CANADA
DEPARTMENT
OF
MINES AND TECHNICAL SURVEYS

GEOLOGICAL SURVEY OF CANADA

SHEET 11 K/9 (West Half)

LEGEND

PALÆOZOIC

MISSISSIPPIAN

WINDSOR GROUP

12	*Limestone, nodular limestone, shaly limestone, shale, arkosic sandstone, boulder conglomerate; gypsum, anhydrite*

HORTON GROUP

11	*Conglomerate, arkose, arkosic sandstone, shale*

DEVONIAN OR EARLIER

10	*Diabase, gabbro*
9	*Gabbro*
8	*Diorite, quartz diorite, minor granodiorite*
7	*Coarse-grained biotite granite*
6	*Gabbro*
5	*Porphyroblastic biotite granite*
4a, 4b	**4a,** *composite gneiss;* **4b,** *granite with numerous inclusions*
3a, 3b	**3a,** *leucocratic biotite granite, biotite-muscovite granite;* **3b,** *with numerous pegmatite dykes*
2A 2B	**2A,** *Crystalline limestone, quartzite, green chloritic schist, phyllite, slate* **2B,** *Andesite, rhyolite*
1a–1c	*Schists and gneisses, (probably highly metamorphosed equivalents of 2);* **1a,** *biotite schist;* **1b,** *hornblende gneiss;* **1c,** *garnetiferous biotite schist*

PRECAMBRIAN (?)

Geological boundary (approximate, assumed)
Heavily drift-covered area
Bedding (horizontal, inclined)
Foliation and schistosity (inclined)
Fault (assumed)
Fossil locality Ⓕ
Prospect shaft
Mineral occurrence × Py

MINERAL OCCURRENCES

Gold ..... Au *Gypsum* .... Gyp
Graphite ..... G *Pyrite* ..... Py

Geology by A. S. MacLaren, 1954

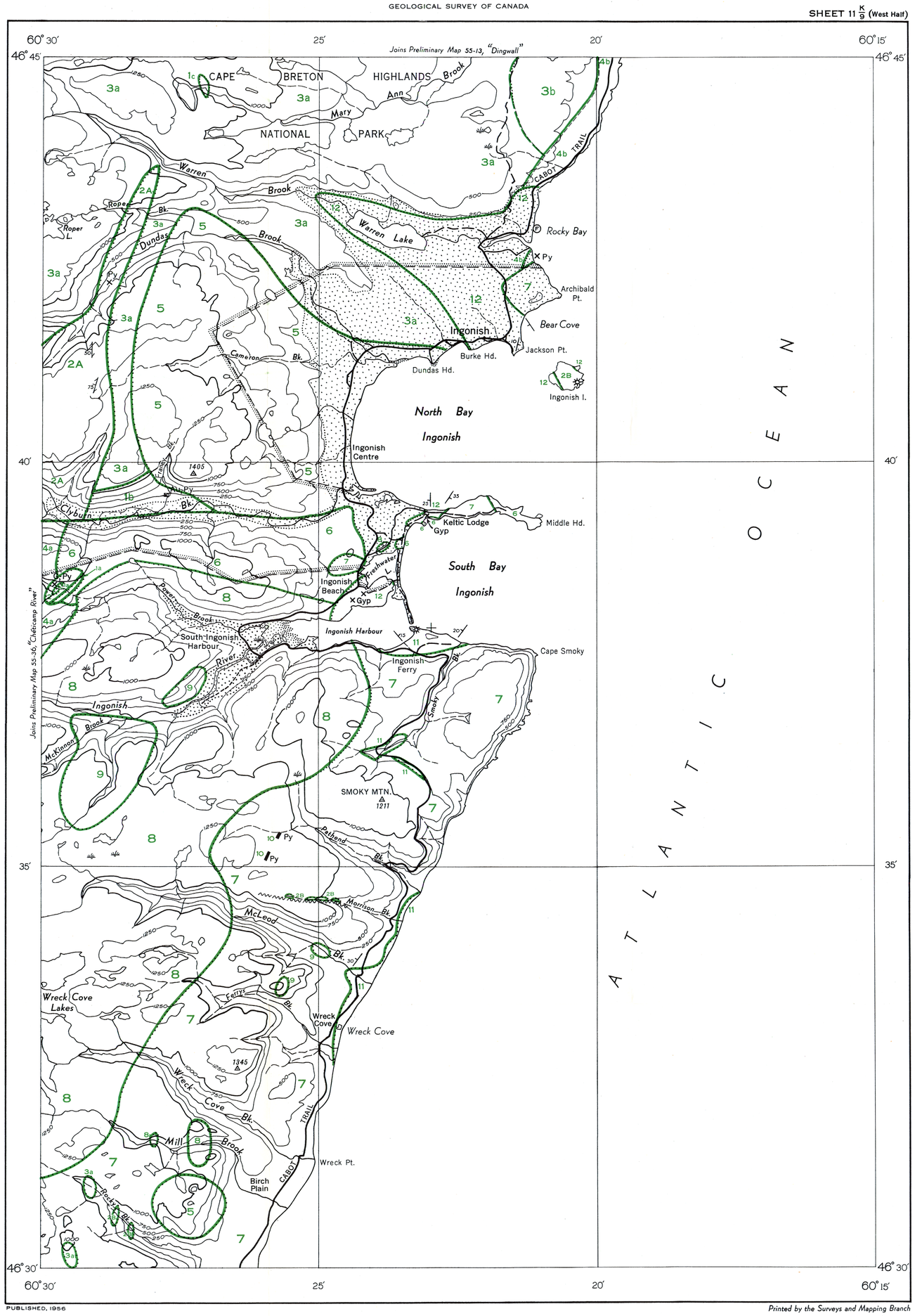
Main highway
Other roads
Trail
Lighthouse
Park boundary
Horizontal control point
Intermittent stream
Marsh
Sand or gravel
Contours (interval 250 feet)
Height in feet above mean sea-level 1345

Approximate magnetic declination, 26°37′ West

Cartography by the Geological Cartography Unit, 1956

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

INDEX MAP



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PRELIMINARY MAP 55-35

INGONISH

VICTORIA COUNTY
CAPE BRETON ISLAND
NOVA SCOTIA

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

Miles 1 ½ 0 1 2 3

DESCRIPTIVE NOTES

Ingonish map-area may be divided into a flat-topped tableland and a small area of coastal plain. The tableland is part of a larger, relatively flat surface covering the greater part of northern Cape Breton Island, believed to be a remnant of a Cretaceous peneplain[1]. This peneplain was uplifted and gently tilted to the south-east. The coastal plain lies between Ingonish and Ingonish Beach and extends up Clyburn Brook, Roper Brook, and Ingonish River. A narrow belt of coastal plain also extends along the Atlantic coast from Pathend Brook to the southern limit of the map-area.

The tableland lies, for the most part, above the 1,000-foot level and is essentially underlain by granite, diorite gneisses, and minor amounts of sedimentary and volcanic rocks preserved in small basins. The lowlands, on the other hand, are underlain partly by less resistant Mississippian rocks of Windsor age.

The schists (1a and 1c) are grey to greyish brown weathering rocks composed mainly of quartz, feldspar, and biotite with some zones containing red garnets. Amphibolite or hornblende gneiss (1b) is composed mainly of black hornblende and less than 10 per cent quartz and feldspar.

Andesite and rhyolite volcanic rocks (2B) and recrystallized sedimentary rocks (2A) overlie rocks of unit 1. Dark green andesite (2B) outcrops along a fault in Morrison Brook and in two small areas in Rocky Brook. Fine-grained, pink weathering rhyolite (2B) occurs in the central part of Ingonish Island where it underlies younger Windsor (12) limestone.

Younger crystalline limestone (2A) overlies mica schist and gneiss and is cut by quartz veins and granitic dykes. This limestone contains some graphite and pyrite. Black slate containing ptygmatically folded quartz veins forms the eastern part of the meta-sedimentary rocks on Clyburn Brook and in Roper Brook. Quartzite, green chloritic schist, and phyllite with some gneiss are intruded by small feldspar porphyry dykes on Clyburn Brook.

These sedimentary rocks dip steeply. They are cut by a fault that follows an east-flowing tributary of Clyburn Brook and is believed to continue eastward to the mouth of the main bruok.

The meta-sedimentary and meta-volcanic rocks (1, 2A, and 2B) are intruded by several types of acid and basic igneous rocks. Pink medium- to fine-grained, leucocratic, biotite granite and biotite-muscovite granite (3a) are the oldest.

The pegmatites in unit 3b are faintly radioactive but no radioactive minerals were observed. The maximum reading over the pegmatite area was two or three times the background count.

Intrusion of granite (3) into the sedimentary and volcanic rocks (1, 2) formed the composite gneisses (4) and the pink porphyroblastic granite (5). An end phase of this intrusive action was the formation of pegmatite dykes, which intrude both the leucocratic biotite granite (3a) and the porphyroblastic biotite granite (5).

The composite gneisses (4a) are essentially composed of quartz, feldspar, and biotite. Granite pegmatite, porphyroblastic biotite granite, and chloritic schist lenses occur in these gneisses. The chloritic schist lenses were probably derived from intermediate to basic volcanic rocks.

The porphyroblastic biotite granite (5) is typically pink in colour and massive. It contains large pink porphyroblasts of potash feldspar up to 3 inches long in a groundmass of quartz, albite-oligoclase, microcline, and biotite. It was not observed to cut the coarse-grained biotite granite (7) or the hornblende gneiss (1b). Because of this lack of intrusive relationships, the large microcline crystals, and the albite-oligoclase borders on these crystals, this rock is considered to be of metamorphic rather than intrusive origin.

A dark greenish black to grey-black gabbro (6) outcrops on Middle Head and along the south side of Clyburn Brook. This rock is composed of pyroxene and plagioclase feldspar and is intruded by gabbroic dykes (10) and aplite. The aplite is believed to be genetically related to the biotite granite (7).

Coarse-grained biotite granite (7) dips under the diorite and quartz diorite (8) and underlies gabbro (9) along McKinnon Brook. The granite is composed of quartz, feldspar, and less than 5 per cent biotite. In places it is nearly pegmatitic. The major constituents of rocks of unit 8 are amphibole and plagioclase feldspar with minor, variable amounts of quartz. Along Power Brook, hematite in the plagioclase colours the diorite pink and black.

Younger, dark green to black gabbro (9) outcrops along McKinnon Brook and overlies the diorite and quartz diorite (8).

The final phase of igneous activity in the map-area was the intrusion of gabbro dykes (10) and minor aplite dykes. These dykes intrude the diorite, quartz-diorite, gabbro, and amphibolite gneiss.

The youngest sedimentary rocks in the map-area belong to the Horton (11) and Windsor (12) groups of Mississippian age. The base of the Horton, on the south side of South Bay Ingonish, consists of a coarse detrital boulder conglomerate overlying the coarse biotite granite (7). It contains biotite granite blocks up to 8 feet in diameter and angular to subangular fragments of gneiss and volcanic rocks in a red arkosic matrix. To the west, outcropping along the Cabot Trail, red arkose and shales with prominent deoxidized spots occur on the west limb of a syncline in the Horton rocks. The rocks in this syncline are interpreted as plunging gently below gypsum (12) of Windsor age found on the north side of Ingonish Harbour. An outlier of red arkose is found along Smoky Brook at the Cabot Trail, and arkosic sandstone and some conglomerate occur along the Atlantic coast between Pathend Brook and Wreck Cove Brook. On the south side of Middle Head, arkosic sandstone, greyish brown micaceous limestone, and gypsum (12) of Windsor age overlie with apparent conformity pink feldspathic conglomerate of Horton age (11), the latter lying disconformably on Devonian or earlier rocks. At Rocky Bay and Bear Cove there is a succession of limestone, shaly limestone, and shales containing a band of nodular limestone and minor arkosic sandstone. Plant remains in the finely laminated shales at Rocky Bay are of Windsor age. A slump conglomerate or breccia outcrops for a distance of 456 feet along the sea-coast north of Warren Brook. This consists of angular to subangular blocks of limestone, shaly limestone, shale, and arkosic conglomerate. The fragments range in size from ½ inch to 3 feet. One small outcrop containing bands of shaly, impure coal was observed along the shore of Rocky Bay. Arkose and limestone containing crushed cephalopods occur in a small creek running into the centre of the north side of Warren Lake.

At least two ages of deformation have taken place in the map-area. The older caused the faulting along Clyburn Brook. A much younger deformation took place in post-Windsor time, causing folding and faulting of the Windsor rocks in Rocky Bay and Bear Cove. Faulting of the Windsor rocks probably belongs to this later stage of deformation.

Pleistocene deposits are found along the coastal plain, in Warren, Roper, Clyburn, Power, McLeod, Wreck Cove, and Mill Brooks, and Ingonish River. Gravel and sand banks range in height from a few feet to 50 feet along Roper and Power Brooks where both pre-glacial and present streams have cut through the deposits. From Warren Lake eastward a large sand plain covers most of the underlying bedrock.

Glacial ice left a thin unsorted mantle of till on the plateau. Precipitous, east-facing cliffs along the east coast, forming part of stoss-and-lee forms, suggest an ice movement from west to east across the eastern part of the plateau. The only clay noted was a bed 6 feet thick interbedded with gravel on Roper Brook.

Gold was found on Franey Brook near its junction with Clyburn Brook in 1910. Gabbro dykes exposed along the brook intrude hornblende gneiss. Quartz veins, ranging in width from 1 inch to 1 foot, also cut the gneiss. Some pyrite occurs in the gneiss adjacent to the quartz veins, but no visible gold was observed in them.

Crystalline limestone on a south-flowing tributary of Power Brook contains disseminated graphite and pyrite. This graphite is not of economic importance.

Gypsum occurs on Middle Head and on the north side of Ingonish Harbour. On Middle Head the gypsum is white and pink and overlies micaceous sandstone of Windsor age. East of Ingonish Beach old workings indicate that a considerable tonnage of gypsum was mined. Work ceased when diamond drill-holes bored to outline the extension of the deposit encountered anhydrite. At the present time gypsum in this area is not of economic importance.

[1]Goldthwait, J. W.: Physiography of Nova Scotia; Geol. Surv., Canada, Mem. 140, p. 41 (1924).

PRELIMINARY MAP 55-35
INGONISH
NOVA SCOTIA
SHEET 11 K/9 (West Half)

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