

LEGEND

MISSISSIPPIAN AND/OR PENNSYLVANIAN
CANSO GROUP

8 Maroon to grey shale, sandstone, conglomerate;
few thin beds of dark grey, fossiliferous limestone

MISSISSIPPIAN
WINDSOR GROUP (probably includes some Canso group)

7 Grey, limy shale, sandstone; minor limestone

HORTON GROUP

6 Grey, micaceous conglomerate, sandstone, and shale

DEVONIAN OR EARLIER

5a, granite and pegmatite with numerous inclusions
5b, composite gneiss

4 Pink, leucocratic granite and pegmatite

3 Hornblende schist

1a, 1b mica schist, garnet-mica schist, metamorphosed
conglomerate, feldspathic sandstone and minor
silicic volcanic rocks 1b, crystalline limestone

2a, 2b staurolite-mica schist
2b, garnet-mica schist

Bedding (inclined, overturned, upper side of bed unknown).....
Foliation and schistosity (inclined, vertical).....
Direction and plunge of lineation.....
Anticlinal axis (arrow indicates direction of plunge).....
Synclinal axis (arrow indicates direction of plunge).....
Fault (defined, approximate, assumed
solid circle indicates downthrown side).....
Fossil locality.....
Mineral occurrence.....

MINERAL OCCURRENCES

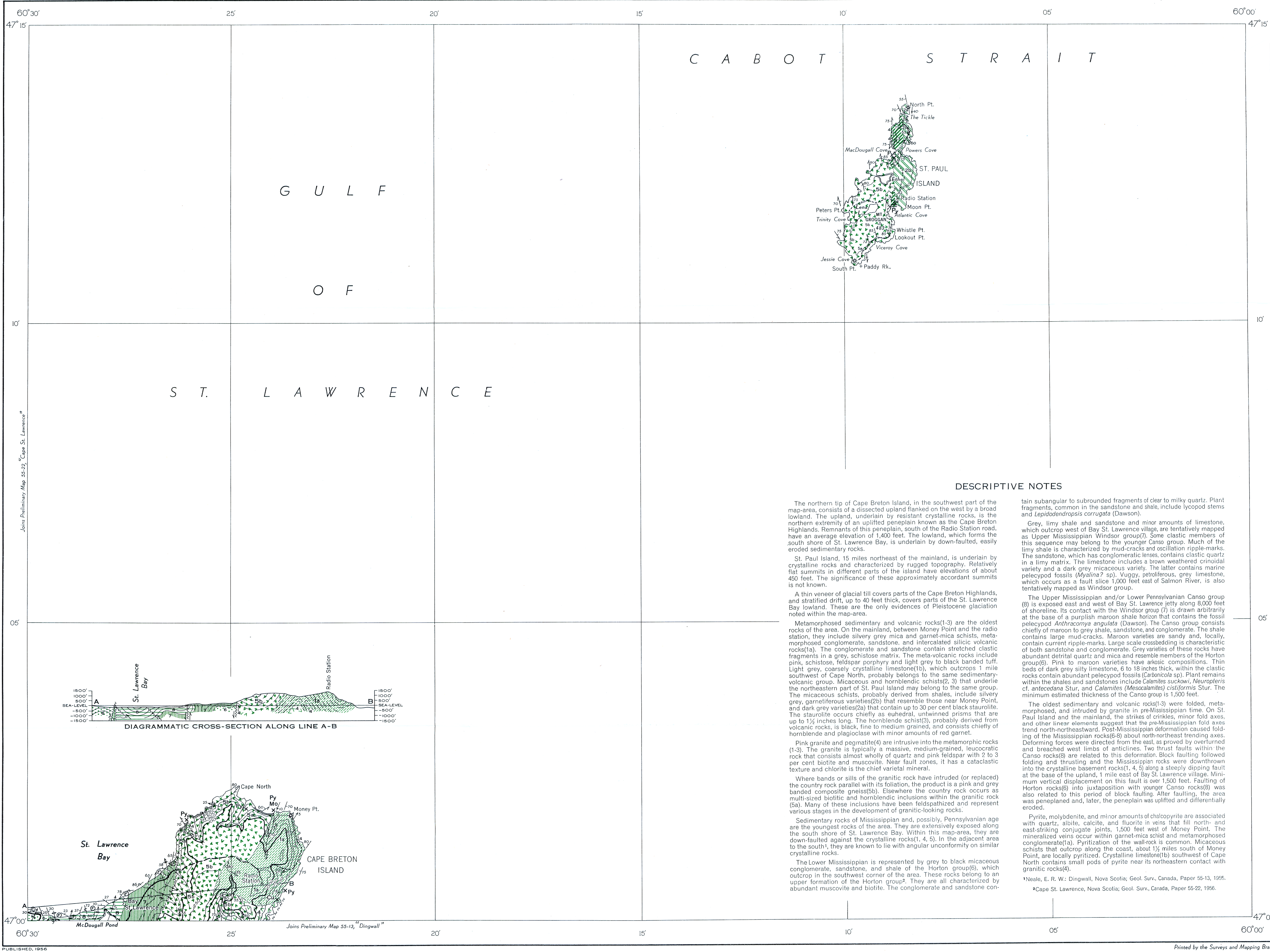
Copper.....Cu Molybdenite.....Mo
Pyrite.....Py

Geology by E. R. W. Neale, 1954

Road.....
Trail.....
Lighthouse.....
Triangulation station.....
Stream (intermittent).....
Cliff.....
Contours (interval 250 feet).....
Height in feet above mean sea-level.....

Approximate magnetic declination 26° 49' West

Cartography by the Geological Cartography Unit, 1956



DESCRIPTIVE NOTES

The northern tip of Cape Breton Island, in the southwest part of the map-area, consists of a dissected upland flanked on the west by a broad lowland. The upland, underlain by resistant crystalline rocks, is the northern extremity of an uplifted peneplain known as the Cape Breton Highlands. Remnants of this peneplain, south of the Radio Station road, have an average elevation of 1,400 feet. The lowland, which forms the south shore of St. Lawrence Bay, is underlain by down-faulted, easily eroded sedimentary rocks.

St. Paul Island, 15 miles northeast of the mainland, is underlain by crystalline rocks and characterized by rugged topography. Relatively flat summits in different parts of the island have elevations of about 450 feet. The significance of these approximately accordant summits is not known.

A thin veneer of glacial till covers parts of the Cape Breton Highlands, and stratified drift, up to 40 feet thick, covers parts of the St. Lawrence Bay lowland. These are the only evidences of Pleistocene glaciation noted within the map-area.

Metamorphosed sedimentary and volcanic rocks(1-3) are the oldest rocks of the area. On the mainland, between Money Point and the radio station, they include silvery grey mica and garnet-mica schists, metamorphosed conglomerate, sandstone, and intercalated silicic volcanic rocks(1a). The conglomerate and sandstone contain stretched clastic fragments in a grey, schistose matrix. The meta-volcanic rocks include pink, schistose, feldspar porphyry and light grey to black banded tuff. Light grey, coarsely crystalline limestone(1b), which outcrops 1 mile southwest of Cape North, probably belongs to the same sedimentary-volcanic group. Micaceous and hornblende schists(2, 3) that underlie the northeastern part of St. Paul Island may belong to the same group. The micaceous schists, probably derived from shales, include silvery grey, garnetiferous varieties(2b) that resemble those near Money Point, and dark grey varieties(2a) that contain up to 30 per cent black staurolite. The staurolite occurs chiefly as euhedral, unwinked prisms that are up to 1½ inches long. The hornblende schist(3), probably derived from volcanic rocks, is black, fine to medium grained, and consists chiefly of hornblende and plagioclase with minor amounts of red garnet.

Pink granite and pegmatite(4) are intrusive into the metamorphic rocks (1-3). The granite is typically a massive, medium-grained, leucocratic rock that consists almost wholly of quartz and pink feldspar with 2 to 3 per cent biotite and muscovite. Near fault zones, it has a cataclastic texture and chlorite is the chief varietal mineral.

Where bands or sills of the granitic rock have intruded (or replaced) the country rock parallel with its foliation, the product is a pink and grey banded composite gneiss(5b). Elsewhere the country rock occurs as multi-sized biotitic and hornblende inclusions within the granitic rock (5a). Many of these inclusions have been feldspathized and represent various stages in the development of granitic-looking rocks.

Sedimentary rocks of Mississippian and, possibly, Pennsylvanian age are the youngest rocks of the area. They are extensively exposed along the south shore of St. Lawrence Bay. Within this map-area, they are down-faulted against the crystalline rocks(1, 4, 5). In the adjacent area to the south, they are known to lie with angular unconformity on similar crystalline rocks.

The Lower Mississippian is represented by grey to black micaceous conglomerate, sandstone, and shale of the Horton group(6), which outcrop in the southwest corner of the area. These rocks belong to an upper formation of the Horton group². They are all characterized by abundant muscovite and biotite. The conglomerate and sandstone con-

tain subangular to subrounded fragments of clear to milky quartz. Plant fragments, common in the sandstone and shale, include lycopod stems and *Lepidodendropsis corrugata* (Dawson).

Grey, limy shale and sandstone and minor amounts of limestone, which outcrop west of Bay St. Lawrence village, are tentatively mapped as Upper Mississippian Windsor group(7). Some clastic members of this sequence may belong to the younger Canso group. Much of the limy shale is characterized by mud-cracks and oscillation ripple-marks. The sandstone, which has conglomeratic lenses, contains clastic quartz in a limy matrix. The limestone includes a brown weathered crinoidal variety and a dark grey micaceous variety. The latter contains marine pelecypod fossils (*Myalina?* sp). Vuggy, petroliciferous, grey limestone, which occurs as a fault slice 1,000 feet east of Salmon River, is also tentatively mapped as Windsor group.

The Upper Mississippian and/or Lower Pennsylvanian Canso group (8) is exposed east and west of Bay St. Lawrence jettly along 3,000 feet of shoreline. Its contact with the Windsor group (7) is drawn arbitrarily at the base of a purplish maroon shale horizon that contains the fossil pelecypod *Anthracomya angulata* (Dawson). The Canso group consists chiefly of maroon to grey shale, sandstone, and conglomerate. The shale contains large mud-cracks. Maroon varieties are sandy and, locally, contain current ripple-marks. Large scale crossbedding is characteristic of both sandstone and conglomerate. Grey varieties of these rocks have abundant detrital quartz and mica and resemble members of the Horton group(6). Pink to maroon varieties have arkosic compositions. Thin beds of dark grey silty limestone, 6 to 18 inches thick, within the clastic rocks contain abundant pelecypod fossils (*Carbonicola* sp). Plant remains within the shales and sandstones include *Calamites suckowi*, *Neuropteris cf. antedecana* Stur, and *Calamites (Mesocalamites) cistiformis* Stur. The minimum estimated thickness of the Canso group is 1,500 feet.

The oldest sedimentary and volcanic rocks(1-3) were folded, metamorphosed, and intruded by granite in pre-Mississippian time. On St. Paul Island and the mainland, the strikes of crinkles, minor fold axes, and other linear elements suggest that the pre-Mississippian fold axes trend north-northeastward. Post-Mississippian deformation caused folding and thrusting and the Mississippian rocks were downthrown into the crystalline basement rocks(1, 4, 5) along a steeply dipping fault at the base of the upland, 1 mile east of Bay St. Lawrence village. Minimum vertical displacement on this fault is over 1,500 feet. Faulting of Horton rocks(6) into juxtaposition with younger Canso rocks(8) was also related to this period of block faulting. After faulting, the area was peneplaned and, later, the peneplain was uplifted and differentially eroded.

Pyrite, molybdenite, and minor amounts of chalcopyrite are associated with quartz, albite, calcite, and fluorite in veins that fill north- and east-striking conjugate joints, 1,500 feet west of Money Point. The mineralized veins occur within garnet-mica schist and metamorphosed conglomerate(1a). Pyritization of the wall-rock is common. Micaceous schists that outcrop along the coast, about ½ miles south of Money Point, are locally pyritized. Crystalline limestone(1b) southwest of Cape North contains small pods of pyrite near its northeastern contact with granitic rocks(4).

¹Neale, E. R. W.: Dingwall, Nova Scotia, Geol. Surv., Canada, Paper 55-13, 1956.

²Cape St. Lawrence, Nova Scotia, Geol. Surv., Canada, Paper 55-22, 1956.

PRELIMINARY MAP 55-23

CAPE NORTH
VICTORIA COUNTY
CAPE BRETON ISLAND
NOVA SCOTIA

Scale: One Inch to One Mile = $\frac{1}{63,360}$

1 1/2 0 1 2 3
Miles

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

Printed by the Surveys and Mapping Branch

PRELIMINARY MAP 55-23

CAPE NORTH
NOVA SCOTIA
SHEET 11 ^N_T