CANADA

DEPARTMENT OF MINES AND RESOURCES

MINES AND GEOLOGY BRANCH

BUREAU OF GEOLOGY AND TOPOGRAPHY

GEOLOGICAL SURVEY

LEGEND

NOTE:-Uncoloured areas are drift covered and in them bedrock outcrops are not known. Coloured areas are in part drift covered, the locations of known areas of outcrop are indicated by crosses x x; small outcrop x.

PROTEROZOIC(?) (LATE PRECAMBRIAN)

- 12 — Olivine gabbro

ARCHEAN (EARLY PRECAMBRIAN)

POST-TIMISKAMING

- 9 — Granite
- 8 — Quartz diorite
- 11 — Altered granite partly replaced by carbonate
- 10 — Altered granite holding blebs of opalescent quartz

KEEWATIN(?)

- 7 — Argillite
- 6 — Altered pyroxenite
- 5 — Gabbro, serpentine

KEEWATIN

- 4 — Tuff, breccia; 4a, with acid lava flows
- 3 — Rhyolite, trachyte, dacite
- 1 — Andesite, basalt; 1a, volcanic rocks, cut by small masses of diorite porphyry; 1b, volcanic rocks not classified according to composition
- 2 — Altered volcanic rocks, chiefly andesite, partly replaced by carbonate

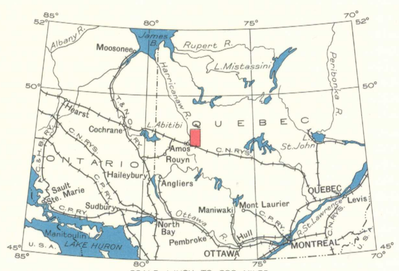
Sand and gravel with some glacial drift

Geological boundary (defined, approximate, assumed)
Fault (defined, position indefinite, assumed)
Bedding (inclined; vertical; dip unknown)
Bedding (direction of dip known, upper side of bed unknown)
Anticlinal axis (position approximate)
Synclinal axis (position approximate)
Prospect

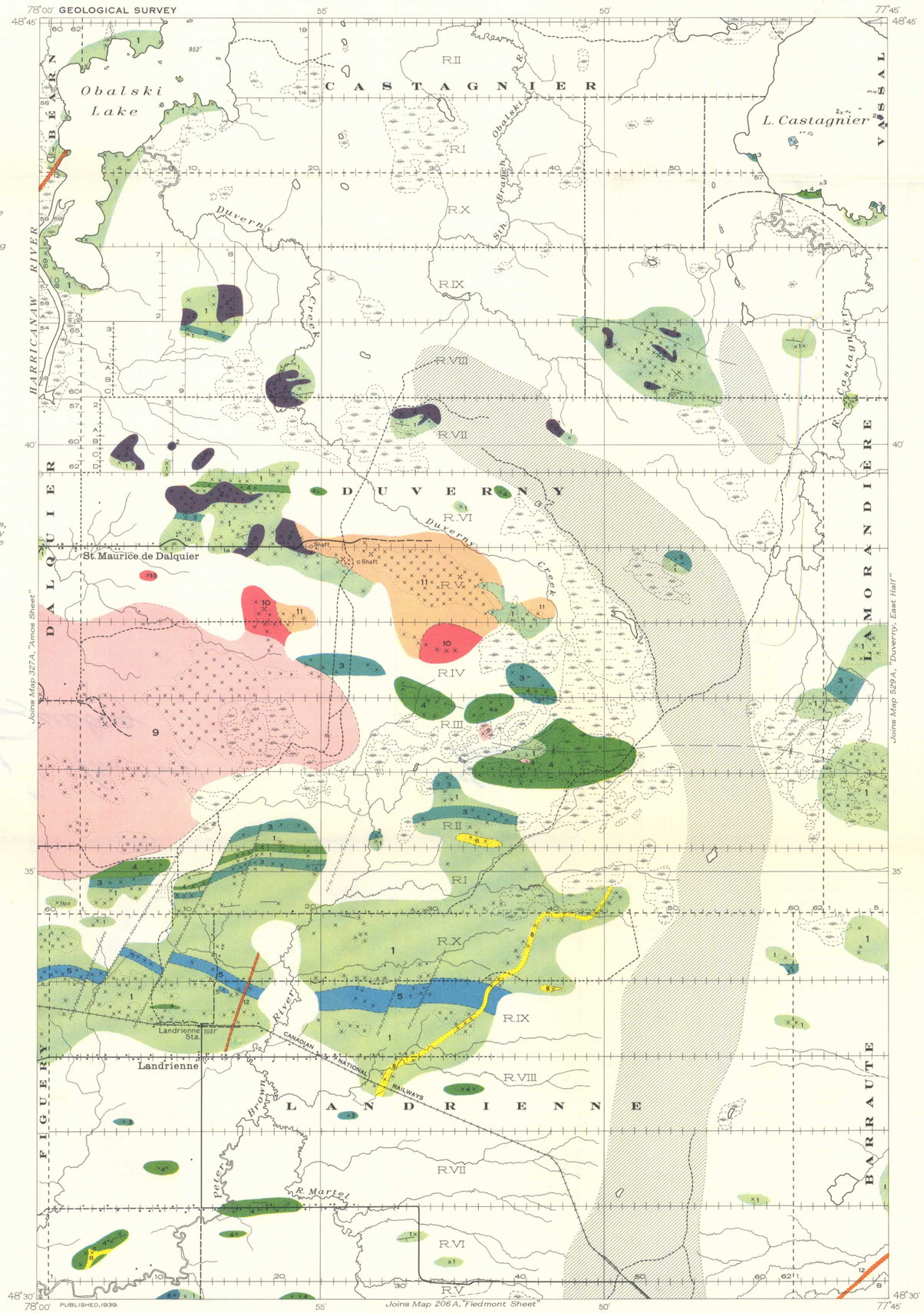
Road and buildings
Road not well travelled
Trail or portage
Post Office
Mine shaft
Township boundary
Range number — R.VI
Lot number — 50
Stream (position approximate)
Marsh
Height in feet above Mean sea-level — 952'

Geology by L. J. Weeks, 1936, and 1937.

Base-map compiled by the Topographical Survey, 1937, from aerial photographs taken by the Royal Canadian Air Force, and from information supplied by the Quebec Department of Lands and Forests. Cartography by the Drafting and Reproducing Division, 1939.



SCALE, 1 INCH TO 200 MILES



MAP 530A

DUVERNY

(WEST HALF)

ABITIBI COUNTY

QUEBEC

Scale, 1/63,360 or 1 Inch to 1 Mile

Miles 1 0 1 2 3

Approximate magnetic declination, 14°30' West.

DESCRIPTIVE NOTES

The area is a plain of clay or muskeg, interrupted by scattered rock exposures, and by ridges of sand and gravel that rise to a maximum height above the plain of less than 200 feet.

The oldest known rocks in the area are volcanic rocks of supposed Keewatin age. Although usually considerably altered, very rarely are their original volcanic textures and structures destroyed. In the intermediate and basic members of the group, (1) the ferromagnesian minerals are largely, and often completely, altered to chlorite and iron oxides. Feldspars while retaining their crystal form, and to a certain extent, their twinning, are often so clouded with sericite and kaolin that their precise determination is impossible. On weathered surfaces, these rocks appear dark grey to greenish grey and usually show a slight trace of iron stain. On fresh surfaces the colour may vary from black, for the more basaltic varieties to a greenish grey for the andesites. Grain varies from dense to about 2 mm. in size, although one flow was observed with altered femic phenocrysts up to 8 mm. in size. Basalts and andesites are characterized to a great extent by the presence of pillow structures. These occur usually on the upper surface of a flow and, in the case of andesite, occasionally reach a length of fourteen feet. A study of the relationships of adjacent pillows will usually give an indication of the attitude of the beds, and practically all of the attitude determinations in the area were made by such means.

The more acid members (3) of the Keewatin volcanic group, although composing a very minor amount of the entire rock assemblage, are of considerable importance as horizon markers. On weathered surfaces, these rocks are much lighter in colour than the andesites, often weathering to a dirty white. Darker varieties are distinguished from the lighter andesites by an absence of iron stain on the surface, or if a stain occurs, it is seen to be due to the presence of iron sulphide or carbonate crystals. On fresh surfaces, the colour may vary from a light grey for the dacites to a deep vitreous green or even a pitch-like black for the rhyolites. Quartz phenocrysts are visible in rhyolite and dacite, but are much larger as a rule in the former, being observed up to 8 mm. in size. The trachytes have phenocrysts only of feldspar, usually weather quite white, and show a vitreous green colour on a fresh surface. Although highly altered forms of these rocks are occasionally found, in general they more nearly portray the original character of the rocks than do the more basic volcanic types. The more altered phases are characterized by a development of sericite in the groundmass, and by a cloudiness of the feldspar phenocrysts due to sericite, kaolin and occasionally carbonates.

Tuff and breccia (4) particularly in their finer grained phases, are excellent horizon markers, some bands or zones being suspected of continuing for 30 miles. The coarser breccias are easily recognizable by the presence of fragments of varying size in a finer, often schistose matrix. Fine beds of tuff are usually highly schistose, and often can be identified with accuracy only if a horizon of coarser material is found within them. Occasionally evidences of water-sorting are found among these rocks.

Two sills of gabbro and serpentine (5), slightly over six miles long, constitute the oldest intrusive in the area, with the exception of such dykes as were feeders for the extrusive flows. The northern half of each sill is altered gabbro, the southern half serpentine. At their western extremity they join forming one sill with width about equal to the combined width of the two sills, and with similar distribution of rock types. At their eastern extremity they are in contact, but still retain the characteristics of two sills. Elsewhere they are separated by a band of volcanic material up to 110 feet wide. The serpentine weathers usually to a bright red or reddish buff, and is decidedly greasy in appearance on a fresh surface. In places, however, the reddish stain is almost lacking on the weathered surface, and the rock appears black or greenish black. The rock is largely altered to antigorite, although remnants of pyroxene are discernible. A rather sharp contact, marked by the sudden cessation of iron stain on the weathered surface, separates the serpentine from the gabbro on the north. The latter rock is a greenish grey on weathered surfaces with a grain of about 3 mm. in size. It has been considerably altered to chlorite, iron oxides and kaolin. These sills were apparently intruded before the tilting of the Keewatin flows, as the gabbro everywhere occurs at the stratigraphic top of the sills. These rocks are possibly genetically connected with a small stock of altered pyroxenite (6), that cuts the volcanic rocks near the south-west corner of the map-area. This rock originally consisted essentially of pyroxene with minor amounts of olivine, magnetite and possibly some plagioclase. It is now altered and holds much chlorite, iron oxides, and carbonates. On weathered surface the rock is buff coloured, massive, and shows a network of projecting black crystals. On fresh surface the rock is black and shows a grain of up to 6 mm. in size.

A few exposures of sediments (7), part of a large body extending east into Montgay township, occur on Lake Castagnier. The exposures within this map-area are fine, grey, banded argillite, although the greater part of the same body elsewhere is composed of greywacke.

Two small, and one long sinuous body of diorite (8) occur in Landrienne and southern Duverny townships. These rocks are equigranular with a grain size up to 13 mm. Dark minerals predominate considerably over the feldspars. The rock is essentially composed of hornblende and andesine with minor amounts of biotite and magnetite. These minerals have been altered in varying degree to chlorite, kaolin, sericite and carbonates. This alteration is less pronounced than is that of the dioritic rocks to the east of this map-area.

Unaltered granite (9) occurs in a triangular shaped mass on the west side of the area, continuing into the Amos map-area. The rock is essentially composed of orthoclase and quartz, with minor amounts of hornblende, biotite and plagioclase. It is usually pink or rosy buff, weathering to a light buff. Small dykes of pink, fine-grained aplite occur cutting the granite. Altered granitic rocks occur to the north and east of this mass. Some of these (10) are characterized by the development of sericite and the presence of small blebs of opalescent quartz. Others (11) have been attacked by carbonate-bearing solutions with alteration of the original minerals and the development of small ankerite crystals. These two groups of altered granitic rocks are believed to have been originally one mass, and possibly to be altered forms of the fresher granite to the south. The sericitized granite is greenish grey, quite massive, and is characterized everywhere by the presence of small crystals of quartz up to 3 mm. in size which have a distinct opalescent play of colours. The grain size of the quartz is about the same as that of the unaltered granite. The carbonatized granite is characterized by the presence of small crystals up to 5 mm. in size of ankerite. These are readily distinguished on a weathered surface by small pockets of limonite. In some places the ankerite is present in sufficient quantity to stain the weathered surface for about one inch in depth. The carbonatized granites grade into the altered, carbonate-free type, but is not known to grade into the more unaltered granite to the south. In appearance, these rocks exhibit more variability than any other type described. They are more frequently light-coloured than dark, often a light buff, with cloudy patches of chlorite up to 4 mm. in length, which indicate the positions occupied by former dark minerals. Darker varieties have less carbonate and grade into the sericitized, but carbonate-free granitic rocks. The presence of a coarse igneous texture, however indistinct, is probably the only criteria that can be used in the field to distinguish these rocks from the more completely altered examples of carbonatized volcanic rocks to be described.

The carbonatizing solutions that altered the granitic rocks also attacked Keewatin volcanic rocks over large areas. Carbonatized volcanic rocks (2) grade from rocks with scattered crystals of ankerite, but whose original texture, composition, and extrusive structures are apparent, to massive, fine grained, buff-coloured rocks with a thick, spongy, rusty weathering zone composed essentially of calcium-iron-magnesium carbonates and quartz. A rough analysis of a specimen of the latter type showed 42% carbonates, 58% insoluble residue. Pseudo-porphyritic types are occasionally found and are an andesitic rock that has been replaced with the exception of areas 5 to 10 mm. in length, scattered rather uniformly throughout the rock mass. Such rocks may possibly be confused with some carbonatized granitic rocks but can usually be distinguished by the uniform denseness and usually lighter colour of the carbonatized "groundmass". In thin section such types are recognizable by the andesitic character of the residual areas. The bodies of more completely replaced rock are usually surrounded by zones of less complete replacement and alteration.

The youngest consolidated rock in the area is olivine gabbro (12), which occurs in dykes from 90 to 200 feet wide striking northeast to almost north. This rock weathers a reddish buff. On a fresh surface it can usually be distinguished from other rocks in the area by its clean cut crystals of augite and plagioclase, and general fresh appearance. The grain varies from dense, near the dyke margins, to about 3 mm. and occasionally more, at the dyke centers.

MINERAL DEPOSITS

Considerable prospecting has taken place in Duverny township since the discovery, in 1934, of a gold bearing vein on what is now the Fontana property. Early in 1937 a shaft was commenced on this property, and in 1938 sinking also began on the adjacent Claverny property. Surface work and some diamond drilling has been done at numerous other localities within the township.

Gold is found in veins filling north-south gashes probably resulting from tension in carbonatized volcanic and granitic rocks, and in northwest and northeast striking shear zones in carbonatized rocks, granite, and greenstone. Small pockets very rich in gold have been found in gash veins in carbonatized granitic rocks. Assays of quartz from the shear zones are reported to be more uniform. The gash veins are too small to be mined singly at a profit. All of the gash veins and most of the known shear zone veins occur in carbonatized volcanic rocks or granite, both fresh and altered. Where shear zone veins extend from these rock types to unaltered greenstone, they invariably lose their sharp boundaries, dwindle in size and give way to a schistose zone with no definite vein.