

Diagrammatic structure-sections along lines A-B, C-D, and E-F.

GEOLOGICAL SERIES

SHEET 1 N (East Half)

LEGEND

- ORDOVICIAN**
- LOWER ORDOVICIAN**
- WABANA GROUP**
- 10 Shale and sandstone, beds of oolitic hematite, oolitic pyrite, and phosphatic pebbles
- BELL ISLAND GROUP**
- 9 Sandstone and shale, beds of oolitic hematite
- CAMBRIAN**
- UPPER CAMBRIAN**
- ELLIOTT COVE GROUP**
- 8 Grey to black shales with concretions and thin sandstone and limestone beds
- MIDDLE CAMBRIAN (ACADIAN)**
- 7 Shales and slate, with nodules, lenses, and thin beds of limestone, and manganese and phosphatic beds
- LOWER CAMBRIAN**
- 6 Shale, slate, crystalline limestone and conglomerate
- CABOT GROUP (3-5)**
- BLACKHEAD FORMATION: arkosic sandstone with thin beds of argillite, siltstone and slate**
- 5A, mainly red sandstone  
5B, mainly greenish sandstone  
5C, mainly red sandstone
- SIGNAL HILL FORMATION: arkosic sandstone and conglomerate, quartzitic sandstone, and thin beds of argillite, siltstone, and slate**
- 4A, mainly greenish grey sandstone  
4B, mainly red sandstone  
4C, mainly red conglomerate
- 3 **ST. JOHN'S FORMATION: grey to black slate, argillite, and grit, with a few arkosic conglomerate and sandstone lenses and a transitional zone to grey sandstone at the top**
- PROTEROZOIC**
- 2 **CONCEPTION GROUP**  
Mainly siltstone, sandstone, and slate; 2a, flinty, green to greenish grey siltstone, sandstone, and slate, with conglomerate, tuff, and agglomerate ("Conception slate"); 2b, flinty green sandstone; green, red, chocolate, and reddish brown siltstone, sandstone, argillite, and slate, with some quartzite, quartzitic sandstone and conglomerate ("Torbay slate")
- 1 **HARBOUR MAIN GROUP**  
Chlorite schist; intermediate to acidic volcanic rocks, with interbedded flinty siltstone, sandstone, slate, and coarse conglomerate
- A** **HOLYROOD BATHOLITH: pink and grey granite, with granodiorite, syenite, aplite, and trap (post-Harbour Main and Conception groups)**
- B** **Meta-gabbro (post-Conception group)**

- Hematite beds (defined, approximate).....
- Bedding (horizontal, inclined, vertical, overturned).....
- Schistosity (inclined, vertical).....
- Fault (defined, approximate, assumed).....
- Anticlinal axis (defined, approximate).....
- Synclinal axis (defined, approximate).....
- Anticlinal or synclinal axis (arrow indicates direction of plunge of axis).....
- Glacial striae.....
- Drift ridge.....
- Fossil locality.....
- Quarry, mine.....
- Adit.....
- Mineral occurrence.....

- SYMBOLS FOR MINERAL OCCURRENCES**
- Copper.....Cu Manganese.....Mn
- Gold.....Au Molybdenum.....Mo
- Iron.....Fe Pyrophyllite.....Pyro
- Limestone.....Ls Silver.....Ag

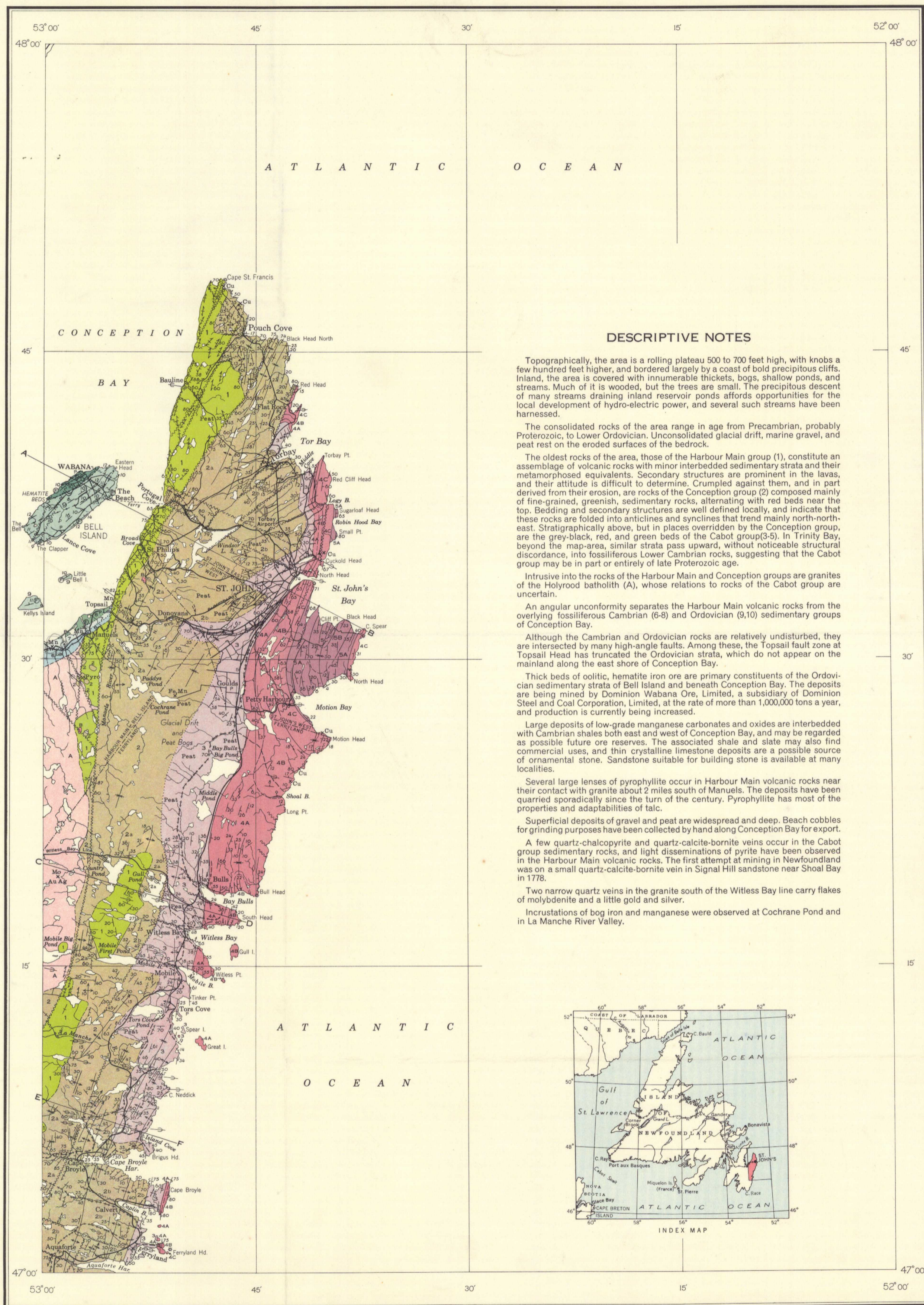
Geology by E. R. Rose, 1948 (for Geological Survey of Newfoundland) and 1949.

- Main highway.....
- Secondary highway.....
- Other roads.....
- Abandoned railway.....
- Post Office.....
- Lighthouse.....
- District boundary.....

Base-map prepared from maps published by the Department of Natural Resources, Newfoundland in 1942 and 1943, and from surveys by the Topographical Survey, 1950.

Cartography by the Geological Mapping Division, 1952

Approximate magnetic declination, 28° 36' West



DESCRIPTIVE NOTES

Topographically, the area is a rolling plateau 500 to 700 feet high, with knobs a few hundred feet higher, and bordered largely by a coast of bold precipitous cliffs. Inland, the area is covered with innumerable thickets, bogs, shallow ponds, and streams. Much of it is wooded, but the trees are small. The precipitous descent of many streams draining inland reservoir ponds affords opportunities for the local development of hydro-electric power, and several such streams have been harnessed.

The consolidated rocks of the area range in age from Precambrian, probably Proterozoic, to Lower Ordovician. Unconsolidated glacial drift, marine gravel, and peat rest on the eroded surfaces of the bedrock.

The oldest rocks of the area, those of the Harbour Main group (1), constitute an assemblage of volcanic rocks with minor interbedded sedimentary strata and their metamorphosed equivalents. Secondary structures are prominent in the lavas, and their attitude is difficult to determine. Crumpled against them, and in part derived from their erosion, are rocks of the Conception group (2) composed mainly of fine-grained, greenish, sedimentary rocks, alternating with red beds near the top. Bedding and secondary structures are well defined locally, and indicate that these rocks are folded into anticlines and synclines that trend mainly north-north-east. Stratigraphically above, but in places overridden by the Conception group, are the grey-black, red, and green beds of the Cabot group (3-5). In Trinity Bay, beyond the map-area, similar strata pass upward, without noticeable structural discordance, into fossiliferous Lower Cambrian rocks, suggesting that the Cabot group may be in part or entirely of late Proterozoic age.

Intrusive into the rocks of the Harbour Main and Conception groups are granites of the Holyrood batholith (A), whose relations to rocks of the Cabot group are uncertain.

An angular unconformity separates the Harbour Main volcanic rocks from the overlying fossiliferous Cambrian (6-8) and Ordovician (9,10) sedimentary groups of Conception Bay.

Although the Cambrian and Ordovician rocks are relatively undisturbed, they are intersected by many high-angle faults. Among these, the Topsail fault zone at Topsail Head has truncated the Ordovician strata, which do not appear on the mainland along the east shore of Conception Bay.

Thick beds of oolitic, hematite iron ore are primary constituents of the Ordovician sedimentary strata of Bell Island and beneath Conception Bay. The deposits are being mined by Dominion Wabana Ore, Limited, a subsidiary of Dominion Steel and Coal Corporation, Limited, at the rate of more than 1,000,000 tons a year, and production is currently being increased.

Large deposits of low-grade manganese carbonates and oxides are interbedded with Cambrian shales both east and west of Conception Bay, and may be regarded as possible future ore reserves. The associated shale and slate may also find commercial uses, and thin crystalline limestone deposits are a possible source of ornamental stone. Sandstone suitable for building stone is available at many localities.

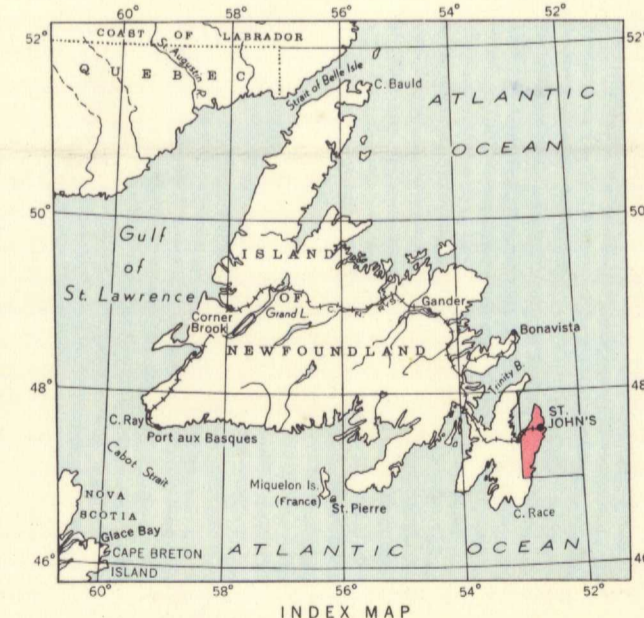
Several large lenses of pyrophyllite occur in Harbour Main volcanic rocks near their contact with granite about 2 miles south of Manuels. The deposits have been quarried sporadically since the turn of the century. Pyrophyllite has most of the properties and adaptabilities of talc.

Superficial deposits of gravel and peat are widespread and deep. Beach cobbles for grinding purposes have been collected by hand along Conception Bay for export.

A few quartz-chalcopyrite and quartz-calcite-bornite veins occur in the Cabot group sedimentary rocks, and light disseminations of pyrite have been observed in the Harbour Main volcanic rocks. The first attempt at mining in Newfoundland was on a small quartz-calcite-bornite vein in Signal Hill sandstone near Shoal Bay in 1778.

Two narrow quartz veins in the granite south of the Witless Bay line carry flakes of molybdenite and a little gold and silver.

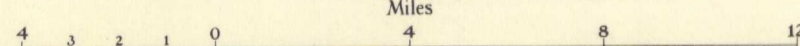
Incrustations of bog iron and manganese were observed at Cochrane Pond and in La Manche River Valley.



MAP 1018A

TORBAY  
NEWFOUNDLAND

Scale: One Inch to Four Miles = 1/253,440



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