



Explanation of Colours and Signs

- Cambro-Silurian**
- D4a Utica
  - D4b Tonawanda
  - D3a Black River
  - D2h Chazy limestone
  - D2a Chazy shales
  - D1b Calciferous
  - D1a Deton sandstone
- Archean**
- A Crystalline limestone
  - A Onondaga quartzite
  - Anor Anorthosite
  - Granitic, syenitic porphyries, etc.
- Structural Features**
- Strike and dip
  - Faults
  - Glacial striae
- Mineral Resources**
- Iron
  - Mica
  - Asbestos
  - Graphite
  - Barite
  - Felspar
  - Quartzites
  - Kaolin
  - Mari
  - Asbestos
  - Peat
- Elevations and Water Levels**
- Elevations in feet above sea-level
  - Water levels

GEOLOGICAL NOTES

Note 1

The great area of crystalline rocks which occupy most of the country north of the Ottawa river is composed of granite gneiss, red and grey gneiss with which are associated beds of whitish-grey quartzite in the upper part, and areas of crystalline limestone, the latter being regarded as constituting the upper portion of the Archean rocks as here accepted. In places the limestone forms bands of considerable extent, but frequently occurs in small detached areas. It is sometimes dolomitic, but as a rule the magnesian element is in small quantity. Tremolite bands also occur. Graphite in scales is frequently disseminated in the limestone itself, but never in such quantity as to be profitably worked.

These crystalline rocks are cut in many places by intrusives, such as the granites and syenites of the Grenville area, the anorthosites of the townships of Morris, Breeseport, Wolf, &c., and the syenites and diabases of the Lierre and Gatineau district. That these are of later date than the crystalline limestone and associated gneiss is clear from their action on the latter series. With the syenites are associated the deposits of magnetite, mica, and certain other economic minerals, which are described in the accompanying report. It is not possible to show these rock masses in detail on a map of this small scale. Owing also to the difficulty of separating the banded gneisses from the older granitic gneiss at many points, it has been deemed best for the present, to include all these rocks under one colour.

Two important rock-masses at least occur, both largely granitic and containing veins of porphyry. One of these known as Rigaud mountain, is on the south side of the Ottawa river in the south-east corner of the map-sheet, the other is north of the river in the townships of Grenville and Chatham. These masses are evidently more recent than the Calciferous dolomites and other surrounding rocks, and are possibly of the same age as the eruptives found in Mount Royal and the isolated hills which occur in the district south-east of the St. Lawrence river.

The somewhat well-defined ridge of gneiss east of St. Andrews village, as well as the smaller transverse ridge lying to the south-east of Rigaud mountain appears to balance rather to the older series of gneisses than to the later eruptives.

Note 2

The area south of the Ottawa river is occupied largely by the Paleozoic formations which range upward from the base of the Potsdam sandstone to the Utica shale which, a short distance to the south, passes up into the Lorraine formation. While these formations generally lie in a nearly horizontal position they are at many points affected by faults, some of which are extensive and can be traced for miles. The principal breaks have been indicated but there are doubtless minor fractures which could not be shown.

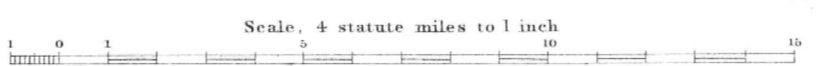
The sedimentary rocks are as a rule highly fossiliferous and the several horizons can be readily determined. Over much of the area, however, there are large deposits of sand and clay concealing the underlying rocks from view. The most important line of fault in this district is found in the area west of Rigaud mountain, by which several of the formations have been displaced horizontally for several miles. This dislocation also extends eastward across the St. Lawrence and, as there exposed, assumes rather the form of an anticline. Other important breaks are seen to the south of the village of L'Original, along the Ottawa river between Grenville and Carleton, near the mouth of the South Nation river, and to the south of the village of Rockland. It is probable also that faults occur at many points throughout the great area of crystalline rocks, but these have not been delineated.

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CITY OF OTTAWA

QUEBEC AND ONTARIO  
Parts of Counties of Ottawa, Argenteuil, Terrebonne, Two Mountains and Vaudeville, Que. and Carleton, Russell, Prescott and Glengarry, Ont.  
(Grenville Sheet)  
No. 121

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To illustrate report by  
R.W. ELLS, LL.D., F.R.S.C.  
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Sources of Information

Surveys by the Geological Survey staff; official plans filed at the Department of Railways & Canals, Ottawa, and official plans of surveys of the Crown Lands Department of Quebec and Ontario.  
Geological boundaries by Sir W.E. Logan, Dr. R.W. Ellis, and F.D. Adams, M.S.J. Giroux and others.

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