

G.A.C. FALL 1978 TRIP

DAY 1 Saturday, October 14th

Mileage measured from TCH - Bay D'Espoir Highway intersection (multiply by 8/5 for metric).

STOP 1

(3 miles) Silurian Botwood Group; red and green ripple marked sandstone and shale.

Between Stops 1 and 2, we drive down the west flank of the Mount Peyton intrusion; aureole rocks are exposed at the 13.9 mile mark in stream section (no stop).

STOP 2

(35.2 miles) Great Bend Ultramafic Body; Dr. D. F. Strong will say a few words.

STOP 3

(40.1 miles) Ordovician or Silurian conglomerate; relationships of this outcrop not known, but it resembles conglomerate found in the northern part of the Baie D'Espoir Group. Pebbles range from granite to serpentine (?).

STOP 4

(73.4 miles) Ordovician Twillick Brook felsic pyroclastic member of St. Joseph's Cove Formation, Baie D'Espoir Group: note lensoid development at south end of pit; interdigitates with graphitic pelite on west side of road just south of pit; on east side of road is the "Melange on the Bay D'Espoir Highway" mentioned by Williams, Kennedy and Neale in "Tectonic Styles in Canada".

STOP 5

(76.8 miles) Ordovician St. Joseph's Cove Formation, Bay D'Espoir Group: fine grained, "distal" turbidites;  $S_1$  slaty cleavage sub-parallel to beds, folded by open recumbent  $F_2$  folds; poorly developed, flat-lying  $S_2$  crenulation cleavage in pelitic beds. If you're lucky, you may find an  $F_1$  fold; if you do, look for evidence of soft sediment deformation.

TURN LEFT ON HARBOUR BRETON ROAD

STOP 6

(81.4 miles) Ordovician Riches Island Formation, Bay D'Espoir Group: mainly pelite with thin siltstone beds.  $S_2$  becoming more prominent (dips moderately to SE). Good chance here of finding  $F_1$  folds.

STOP 7

(87.4 miles) Ordovician Isle Galet Formation, Baie D'Espoir Group: hornblende schist with  $F_2$  crenulation lineation on  $S_1$ ; interbedded with quartz-sericite schist (felsic tuff) and graphitic schist.

STOP 8

(88.9 miles) Ordovician Isle Galet Formation, Baie D'Espoir Group; felsic tuff with minor hornblende schist; well deformed near contact with gneisses to southeast; this is the most common volcanic lithology of the Baie D'Espoir Group; the man from Falconbridge will say a word.

STOP 9

(89.9 miles) Ordovician Baie D'Espoir Group: this is the basal fault, slide, detachment zone (or whatever you like to call it) of the Baie D'Espoir Group, attributed to the second deformation; consists principally of incompetent graphitic and sericite schists with pieces of amphibolite; this rock overlies the gneisses which occur to the southeast; notice the topographic depression (looking to the north-east) which marks the fault and the change in vegetation across it. Disbelievers will find the coastal section in Bay D'Espoir more convincing; book early for next summer!

STOP 10

(90.7 miles) Paragneiss of the Little Passage Gneisses, age unknown: composed essentially of quartz and a mica, with accessory feldspar, garnet, tourmaline, and locally staurolite and sillimanite; notice complex folding and lack of primary structures.

STOP 11

(92.1 miles) Foliated diorite, faulted against and also intrusive into gneiss; grades southwestward into Gaultois Granite, a typical Gander Zone foliated magacrystic granite; note veins of garnet-tourmaline granite.

STOP 12

(93.4 miles) Hornblende gabbro cut by garnet - tourmaline granite veins; gabbro may be a variation of diorite at last stop, but is only exposed in the road cut, so affinities uncertain.

STOP 13

(97 miles) Equigranular, garnetiferous granite with moderate fabric; both biotite and muscovite varieties; cut by garnet and tourmaline pegmatites and by zones of brecciation.

At approximately the 103 mile mark, as the road runs down towards the south shore of Hermitage Bay, we cross the Hermitage Bay Fault into the Avalon Zone and head for Harbour Breton. If time allows, we will look at the fault zone on Day 1.



BAY

BENTON INTRUSION

INCLINED METAMORPHIC ROCKS

DOMINANTLY VOLCANIC ROCKS

- STOP 1
- STOP 2
- STOP 3
- STOP 4
- STOP 5
- STOP 6
- STOP 7
- STOP 8
- STOP 9
- STOP 10
- STOP 11
- STOP 12
- STOP 13
- STOP 14
- STOP 15

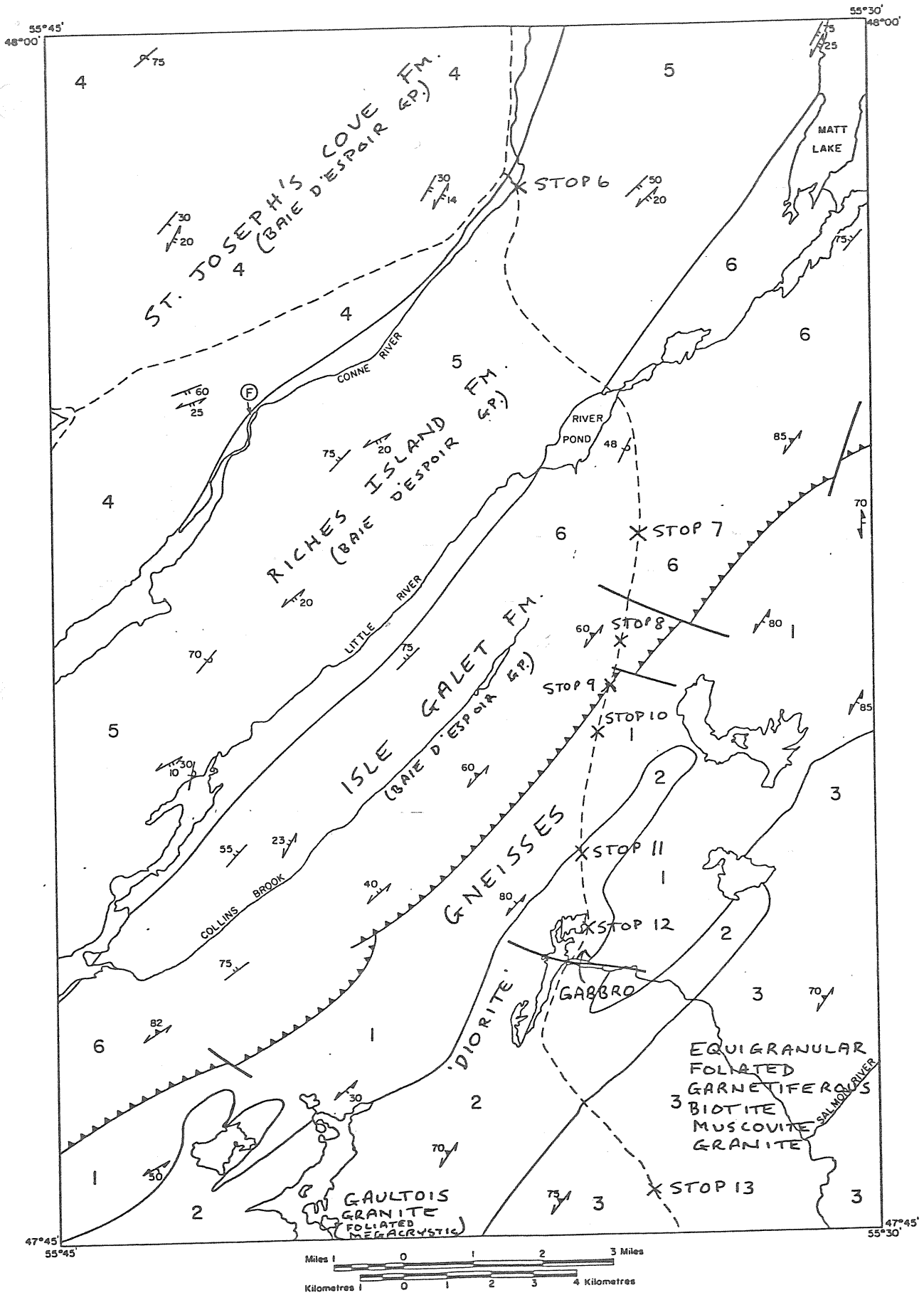


Fig.1 St. Alban's East Half Geological Sketch Map

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DAY 2 Sunday, October 15th

STOP 1

Mafic pyroclastics and flows of the Doughball Point Formation, Connaigre Bay Group.

STOP 2

Finely laminated green-grey argillite with scattered limestone lenses of the Sam Head Formation, Connaigre Bay Group. This formation conformably underlies the volcanics of Stop 1.

STOP 3

Silicic and minor mafic volcanics of the Tickle Point Formation, the lowermost formation of the Connaigre Bay Group. This formation conformably underlies the sediments of Stop 2. Contact is not exposed in this area.

STOP 4

Small outcrop of the red sandstones of Downs Point Formation which forms the uppermost unit of the Connaigre Bay Group.

STOP 5

Red conglomerate which is close to the base of the Sam Head Formation, Connaigre Bay Group. Here the basal contact is not exposed but inland, near the core of the syncline, the conglomerate can be seen to overlie purple rhyolite breccia of the Tickle Point Formation.

STOP 6

Contact area of the Hermitage Bay Complex and the Connaigre Bay Groups. The Hermitage Bay Complex intrudes, agmatizes and migmatizes the volcanic rocks of the Connaigre Bay Group. Contact migmatites are well exposed at this locality and inclusions range from angular to partially melted and aligned fragments, to almost completely resorbed fragments which are evidenced as dark bands in a dioritic matrix.

STOP 7

Straddling Granite. This intrusive body intrudes rocks of the Gander and Avalon Zones. It has been radiometrically dated by whole rock Rb/Sr and has yielded an age of  $490 \pm 10$  million years, thus providing an early Paleozoic linkage between the two zones. The Straddling Granite has been cataclastically deformed and brecciated by the Hermitage Bay Fault, indicating main movement along the fault to be post-Ordovician.

STOP 8

Hermitage Bay Fault. A 50 - 100 metre wide zone of brecciation which forms the Gander - Avalon Zone boundary in this part of Newfoundland. The fault zone contains sub-angular to rounded fragments of disoriented foliated Gander Zone rocks and unfoliated Avalon Zone rocks in a fine-grained matrix of crushed granitic and volcanic rocks.

STOP 9

The Simmons Brook Batholith. A pre-Devonian intrusion consisting of gabbro, diorite and granodiorite. It has been postulated that the Straddling Granite is a silicic phase of this intrusion. At this stop, granodiorite is exposed exhibiting a faint foliation. Nearby, it is intruded by late Devonian granite (Harbour Breton Granite).

STOP 10

Nonconformity between the Simmons Brook and the Devonian Pool's Cove Formation. Here the sedimentary rocks consist mainly of arkosic conglomerate with clasts of Simmons Brook Batholith.

STOP 11

Pool's Cove conglomerate with clasts showing a variety of lithologies, including some similar to those of the Gander Zone.

STOP 12

Harbour Breton Granite. This body intrudes the Pools Cove Formation and is probably late Devonian - lower Carboniferous in age. It consists of pink - orange alaskite to granite. Here the rocks show some evidence of mineralization with some fluorite, and if blasting hasn't removed too much, also some molybdenite and chalcopyrite in quartz - filled vugs.

LEGEND

GANDER ZONE

AVALON ZONE

DEVONIAN

- 18 BELLEORAM GRANITE: medium to coarse grained, gray to pink granite, with numerous small dark inclusions
- 16 HARBOUR BRETON GRANITE: medium to coarse grained, pink, alaskitic granite; 16a - medium to coarse grained, pink, porphyritic, biotite granite

- 17 PASS ISLAND GRANITE: medium to coarse grained, pink, hornblende-biotite granite

DEVONIAN OR EARLIER

- 15 POOLS COVE FORMATION: red arkose, red shale, red to gray pebble to boulder conglomerate
- 14 CINQ ISLES FORMATION: red, micaceous, cross-bedded sandstone, red argillite, quartz pebble conglomerate, red and gray micritic limestone

ORDOVICIAN OR EARLIER

- C Medium grained, equigranular, pink feldspar granite, with local development of minor muscovite; probably equivalent to Unit 11 in Avalon Zone

ORDOVICIAN OR EARLIER STRADDLING GRANITE

- 11 Medium grained, pink to gray, alaskitic granite, altered hornblende-biotite granite and granodiorite; may include some Harbour Breton Granite; probably equivalent to Unit C in Gander Zone
- 10 SIMMONS BROOK BATHOLITH: medium grained, equigranular, altered hornblende-biotite granodiorite; includes some porphyritic, pink to red, alaskitic and hornblende-biotite granite

HERMITAGE COMPLEX (12-13) (may be in part or entirely equivalent to Units 9-11)

- 13 Medium grained, pink, hornblende-biotite granite

- 9 Fine to medium grained, dark gray to green diorite, medium to coarse grained hornblende-pyroxene gabbro

- 12 Dark gray quartz diorite to diorite with hornfelsed volcanic inclusions, medium to coarse grained, black, hornblende-pyroxene gabbro, numerous basic and silicic dykes

CAMBRIAN

- 8 SALMONIER COVE FORMATION: black, fissile shales, minor fine-grained gray sandstone

CAMBRIAN OR EARLIER

- 7 CHAPEL ISLAND FORMATION: interbedded gray, micaceous argillite and fine-grained gray sandstone; mainly hornfelsed

PRECAMBRIAN

PRECAMBRIAN (?)

- B Foliated fine to medium grained muscovite granite; contains undivided zones of biotite-muscovite granite

- A GAULTOIS GRANITE: foliated, porphyritic granite and granodiorite. Possible equivalents are: Aa - foliated, porphyritic quartz diorite with local pink feldspar megacrysts; Ab - foliated porphyritic, pink feldspar, biotite-chlorite granite

LONG HARBOUR GROUP (1-2)

- 2 RENCONTRE FORMATION: medium to coarse grained, pink to purple, crossbedded sandstone and pebble conglomerate, with interbedded red micaceous sandstone and siltstone; 2a - hornfelsed dark gray, thinly bedded gray argillite and sandstone, minor quartz pebble conglomerate
- 1 Pink, flow banded, autobrecciated rhyolite, gray to green basic tuffs, red agglomerate; 1a - fine grained, dense, gray hornfels, probably derived largely from basic volcanics

CONNAIGRE BAY GROUP (3-6) (may be in part or entirely equivalent to Units 1-2) DOWNS PT. FM.

- 6 Red to purple, graded and cross-bedded sandstone and pebble to cobble conglomerate, red, thinly laminated argillite; 6a - pink to purple, massive rhyolite and silicic tuffs

- DOUGHBALL PT. FM.
- 5 Gray to green, massive andesite and basalt, green, fine to coarse, basic tuffs and agglomerates, minor interbedded silicic flows and tuffs

- SAM HEAD FM.
- 4 laminated, gray and green argillite, with purple conglomerate and shale at the base, occasional limestone lenses; 4a - interbedded basic tuffs and thinly bedded tuffaceous sediments

- TICKLE PT. FM.
- 3 Purple to pink, massive flow banded and autobrecciated rhyolite; interbedded massive green andesite and basalt

