

- LEGEND**
- PLEISTOCENE AND RECENT WISCONSIN AND YOUNGER**
- 8 BOG DEPOSITS: chiefly peat and muck
 - 7 ALLUVIAL DEPOSITS: medium to fine sand, some gravel; contains some disseminated organic matter in many places; modern flood plains and recently abandoned channels and terraces
 - 6 HIGH TERRACE SANDS: chiefly fine to medium sand; on abandoned terraces, channels etc. of high stages of ancestral St. Lawrence River and its tributaries
 - 5 CRÊTE DE COQ SANDS: aeolian sand deposits in elongate sharp-crested dunes developed on abandoned strands
 - 4 CHAMPLAIN SEA SANDS: sands and gravels occurring in abandoned beach ridges, spits, lag gravels and off shore sand flats; fossiliferous in many localities
 - 3 CHAMPLAIN SEA CLAYS: generally massive, soft grey clays and silty clays, in some places with fine sand partings; foraminiferal microfossils common in the clays, pelecypods in sand partings
 - 2 GENTILLY TILL: grey calcareous sandy till; 2a, reworked grey till comprising lag gravel and sand grading downward into grey till; contains some fossils
 - 1 EARLY AND PRE-WISCONSIN BECANCOUR TILL: brick-red calcareous sandy silt till; 1a, reworked red till comprising lag gravel and sand grading downward into red till; contains some fossils

- BEDROCK**
- R Chiefly red shale

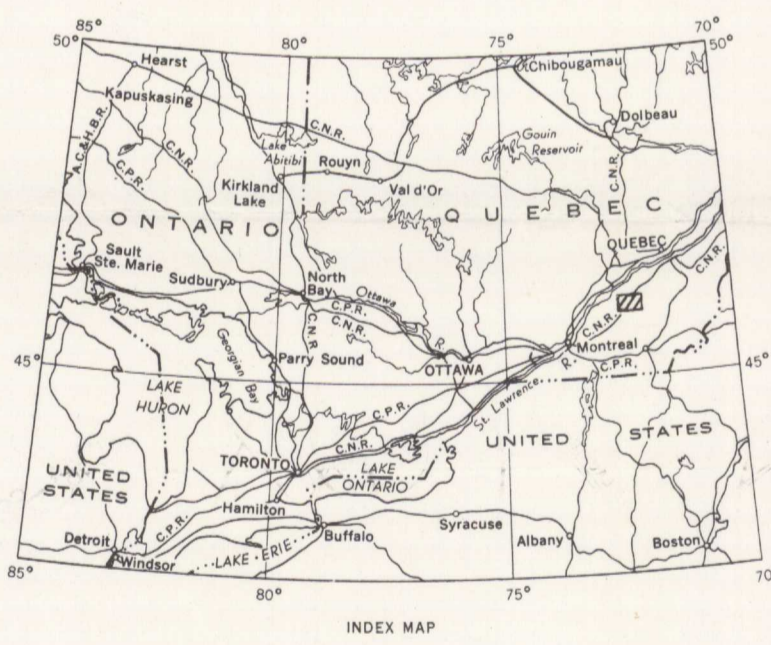
- Geological boundary (approximate)
- Geology by N.R. Gadd, 1953
- Main highways
- Other roads
- Trail
- Railway
- Power transmission line
- Post Office
- Country boundary
- Township boundary
- Concession and lot numbers
- Marsh
- Contours (interval 50 feet)

Cartography by the Geological Survey of Canada, 1960

Approximate magnetic declination, 17° 20' West

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

In response to public demand for earlier publication, Preliminary Series maps are now being issued in this simplified form, thereby effecting a substantial saving in time. There is no loss of information, but the maps will be clearer to read if all or some of the map-units are hand-coloured.



DESCRIPTIVE NOTES

Surficial unconsolidated sediments of the Aston map-area record two Pleistocene glaciations. The older glaciation is represented by brick-red Becancour till (1) and some outwash gravels and sands that are not shown as map-units because of their small outcrop area. The red till occurs extensively in the southeastern part of the map-area, with one major outcrop in the northwest. Its extent southward beyond the map-area is unknown.

In this area sediments laid down at the retreat of the first, pre-Wisconsin glacier, and during the cool, moist interglacial interval (the St. Pierre Interval) are chiefly sands and gravels. For example, thick sections of stratified, medium to coarse sand occur beneath grey till in sections along the Becancour River north of Aston Station. These are not shown at the present scale of mapping because of the nearly vertical outcrop in most sections.

The second glaciation of the area resulted in the deposition of sandy, grey Gentilly till (2). Outcrops are common in the northern and western parts of the area that has its southeastern limit roughly along the Sir Wilfrid Laurier Way, Highway No. 7, between Bon-Consell and Blandford. Most of the grey-till outcrops in the area are in much modified ridges that are elongated northeasterly and form part of the Drummondville moraine. Although outcrops of Gentilly till are not known in the southeastern part of the area, it is probable that the second glaciation advanced southward beyond the limits of the map-area and that the Drummondville moraine records a recessional position of the ice-front before the area was flooded by the Champlain Sea. Outwash gravels and sands in the banks of Southwest Nicolet River at Ste-Brigitte-des-Saults and elsewhere are in turn overlain by laminated silts, probably varves, that grade upward into massive fossiliferous marine clays. Other outcrops of laminated silts at Mitchell station (and on Nicolet River where it is crossed by Highway 9), indicate a short-lived ponding of glacial outwash near the southeastern limit of outcrop of Gentilly till. This is part of the evidence for calling the Drummondville moraine recessional and for the belief that the limit of outcrop area coincides with a position at which the ice stood for some time.

Upon retreat of the ice-front northward from the Drummondville moraine, the entire Aston map-area was flooded by brackish waters of the Champlain Sea. Topographic features left by the continental glaciers were modified by wave action, either directly by erosion that removed fine sediments and concentrated coarser ones, or indirectly by deposition of suspended fine sediment into natural basins and depressions. This wave action produced lag gravels on the crests of ridges of both red till (1a) and grey till (2a). In addition, beach features primarily of sand (map-unit 4), including sand bars, spits and sand flats, were distributed down the flanks of ridges and over some depressions between them. Soft grey silts and silty clays (map-unit 3) were deposited as bottom sediments by the waters of the Champlain Sea. Lag gravels, shore and flat sand deposits and bottom clays all have abundant marine or brackish water fossils in most outcrops.

As the Champlain Sea receded and sandy strand-lines were abandoned and exposed to wind action, parts of the sediment were transported by wind and accumulated into dunes. Most of the dunes are elongate, sharp-crested ridges of moderate relief, known locally as 'Crête de Coq' (map-unit 5). Further recession of the Champlain Sea allowed a transition to estuarine and then to fluvial conditions in a broad, ancestral St. Lawrence River and in tributary streams that reworked existing materials and redeposited them as high terrace sands (6) in broad valleys, and as high terrace sands (6) in broad valleys, and terraces. In the northwest corner of the map-area the highest levels of the main course of the ancestral St. Lawrence left sand-bar ridges at the margins of terraces cut in marine clays.

As the present drainage system of the area developed, valleys of tributaries of the St. Lawrence were cut deeply into the unconsolidated deposits. The streams developed narrow alluvial plains (7) and exposed bedrock at a few places. Best known stream-bed exposures of bedrock are at Ste-Brigitte-des-Saults and at Maddington Falls, where in each case a small fault-scarp in the bedrock has been uncovered. Poorly drained interfluvial areas support the growth of bogs consisting mainly of peat and muck (8).

The Pleistocene stratigraphy of Aston map-area is similar to that of the adjoining Becancour map-area, described in Paper 59-B, Map 42-1959 (Geol. Surv., Canada).

MAP 50-1959
SURFICIAL GEOLOGY
ASTON
NICOLET, ARTHABASKA
AND DRUMMOND COUNTIES
QUEBEC

Map 50-1959

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

MAP 50-1959
ASTON
QUEBEC
SHEET 31