CANADA
DEPARTMENT
OF
MINES AND TECHNICAL SURVEYS

GEOLOGICAL SURVEY OF CANADA

GEOLOGICAL SERIES

CANADA, SHEET 32 C/5

LEGEND

PROTEROZOIC

11 — *Gabbro, quartz gabbro; diabase; minor olivine gabbro*

ARCHÆAN

POST-TIMISKAMING

LACORNE INTRUSIONS (8-10)

10 / 10c — *Muscovite granite, biotite-muscovite granite, biotite granite, pegmatitic granite;* **10a**, *biotite granodiorite; minor biotite granite;* **10b**, *biotite-rich granite;* **10c**, *pegmatite;* **10d**, *same as 10a, with inclusions of intruded rocks;* **10e**, *crushed granitic rocks*

9 — *Hornblende monzonite, minor hornblende syenite and diorite;* **9a**, *biotite-hornblende granodiorite, biotite-hornblende granite;* **9b**, *with large inclusions of intruded rocks*

8 — *Amphibolite; minor undifferentiated diorite and hornblende monzonite (9)* **8a**, *cut by many pegmatite bodies*

7 — *Albite granite, granodiorite;* **7a**, *porphyritic granite;* **7b**, *micrographic granite;* **7c**, *amphibolite, probably related to the albite granite;* **7d**, *same as 7, with inclusions of intruded rock*

POST-KEEWATIN

6 — *Massive, buff, quartz-feldspar porphyry;* **6a**, *sheared quartz-feldspar porphyry;* **6b**, *grey, massive porphyry;* **6c**, *same as 6a, including a band of black slate*

5 — *Quartz diorite*

4 — *Amphibolite, altered pyroxenite, minor peridotite*

3 — *Peridotite, partly altered to amphibolite and serpentine*

KEEWATIN AND (?) TIMISKAMING

KEWAGAMA GROUP

2 — *Quartz-biotite schist; minor greywacke and hornblende schist;* **2a**, *cut by many pegmatite bodies*

KEWAGAMA GROUP (?)

2A — *Greywacke and derived quartz-biotite schist;* **2Aa**, *conglomerate (See Note 1)*

MALARTIC GROUP

1 — *Hornblende schist, biotite-hornblende schist, amphibolite derived from basic to intermediate volcanic rocks; minor greywacke*

KINOJEVIS GROUP (A-D) *See Note 2*

A — *Basaltic and andesitic lavas, dacite; minor rhyolite and pyroclastic rocks; possibly some diorite;* **Aa**, *derived hornblende schist and amphibolite;* **Ab**, *same as A, but including small bands of rhyolite;* **Ac**, *same as A, but including small bands of tuff and agglomerate*

Ba-Bc — **Ba**, *highly altered basic volcanic rocks;* **Bb**, *biotitized rhyolite, rhyolite porphyry, agglomerate, and tuffs; minor bands of basic volcanic rocks;* **Bc**, *similar to Bb, but biotitized and amphibolitized*

C — *Agglomerates and acidic tuffs; minor rhyolite*

D — *Rhyolite, rhyolite breccia, trachyte*

Sands and gravel (eskers)
Rock outcrop, area of outcrop
Carbonate zone
Granitic dykes ... G
Bedding (inclined, overturned, dip unknown)
Bedding (direction of dip known, upper side of bed unknown)
Bedding (upper side of bed faces as indicated, direction of dip unknown)
Schistosity (foliation in intrusive rocks), inclined, vertical, dip unknown
Glacial striae
Gold prospects ... 3
Mine shaft

MINERAL OCCURRENCES

Beryl	Be	*Molybdenite*	Mo
Betafite	U	*Pyrite*	Py
Bismuthinite	Bi	*Sphalerite*	Zn
Columbite-tantalite (Microlite)	Ta	*Spodumene*	Li
Gold	Au		

NOTE 1: The age relations of map-units 6 to 3, 4, and 5, of 3 to 4 and 5, and of 3, 4, 5, and 6 to the Kewagama (?) sedimentary rocks (2A), are uncertain.

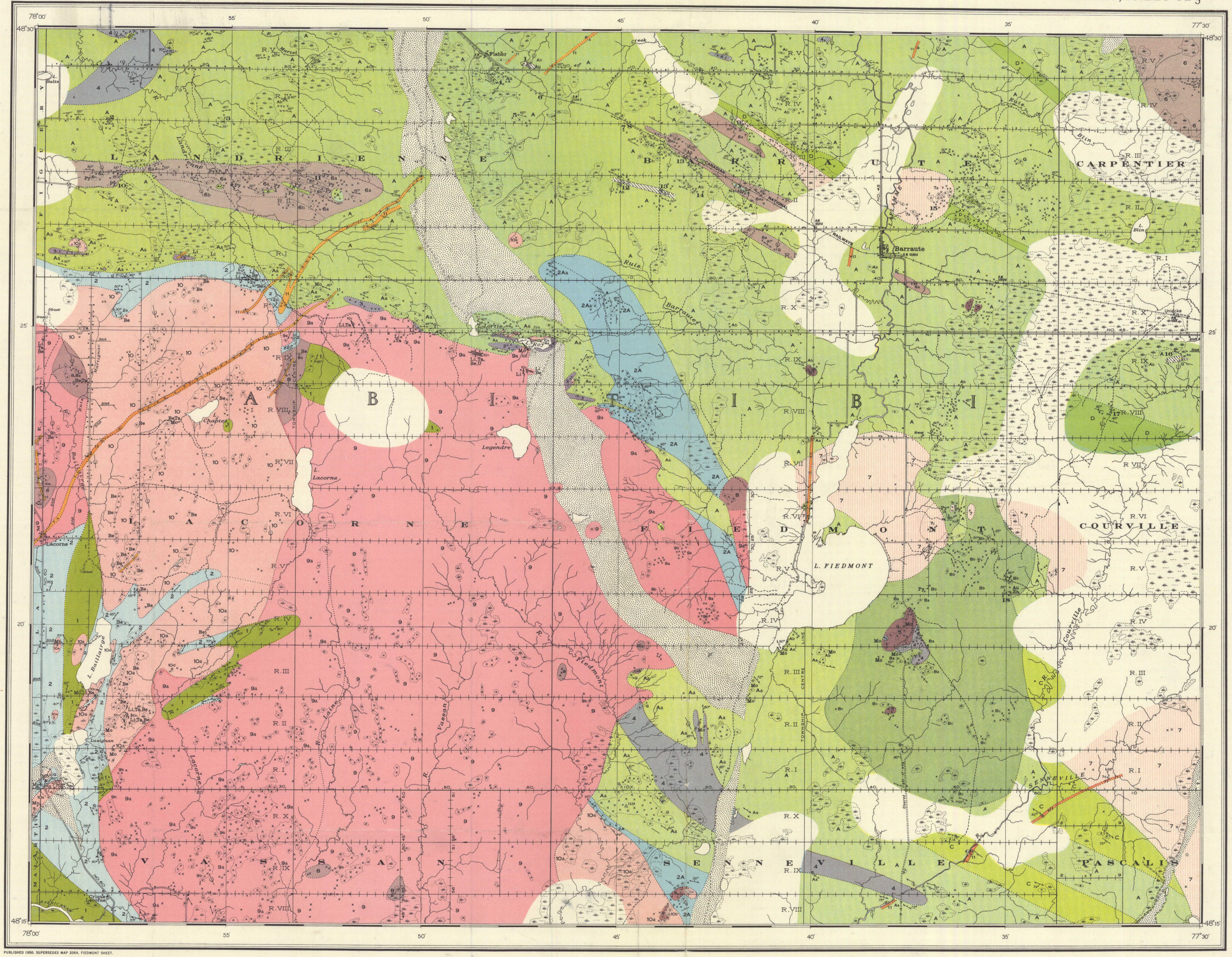
NOTE 2: The Kinojevis group is probably the Malartic group repeated by folding and faulting, but may include younger rocks.

GOLD PROSPECTS

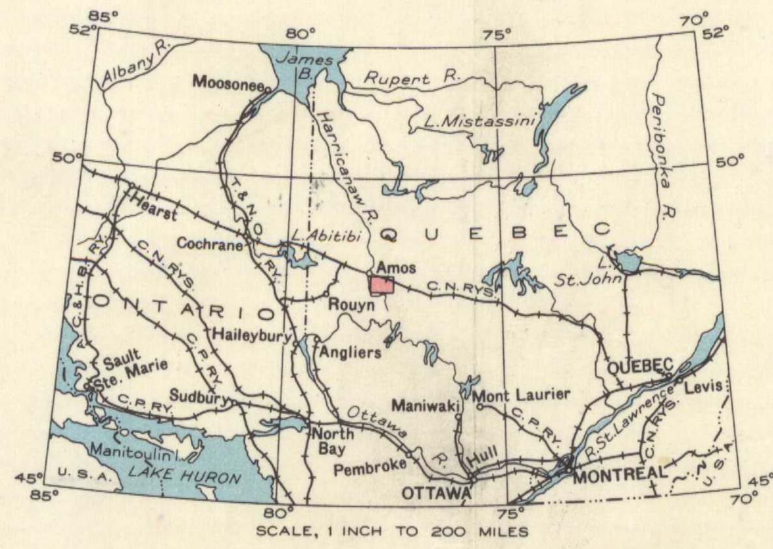
1 Fisher-Quebec Gold Mines, Limited
2 Mine d'Or Abitibi
3 Lots 22 and 23, rges. III and IV, Landrienne tp.
4 Randall Mines Corporation, Limited
5 Lots 58 and 59, rge. IV, Landrienne tp.
6 Batège Mines, Limited
7 Lot 9, rge. III, Barraute tp.
8 Gillies claim, Barraute tp.
9 Claims of the Consolidated Mining and Smelting Company of Canada, Limited
10 Bacon claims
11 Sulphide zones
12 Continental Gold Mines, Syndicate
13 Bar-Lan Gold Mines, Limited (La Mine d'Or Vénus, Consolidée)
14 Natagan Gold Mines Syndicate, Limited
15 Vallée claims
16 Heva Cadillac Gold Mines, Limited
17 Carchy Malartic Mining Company
18 Jarvis Mines (Swanson claims)

Geology by L. P. Tremblay, 1945, 1946.

Cartography by the Geological Mapping Division, 1949.



PUBLISHED 1950. SUPERSEDES MAP 206A, FIEDMONT SHEET.



MAP 999A

FIEDMONT
QUEBEC

Scale: One Inch to One Mile = 1/63,360

Miles
1 ¾ ½ ¼ 0 1 2 3

REFERENCE

Main highway	NO. 45	*Range line*	
Other roads and buildings		*Range and lot numbers*	R.II ... 50
Other roads (poor condition)		*Survey monument*	
Bush road or trail		*Bench mark*	B.M. 1062·9
Railway		*Triangulation station*	
Church		*Fall or rapid*	
School	S	*Stream (position approximate)*	
Post Office	P	*Marsh or swamp*	
Gravel pit		*Height in feet above mean sea-level*	1528
Township boundary			

Base-map surveyed by the Topographical Survey in 1926 and 1946, with Township Surveys by the Department of Lands and Forests, Quebec.

Approximate magnetic declination, 14°15' West.

DESCRIPTIVE NOTES

The area lies within the so-called 'clay belt' of northern Quebec and Ontario, and comprises a northern lowland and a southern hilly country with a maximum relief of 350 feet. The latter is an area of outcrops, mainly granitic, occupying Lacorne township and adjacent parts of Landrienne, Fiedmont, and Senneville townships. The northern lowland is flat, and is covered almost entirely with clay, but includes clusters of small outcrops and gravel ridges; the outcrops are mainly of volcanic rocks, whereas the gravel ridges represent small annual moraines. A large esker divides the area into eastern and western zones, the drainage pattern of the former being more completely controlled by glacial features than that of the western zone.

Volcanic rocks of the Kinojevis group consist mainly of basaltic and andesitic flows (A) interbanded with minor amounts of rhyolite and trachyte (D), and pyroclastic rocks (C), and much resemble rocks elsewhere known as Keewatin. The basic to intermediate types are fine- to coarse-grained, massive to schistose rocks that, although altered, retain characteristic features such as pillows and amygdules. They weather dark green to brownish black. Some have been entirely recrystallized near intrusive contacts to a hornblende schist (Aa); others have been largely carbonatized along shear zones (carbonate zones); and still others have been altered to schistose, chlorite-epidote rocks. The rhyolite and trachyte (D) weather white to creamy white, are massive and fine grained, and generally are well jointed. Some rocks (Ba-Bc) east and southeast of Lake Fiedmont are now so altered that their original character is in doubt, and for this reason they have been mapped separately. They are probably of volcanic origin as they present features suggestive of pillows, have a weathered appearance very similar to undoubted volcanic rocks to the north, and are very fine grained. The rocks classified as tuff, rhyolite, and in general as acidic volcanic rocks (Bb, Bc), weather white, and are commonly massive; in places, however, they are fragmental or show good bedding. Directly east of Lake Fiedmont these acidic rocks contain a large amount of biotite, and southeast of the lake they also carry abundant hornblende crystals. The more basic phases (Ba) weather dark green, contain much biotite, and seem to be pillowed.

Rocks of the Malartic group (1) are found only in the southwestern corner of the map-area, and consist mainly of volcanic rocks now entirely altered to hornblende schist and amphibolite.

The sedimentary formations (2, 2A) are fine- to medium-grained, grey rocks that weather reddish brown to grey-black, and consist mainly of quartz and biotite with some feldspar. They are mainly greywacke, now in places recrystallized to quartz-biotite schist, and they appear to overlie the Kinojevis and Malartic groups of volcanic rocks conformably. Four narrow belts outcropping at the four corners of Lacorne township have been recognized, and their age is known only in part. The two western belts are believed to be of Kewagama age (2) as they were traced beyond the map-area into rocks previously mapped as Kewagama, but their relative age to the other two bands (2A) is still uncertain. The belt at the northeastern corner of Lacorne township is closely folded with the Kinojevis volcanic rocks, and is likely pre-Timiskaming in age. If this be so, the conglomerate (2Aa) noted in the northern outcrops of this belt is probably not Timiskaming but may indicate a local unconformity only. Along the contacts of the southeastern belt, layers of volcanic and sedimentary rocks are interbanded.

Intrusive rocks underlie about 50 per cent of the area and outcrop mainly in Lacorne, Fiedmont, Courville, and Vassan townships. In and adjacent to Lacorne township, they are of batholithic size; elsewhere they form plugs, sills, and relatively small irregular masses. They vary in composition from peridotite to pegmatite, with granitic varieties the most common. Peridotite (3) is a mauve to reddish brown, soft rock, of massive appearance and composed mainly of talc or serpentine, chlorite, and tremolite. The intrusive amphibolite (4) is a dark green to black, coarse-grained, altered rock consisting entirely of amphibole (mainly hornblende) and feldspars. The texture of the rock in thin section suggests that it might have been originally a pyroxenite. Quartz diorite (5) is a massive, grey, medium-grained rock composed mainly of hornblende, quartz, and andesine. It definitely cuts the intrusive amphibolite.

Some irregular, sill-like masses of quartz-feldspar porphyry (6) have been included with the intrusive rocks. They seem to be conformable with the trend of the formations, but in detail their contacts appear to be crosscutting. This porphyry weathers white, has a yellowish, streaky tinge, and commonly contains an abundance of quartz and feldspar phenocrysts in a groundmass of the same minerals. Abundant chlorite and biotite were also noted in some masses of this porphyry, which is commonly highly sheared (6a). In a few places some acidic extrusive rocks, closely associated with this prophyry, were mapped with it.

The bulk of the intrusive rocks is formed of masses that vary in composition from albite- to microcline-bearing types, and are similar in appearance and nature to the typical intrusions of this part of the Canadian Shield. An albite-bearing mass (7) occupying part of the southeastern corner of the map-area is probably an extension of the Pascalis-Tiblemont intrusions. To the west, the microcline-bearing masses (8, 9, and 10) occupying most of Lacorne township form the Lacorne batholith, which is the eastern extension of the Preissac-La Motte intrusive masses. The Lacorne intrusions are characterized by a differentiated series of rocks varying from amphibolite (8) through hornblende monzonite (9) and biotite granodiorite (10a) to muscovite granite (10) and pegmatite (10, 10c). The hornblende monzonite (9) is a grey, massive, medium-grained rock composed mainly of hornblende, oligoclase, and microcline. The marginal zone of this mass has been altered by hydrothermal solutions to a biotite-hornblende granodiorite (9a), which much resembles the monzonite but contains a fair amount of quartz and biotite. The muscovite granite (10) is a white to reddish white, coarse-grained rock mixed with a high percentage of pegmatitic and aplitic material in the form of dykes or irregular masses. The biotite granodiorite (10a) resembles the muscovite granite, but is much finer grained and more gneissic.

Pegmatitic and aplitic material forms about 50 per cent of the muscovite granite mass at its north and south ends, and occurs abundantly as dykes within the central part of the muscovite granite body, and in the intruded rocks close to its eastern and western contacts. Similar material is also found along the contact zones of the hornblende monzonite mass, either in the intrusive or in the intruded rocks. All are coarse-grained rocks composed of quartz, albite, and microcline. In places they grade into quartz pegmatite veins and quartz veins, and many of the dykes, masses, and veins carry appreciable amounts of spodumene, molybdenite, or beryl.

Dykes of gabbro and diabasic rocks (11) are remarkable for their continuity and their northeast trend; they are coarse-grained rocks, weathering reddish brown, and consisting of plagioclase, pyroxene, and small amounts of interstitial quartz-feldspar intergrowths.

The normal trend of the formations changes gradually from 75 degrees east of north, in the western part of Landrienne township, to about 25 degrees south of east in Courville and Carpentier townships. In the southeastern part of the map-area, southwest and south of Lake Fiedmont, the formations strike normally about 25 degrees south of east. In some other parts, however, the trend appears to have been deflected materially from the normal, as, for example, due east of Lake Fiedmont, in the southwest corner of the map-area, and east of Lake Roy where the formations trend north, due perhaps to cross-folding induced by the adjacent intrusive masses.

Schistosity is well developed in volcanic and sedimentary formations and in some intrusive rocks of the map-area. It commonly strikes parallel with the trend of the formations, even in areas where this trend is northerly, and dips steeply north except in areas adjacent to large intrusions where it tends to dip away from these masses.

The Kinojevis rocks of the map-area seem to form part of the southern limb of a broad anticline, which is slightly overturned in a southerly direction and whose axis passes a little north of the map-area. The belts of sedimentary rocks north and east of the Lacorne batholith seem to form part of this broad structure, but were probably more closely folded than the volcanic rocks.

No significant faults were detected in the map-area. Joints are common; most of them trend either north-northeast or east-southeast, and joints of either set may be filled with quartz.

The mineral occurrences of the map-area comprise two distinct groups, one characterized by the presence of molybdenite, spodumene, beryl, and other rare minerals, the other by deposits in which gold has been reported; the latter contain variable amounts of sulphides other than molybdenite.

The first group is the more important, as it is the only one that so far has provided mineral deposits of economic value. In these deposits, molybdenite and spodumene are by far the most abundant ore minerals. Molybdenite is found in flaky grains closely associated with muscovite in quartz veins or pegmatitic quartz veins, and has been mined for 5 years at the Lacorne mine, producing a total of about 4,910,200 pounds of molybdenite and 30,087 pounds of bismuth. Green to buff spodumene occurs in ragged, elongate crystals, intimately associated with quartz, albite, and microcline, in pegmatite dykes or masses.

The reported gold-bearing deposits comprise three observed types: (a) quartz veinlets and stringers slightly mineralized with sulphides, such as pyrite and chalcopyrite, and occurring in massive to sheared, partly carbonatized rocks; some of the quartz stringers in the Barraute plug are of this type; (b) carbonate zones with or without quartz stringers and mineralized with pyrite and probably also some other sulphides, as, for example, the carbonate zone south of Uniacke station; and (c) lenses of massive to disseminated sulphides, such as sphalerite and pyrite, in acidic volcanic rocks or sheared quartz-feldspar porphyry. The occurrence of sphalerite on lot 56, rge. 5, Fiedmont tp., is of this type.