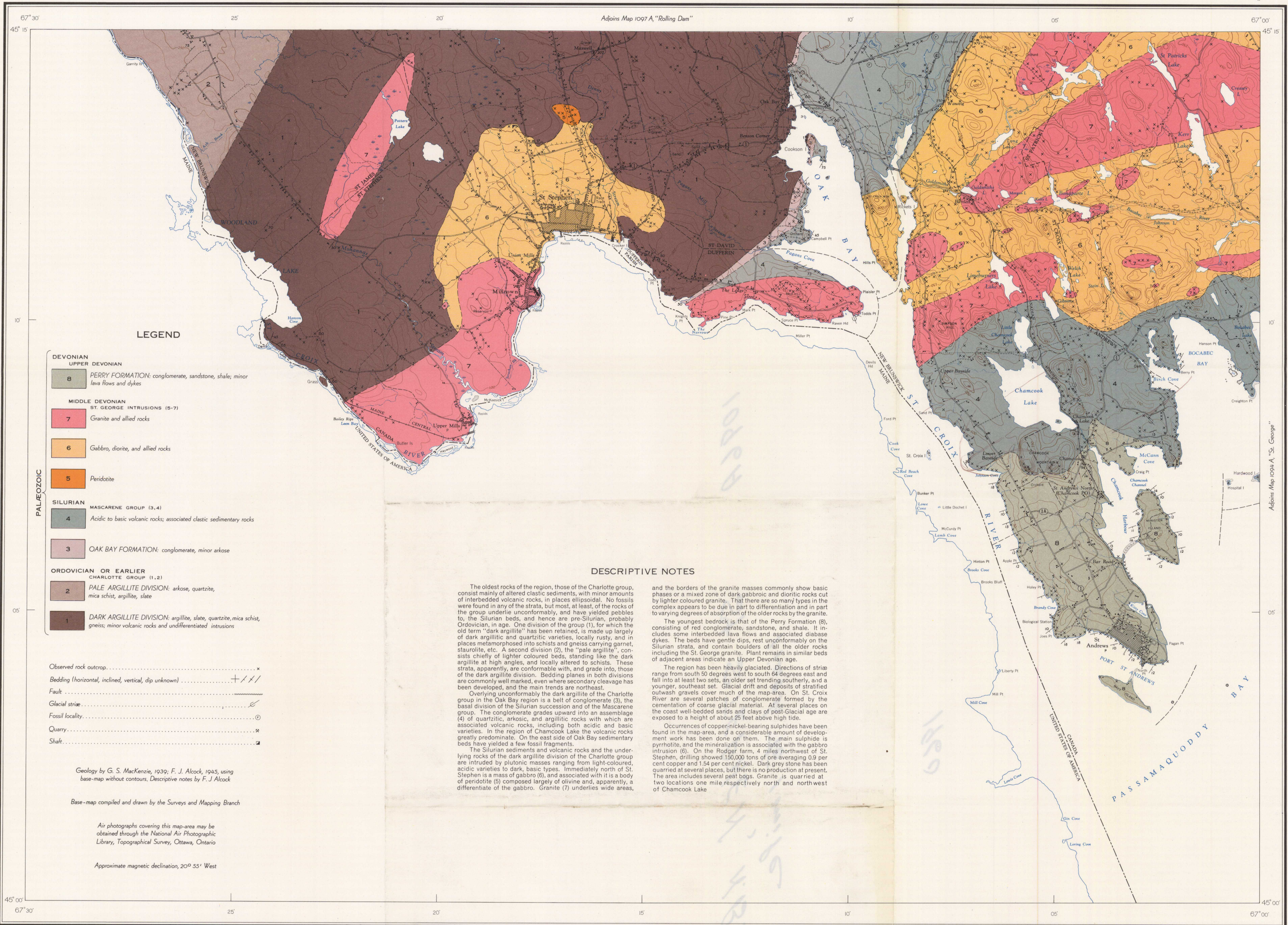




Adjoins Map 1097 A, "Rolling Dam"



LEGEND

- DEVONIAN**
- UPPER DEVONIAN**
- 8 PERRY FORMATION: conglomerate, sandstone, shale; minor lava flows and dykes
- MIDDLE DEVONIAN**
- 7 ST. GEORGE INTRUSIONS (5-7)  
Granite and allied rocks
- 6 Gabbro, diorite, and allied rocks
- 5 Peridotite
- SILURIAN**
- MASCARENE GROUP (3, 4)
- 4 Acidic to basic volcanic rocks; associated clastic sedimentary rocks
- 3 OAK BAY FORMATION: conglomerate, minor arkose
- ORDOVICIAN OR EARLIER**
- CHARLOTTE GROUP (1, 2)
- 2 PALE ARGILLITE DIVISION: arkose, quartzite, mica schist, argillite, slate
- 1 DARK ARGILLITE DIVISION: argillite, slate, quartzite, mica schist, gneiss; minor volcanic rocks and undifferentiated intrusions

- Observed rock outcrop ..... x
- Bedding (horizontal, inclined, vertical, dip unknown) ..... + //
- Fault ..... - - - - -
- Glacial striae ..... /
- Fossil locality ..... ⊙
- Quarry ..... x
- Shaft ..... ▬

Geology by G. S. MacKenzie, 1939; F. J. Alcock, 1945, using base-map without contours. Descriptive notes by F. J. Alcock

Base-map compiled and drawn by the Surveys and Mapping Branch

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

Approximate magnetic declination, 20° 55' West

DESCRIPTIVE NOTES

The oldest rocks of the region, those of the Charlotte group, consist mainly of altered clastic sediments, with minor amounts of interbedded volcanic rocks, in places ellipsoidal. No fossils were found in any of the strata, but most, at least, of the rocks of the group underlie unconformably, and have yielded pebbles to, the Silurian beds, and hence are pre-Silurian, probably Ordovician, in age. One division of the group (1), for which the old term "dark argillite" has been retained, is made up largely of dark argillitic and quartzitic varieties, locally rusty, and in places metamorphosed into schists and gneiss carrying garnet, staurolite, etc. A second division (2), the "pale argillite", consists chiefly of lighter coloured beds, standing like the dark argillite at high angles, and locally altered to schists. These strata, apparently, are conformable with, and grade into, those of the dark argillite division. Bedding planes in both divisions are commonly well marked, even where secondary cleavage has been developed, and the main trends are northeast.

Overlying unconformably the dark argillite of the Charlotte group in the Oak Bay region is a belt of conglomerate (3), the basal division of the Silurian succession and of the Mascarene group. The conglomerate grades upward into an assemblage (4) of quartzitic, arkosic, and argillitic rocks with which are associated volcanic rocks, including both acidic and basic varieties. In the region of Chamcook Lake the volcanic rocks greatly predominate. On the east side of Oak Bay sedimentary beds have yielded a few fossil fragments.

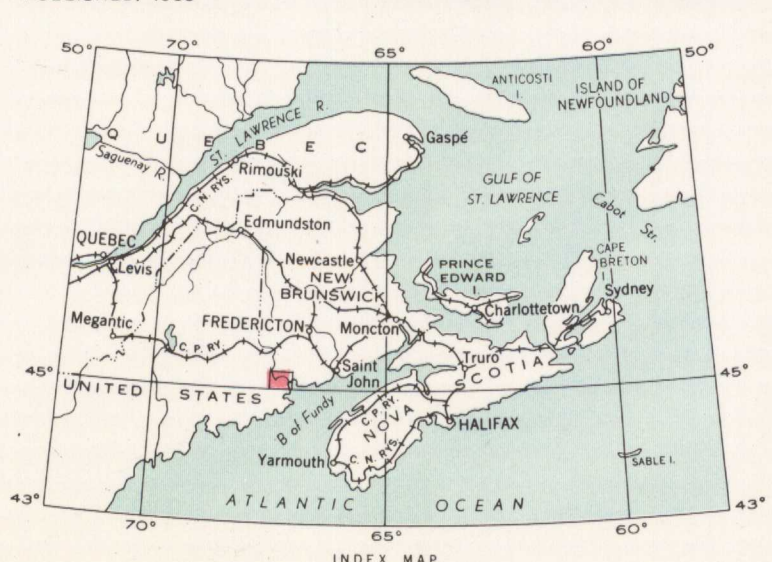
The Silurian sediments and volcanic rocks and the underlying rocks of the dark argillite division of the Charlotte group are intruded by plutonic masses ranging from light-coloured, acidic varieties to dark, basic types. Immediately north of St. Stephen is a mass of gabbro (6), and associated with it is a body of peridotite (5) composed largely of olivine and, apparently, a differentiated of the gabbro. Granite (7) underlies wide areas,

and the borders of the granite masses commonly show basic phases or a mixed zone of dark gabbroic and dioritic rocks cut by lighter coloured granite. That there are so many types in the complex appears to be due in part to differentiation and in part to varying degrees of absorption of the older rocks by the granite.

The youngest bedrock is that of the Perry Formation (8), consisting of red conglomerate, sandstone, and shale. It includes some interbedded lava flows and associated diabase dykes. The beds have gentle dips, rest unconformably on the Silurian strata, and contain boulders of all the older rocks including the St. George granite. Plant remains in similar beds of adjacent areas indicate an Upper Devonian age.

The region has been heavily glaciated. Directions of striae range from south 50 degrees west to south 64 degrees east and fall into at least two sets, an older set trending southerly, and a younger, southeast set. Glacial drift and deposits of stratified outwash gravels cover much of the map-area. On St. Croix River are several patches of conglomerate formed by the cementation of coarse glacial material. At several places on the coast well-bedded sands and clays of post-glacial age are exposed to a height of about 25 feet above high tide.

Occurrences of copper-nickel-bearing sulphides have been found in the map-area, and a considerable amount of development work has been done on them. The main sulphide is pyrrhotite, and the mineralization is associated with the gabbro intrusion (6). On the Rodger farm, 4 miles northwest of St. Stephen, drilling showed 150,000 tons of ore averaging 0.9 per cent copper and 1.54 per cent nickel. Dark grey stone has been quarried at several places, but there is no production at present. The area includes several peat bogs. Granite is quarried at two locations one mile respectively north and northwest of Chamcook Lake



MAP 1096A  
GEOLOGY  
**ST. STEPHEN**  
CHARLOTTE COUNTY  
NEW BRUNSWICK

Scale: One Inch to One Mile =  $\frac{1}{63,360}$   
Miles 1 1/2 0 2 3

COPIES OF THIS MAP MAY BE OBTAINED FROM THE DIRECTOR, GEOLOGICAL SURVEY OF CANADA, OTTAWA

- REFERENCE
- Main highway ..... =
  - Road and buildings ..... =
  - Road not well travelled ..... =
  - Cart track ..... =
  - Trail ..... =
  - Bridges (road, railway) ..... =
  - Power transmission line ..... =
  - Church ..... =
  - School ..... =
  - Post Office ..... =
  - Cemetery ..... =
  - Lighthouse ..... =
  - Bench-mark ..... =
  - International boundary ..... =
  - Parish boundary ..... =
  - Intermittent stream ..... =
  - Marsh ..... =
  - Shoreline flats ..... =
  - Foreshore (interval 50 feet) ..... =
  - Height in feet above mean sea-level ..... =

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