fault movement. The second period of deformation in late Pennsylvanian and Permian time resulted in gentle folding of the rocks, with faulting of some areas.

The evaporite deposits require sampling to show whether the gypsum-anhydrite ratio favours economic use. The gypsum has been used locally for plaster and fertilizer. Galena occurs in surface outcrops in some old workings in limestone near Glenberrie. Diamond-drilling and surface exploration have recently been carried out nearby. Malachite stains are found around a small adit at an old copper showing near Lansdowne Station. Several pits were dug many years ago, in search of coal west of West River Station. The quartz arenites within the Horton group may be of sufficient purity to merit investigation as a source of silica.

¹ Fairbairn, H. W., et al.: Age of the Granitic Rocks of Nova Scotia; Bull. Geol. Soc. Amer., vol. 71, pp. 399-414 (1960).
² Stevenson, I. M.: Truro Map-Area, Colchester and Hants Counties, Nova Scotia; Geol. Surv., Canada, Mem. 297 (1956).

- CARBONIFEROUS PENNSYLVANIAN CUMBERLAND AND/OR PICTOU GROUPS 8 Brown and grey sandstone and mudstone, red conglomerate, and black carbonaceous shale
- RIVERSDALE GROUP 7 Grey shale and siltstone, black shale, and minor grey quartz wacke
- MISSISSIPPIAN CANSO GROUP 6 Red, green, and grey mudstone, argillite, and fine-grained sandstone; minor grey limestone
- WINDSOR GROUP 5 Grey fragmental limestone, red and grey calcareous shale, gypsum and anhydrite
- HORTON GROUP 4 Siltstone, mudstone, and sandstone; 4a, medium to dark grey siltstone and shale; 4b, light grey, medium- to coarse-grained quartz feldspar arenite; 4c, red and green mudstones and siltstones
- DEVONIAN 3 Light grey biotite and muscovite granite
- ORDOVICIAN MEGUMA GROUP 2 HALIFAX FORMATION: black slate, grey quartz wacke, phyllite and minor andalusite schist
- 1 GOLDENVILLE FORMATION: greenish grey quartzite and minor slate

- Rock outcrop x
- Geological boundary (defined, approximate or assumed) - - - - -
- Bedding, tops known (inclined, vertical, overturned) / / / / /
- Bedding, tops unknown (inclined, vertical)
- Schistosity (inclined, vertical)
- Fault (defined, approximate, assumed) - - - - -
- Anticline (defined, arrow indicates direction of plunge)
- Syncline (defined, arrow indicates direction of plunge)
- Fossil locality
- Mineral occurrence x RYP

MINERAL SYMBOLS

Anhydrite anhy Gypsum gyp
Copper Cu Lead Pb

Geology by D. G. Benson, 1960

Cartography by the Geological Survey of Canada, 1961

- Roads, all weather
- Other roads, dry weather
- Trail
- Railway
- Power transmission line
- County boundary
- Post Office
- Intermittent stream
- Marsh
- Contours (interval 50 feet)
- Height in feet above mean sea-level 565

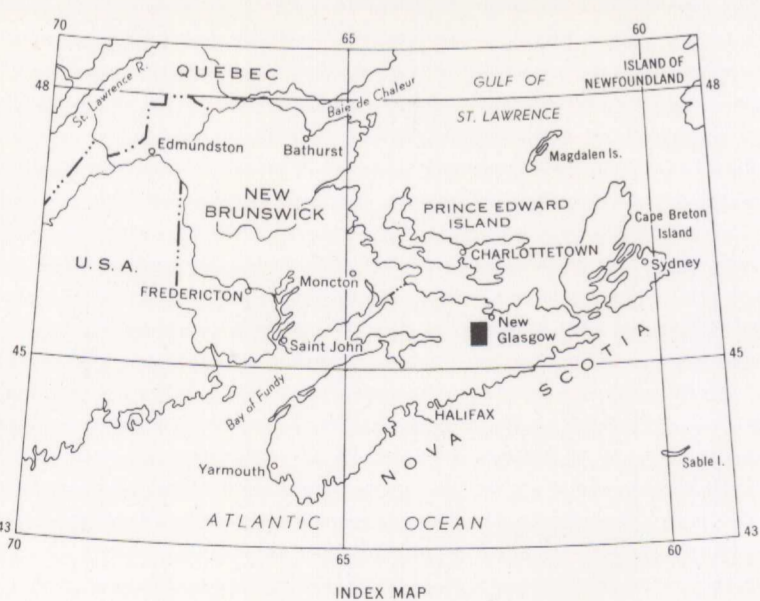
Base-map prepared by Surveys and Mapping Branch, 1954, with revisions by the Geological Survey of Canada, 1961

Approximate magnetic declination, 23° 19' West

Geological names subject to revision

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

In response to public demand for earlier publication, Preliminary Series maps are issued in this simplified form and will be clearer to read if all or some of the map-units are hand-coloured

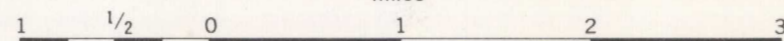


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PRINTED BY THE SURVEYS AND MAPPING BRANCH

MAP 1-1961
GEOLOGY
HOPEWELL
(WEST HALF)
NOVA SCOTIA

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



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G 34101
.C5
1956
G4
omvfc
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2.0
1961-1