

LEGEND

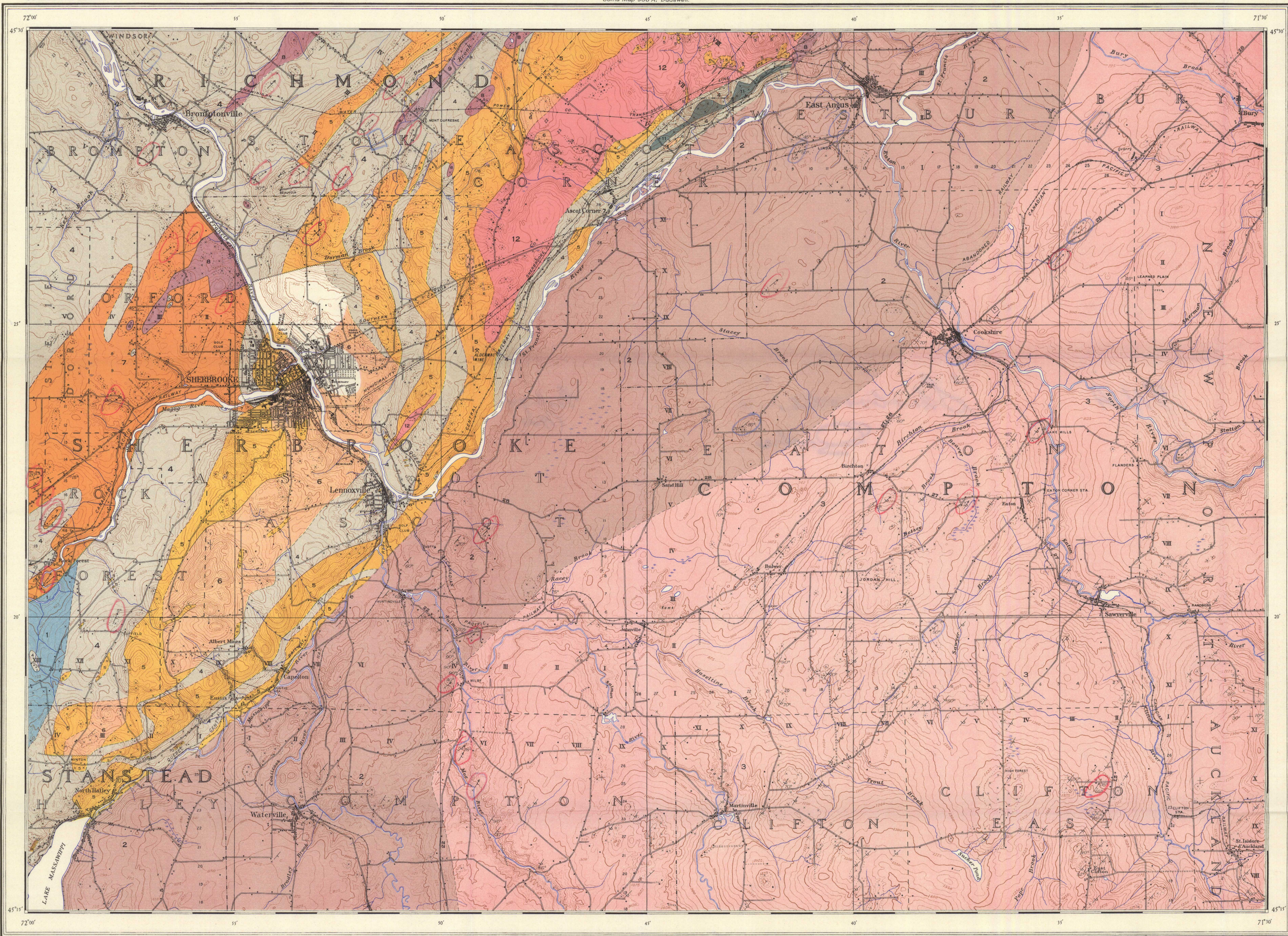
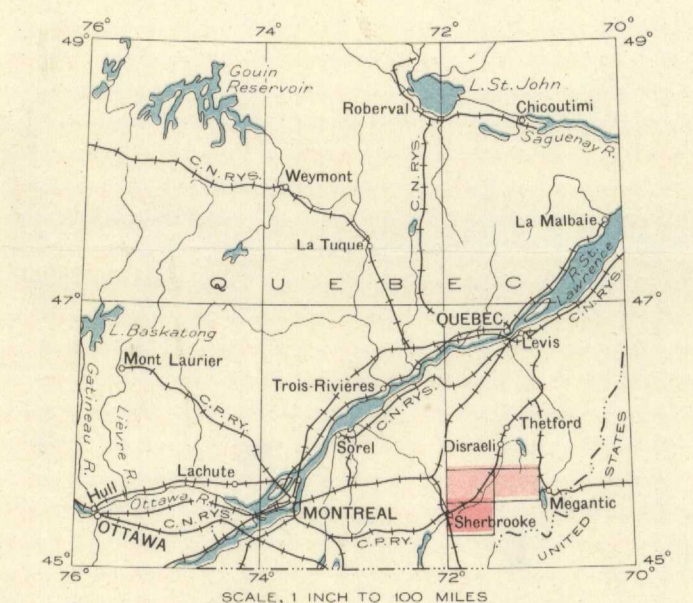
- DEVONIAN (?)**
- 12 Granite
- 11 Gabbro
- 10 Anorthosite and anorthositic gabbro
- DEVONIAN**
- LOWER DEVONIAN**
- LAKE AYLMER GROUP
- 9 Limestone
- 8 Conglomerate and quartzite
- SILURIAN (?)**
- SHERBROOKE GROUP
- 7 Conglomerate, rhyolite, tuff or grit, quartzite, slate
- ORDOVICIAN**
- BEAUCVILLE GROUP**
- 6 Basalt, andesite
- 5 Rhyolite, coarse rhyolitic agglomerate, gritty tuff
- 4 Thin-bedded black slates and brownish silty slates, some quartzites and tuffaceous beds in places
- ST. FRANCIS GROUP**
- 3 Thick quartzites, slates
- 2 Impure dark limestone, limy slate and limy quartzite
- CAMBRIAN (?)**
- CALDWELL GROUP
- 1 Quartzite, grey slates, metamorphic equivalents

- Rock outcrop, area of outcrop
- Bedding (strike and top of bed, overturned, horizontal, arrow, where present, indicates direction of plunge)
- Fault
- Anticlinal axis
- Synclinal axis

Geology by H. C. Cooke, 1945.
Cartography by the Drafting and Reproducing Division, 1947.

- Main highway
- Road and buildings
- Road not well travelled
- Trail
- Power line
- Church
- School
- Post Office
- Cemetery
- County boundary
- Township boundary
- Marsh
- Contours (interval 25 feet)
- Height in feet above mean sea-level

Base-map surveyed and drawn by the Geographical Section, General Staff, Department of National Defence, 1914, revised 1940.



MAP 911A
SHERBROOKE
QUEBEC

Scale, 63,360 or 1 inch to 1 mile

Approximate magnetic declination, 18°09' West.

DESCRIPTIVE NOTES

In Ordovician time the Eastern Townships area of Quebec extended much farther to the southeast than at present. Its relief was low, and the surface close to sea-level. At times gentle downwarping of the surface allowed the sea to invade parts of it; at other times, reverse movements uplifted and drained these basins while creating others. It is probable that the basins were long narrow gulfs with northeast trends. Sedimentation in these troughs gave rise to distinctive groups of strata of no great difference in age.

In fairly late Ordovician time the rocks were closely folded and intensely faulted. Great northeast-trending overthrusts cut the region into fault slices; and the mountain-building forces, pushing from the southeast, drove these segments over one another for distances, probably, of many miles.

A long period of erosion followed, lasting through the remainder of the Ordovician and practically all of Silurian time. The Ordovician mountains were worn down to sea-level, and new troughs formed in which Lower Devonian, and possibly some late Silurian, sediments were deposited. About Middle Devonian time folding was renewed, more movement took place on the old faults, and new faults were formed. The great bends that now characterize some of the old faults may have been formed during the period of Devonian deformation.

The net result of these processes was to telescope the former area of Ordovician sedimentation into the present much narrower area, which now consists of a succession of long, narrow fault slices, each comprising a fairly definite succession of strata that bear little resemblance to those in the adjoining slices.

One of the through-going faults passes northeasterly through the middle of Sherbrooke area, which thus displays parts of two fault slices. The fault follows the valley of Massawippi Lake and River to Lennoxville, and continues up St. Francis Valley, leaving it where it bends eastward to East Angus. The southeast side of the fault is upthrown, or overthrust.

The St. Francis group of Middle Ordovician strata lies on the southeast side of the fault, and though fairly closely folded, appears to have a general southeasterly dip. At the fault, the rocks are dark impure limestones interbedded with limy slates and quartzites (2). These beds form a band 3 to 5 miles wide, and are overlain to the boundaries of the map-area by the non-limy part of the group, a rather monotonous succession of thick-bedded slates and impure quartzites (3).

Northwest of the fault is the Beauceville group, also of Middle Ordovician age. In the northwest corner of the map-area these beds resemble in every particular the Beauceville of other parts of the Eastern Townships, that is, they are thin beds of black slate interbedded with equally thin beds of brownish siltstone, greywacke, or impure quartzite. As the fault is approached, however, volcanic rocks (5, 6) appear in the series. Many of these are explosive types, grading from coarse agglomerates down to fine, black, slaty tuffs, but others are flows. Most of the volcanic rocks are rhyolitic in composition (5), but more basic types (6) also are present. All these rocks are strongly sheared close to the fault, and become less so with increasing distance from it.

A body of granite (12) about 6 miles long and a mile wide intrudes the lavas at the north boundary of the map-area, and may extend into the Dudswell area. At the north boundary, the granite appears to be barely unroofed, as rhyolite outcrops on the hilltops whereas the intervening valleys are in granite. Granite dykes are numerous in the southern part of the Stoke Mountains to the north, and seem to indicate that the main intrusive body lies at no great depth below.

In the northwestern part of Sherbrooke area, scattered outliers of Lower Devonian rocks (8, 9) in places overlie the Beauceville with great structural unconformity. In other places the strata beneath them belong to the newly-discovered Sherbrooke group, and where contacts have been found neither erosional nor structural unconformity has been detected, although the basal member of the Devonian is always a coarse conglomerate. Both groups of strata have prevalently low dips, 25 degrees or less. It would therefore appear that where the Sherbrooke group was laid down, deposition continued into the Lower Devonian with little or no break; and the age of the Sherbrooke group is therefore inferred to be probably fairly late Silurian.

Numerous deposits of copper ore have been found in the sheared Beauceville lavas, most of them within a mile of the principal fault, though a few at greater distances. The best of them was the Eustis, which was mined from 1866 to 1937. Apart from these, however, the area holds little of economic interest. Gravel deposits are numerous, and have been largely used for road and railroad construction.

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