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PRELIMINARY REPORT ON HONORAT WEST AREA, BONAVENTURE ELECTORAL DISTRICT

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PRELIMINARY REPORT

ON

HONORAT WEST AREA

BONAVENTURE ELECTORAL DISTRICT

BY

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QUEBEC
1958

P. R. No. 366

M-D-4571

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BONAVENTURE ELECTORAL DISTRICT

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W. B. Skidmore

INTRODUCTION

The Honorat West area was geologically mapped by the writer in the summer of 1957. It lies in southeastern Gaspé Peninsula, some 50 miles from the east end of the peninsula, and 20 to 35 miles north of Bay des Chaleurs. It is bounded by longitudes 65°15' and 65°30', and by latitudes 48°30' and 48°15'. It includes large parts of Reboul, Guéguen, Garin, and Honorat townships, together with small parts of Robidoux and Weir townships. The extent of the area is 200 square miles.

Bonaventure river runs through the area, close to its western boundary, and provides access to its western half. The river itself can be travelled by canoe, with outboard motor, when the water is not too low. A gravel road runs from the settlement of Robidoux to the point where the river leaves the western edge of the area. From there a wagon road continues north along the west side of the Bonaventure valley as far as the mouth of Reboul brook, beyond which it is useful only for foot travel. Similar old wagon roads, still useful as pack trails, extend for several miles up the valleys of Garin and Reboul brooks. The eastern half of the area is most easily accessible from a road leading north from the settlement of St. Jogues. This road does not enter the area, but terminates at lake Arsenault, the head of the south branch of Reboul brook, 1½ miles from the east boundary. It can be travelled, with difficulty, by a vehicle with four-wheel drive. Two truck roads leading north from the settlements of Garin and St. Elzéar penetrate short distances into the southwestern part of the area.

Most of the area drains into Bonaventure river, which flows southward into Bay des Chaleurs. The southern fringe is drained by smaller south-flowing streams. The surface is a dissected upland, with a general level of 1,200 to 1,500 feet. Several ridges of more resistant rock rise above this, to a maximum height of 2,250 feet above sea-level. The streams are sharply incised down to a minimum elevation of 300 feet above sea-level.

GENERAL GEOLOGY

The consolidated rocks of the area are predominantly sedimentary and volcanic, and mostly of Ordovician and Silurian age. A very small part of the area is underlain by Devonian rocks. Two Ordovician sedimentary units, the Honorat and Matapedia groups, occupy the central part of the area. They are overlain on the north and south sides by the Mount Alexander and Chaleurs Bay groups, respectively, both of Middle Silurian age. The Chaleurs Bay group is entirely sedimentary, and is divided into six formations, at least five of which are present in the area. The Mount

Alexander group contains a thick series of volcanic rocks. On its north side it lies in fault contact with the York River formation, of Devonian age.

Small intrusions of diabase, or similar rock, are fairly common in the Ordovician rocks and in the Mount Alexander group.

Recent alluvial gravels occur in the bottoms of the valleys and gullies. The bedrock is covered almost everywhere else by a mantle of weathered debris, which has mostly been derived from the underlying bedrock. Some erratics are found, which have evidently not been transported to their present sites by the existing streams, but their distribution is in accordance with the general drainage pattern. There is little evidence of glaciation within the area.

Table of Formations

Epoch	Group	Formation	Description
Recent			Stream deposits.
Early or Middle Devonian	Gaspé Sandstone	York River	Sandstone; siltstone.
Silurian			Diabasic intrusions.
Middle Silurian	Chaleurs Bay	West Point	Limestone; silty limestone; siltstone.
		Bouleaux	Silty limestone; nodular limestone; calcareous siltstone.
		Gascons	Siltstone; calcareous siltstone; sandstone.
		La Vieille	Limestone; nodular limestone.
		Clemville	Siltstone; conglomerate; sandstone; shale; silty, and sandy limestone.
	Mount Alexander		Limestone; silty limestone; andesitic lava; agglomerate; sandstone; calcareous siltstone.
Late Ordovician	Matapedia		Limestone; silty limestone; calcareous slaty shale and siltstone.
Ordovician	Honorat		Mudstone; siltstone; calcareous, slaty shale, silty limestone; sandstone; conglomerate.

HONORAT GROUP

Occupying a large part of the southern half of the area are rocks of complicated structure and varied lithology, which are here named the Honorat group. The bulk of the group is grey, in some places slightly greenish, mudstone. In many places the mudstone contains beds of siltstone up to about 6 inches thick. Less commonly the rock is entirely siltstone. Grey, calcareous shale, and silty limestone, and grey to greenish-grey, quartzose, silty sandstones, are minor constituents. In the northeast corner of the group's outcrop area, between the headwaters of Garin and Reboul brooks, are rocks which are, on the average, much coarser grained. They appear to underlie the main mass of the group. Massive beds, usually 3 feet or more thick, of medium- to coarse-grained sandstone and of conglomerate, alternate with grey siltstone and mudstone, and rarer green and reddish-brown mudstone. The sandstones may be quartzose or highly feldspathic, but are always poorly sorted, with the general appearance of greywackes. The conglomerates contain well rounded cobbles and boulders of varied shales, limestones, and sandstones, none of which are distinct from the rocks of the group.

Cleavage is more or less well developed throughout, but there are no true slates. The group has great thickness, possibly as much as 14,000 feet.

Similar rocks, in analogous positions immediately south of the Matapedia group, have been observed at several localities to the southwest of the present area. These rocks have been dated as Ordovician. They may be correlatable with the Middle Ordovician Mictaw group.

Matapedia Group

To the north of the Honorat group, and in contact with it along a major fault, is the Upper Ordovician Matapedia group. This group is mainly grey limestone, either fairly pure and smooth or silty. Pure and silty limestone may be interbedded, or interbanded, down to thicknesses of about ½ inch. Grey, calcareous shale and siltstone are common.

The rocks are folded into a broad anticline. In the axial region of the anticline silty and argillaceous limestones predominate, whereas elsewhere, in the upper part of the group, fairly pure limestone is the more common. These two divisions probably correspond to the Pabos and White Head formations of the Matapedia group, but are not sufficiently distinct to be mapped separately.

The broad anticlinal structure of the group is clear, but intense minor folding and faulting are common locally. Cleavage is usually well developed in the more argillaceous rocks. The thickness of the group appears to be at least 8,000 feet.

Mount Alexander Group

The Matapedia group is overlain, probably, disconformably, on the northwest, by the Mount Alexander group, of Middle Silurian age. The contact between the two is not exposed, and its position and nature are indefinite. However, the lower part of the group apparently consists of close to 3,000 feet of grey, fairly pure and silty limestone, grading up into greenish-grey silty linestone. These rocks are

overlain by approximately 4,500 feet of dark green or dark red, usually porphyritic, andesitic to basaltic lavas. A few outcrops of agglomerate are found close to the base of the volcanic sequence. The volcanic rocks are in turn succeeded by about 5,000 feet of sedimentary rocks, including greenish-grey, calcareous sandstone; greenish-grey, silty limestone; and hard, grey, calcareous siltstone.

Chaleurs Bay Group [1]

The southern quarter of the map-area is underlain by rocks of the Middle Silurian Chaleurs Bay group, consisting of at least five formations.

The Clemville formation, at the base, includes 2,000 feet or more of interbedded quartz conglomerate and sandstone, and grey and greenish-grey siltstone and shale. A little grey, silty and sandy limestone is present in the upper half of the formation. The Clemville is overlain by about 1,800 feet of limestones, comprising the La Vieille formation. These limestones are partly grey, dense, and smooth; partly grey to greenish-grey, and silty, with nodules of smoother grey limestone. Many of the nodules are of organic origin. Overlying the La Vieille is the Gascons formation, which consists of about 2,000 feet of hard, greenish-grey siltstone and very fine quartzite. The rocks are in regular layers, about 1 inch to 1 foot thick. The formation is remarkably uniform, except at the base, where there is a little greenish-grey, calcareous siltstone. The Bouleaux formation is transitional between the Gascons and West Point formations. It consists of about 1,250 feet of greenish-grey, calcareous siltstone, silty limestone, and nodular limestone. The West Point formation is mainly grey, smooth limestone, with some interbanded smooth and silty limestone and some grey to greenish-grey, nodular, fossiliferous limestone. Minor amounts of finely crystalline limestone, and sandy limestone also occur, and, towards the top of the formation, some grey and greenish-grey siltstone. This last possibly represents the base of the Indian Point formation, the uppermost formation of the group. The thickness of the West Point formation is about 3,000 feet.

York River Formation

The York River formation is not exposed in the area. However, the distribution of rock debris, and previous mapping to the north, indicate that the extreme northwest corner of the area is underlain by the fine- to medium-grained feldspathic sandstone, and greenish-grey siltstone of this formation. Its age is Early to Middle Devonian.

Intrusive Rocks

Small dykes and sills, up to about 50 feet thick, are common locally, in the Honorat, Matapedia, and Mount Alexander groups. They are composed of dark green, aphanitic, and usually porphyritic diabasic rock. They are chiefly restricted to two regions: first, along the lower part of the valley of Garin brook, in the southwestern part of the Honorat outcrop area; second, a broad belt between the Mount Alexander lavas and the main anticlinal axis in the Matapedia group. Only one occur-

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1. Previously the Chaleurs Bay series. It is here called a group because it is defined, and correlated, by lithological characteristics, rather than by age.

rence was noted above the volcanic rocks of the Mount Alexander group. Most of the intrusions are probably associated with the Mount Alexander lava flows, and date from Silurian time.

STRUCTURAL GEOLOGY

The most striking structural feature of the area is a fault which runs in a straight line, at about N. 85°E., across the middle of the area. It separates the distinctive rocks of the Matapedia and Honorat groups, and cuts across the structures of both. However, its exact position is taken from a very clear lineament on the aerial photographs. On its north side the Matapedia group is folded into a broad, compound anticline, whose axis trends about N. 65°E., and plunges about 20° to the southwest. The Matapedia group is overlain, probably disconformably, on the northwest, by the Mount Alexander group, which dips moderately to the northwest. In the northwest corner of the map-area the Mount Alexander group is limited by a fault, probably a thrust fault dipping southeast. Its existence has been demonstrated by mapping in the area to the north, where it cuts sharply across the structure of the Mount Alexander group.

To the south of the Matapedia group lies the Honorat group, whose structure is complex, and not well understood. It appears to be roughly that of a broad anticline, with axis running northeast-southwest, interrupted by an even broader syncline, with axis running northwest-southeast. In other words this is a saddle structure. The south boundary of the Honorat group is formed, in part, by a fault running approximately east-west across the area, with downthrow on the south side. However, a thin wedge of the Clemville formation on the north side of this fault appears to overlie the Honorat group with slight disconformity.

The rocks on the south side of the last-mentioned fault all belong to the Chaleurs Bay group. They are folded into two synclines, and two anticlines, all plunging to the northeast. The more northerly syncline is cut, at its southwest end, by a cross-fault, trending about N. 20°E., with downthrow on the east side. The second syncline is complicated by a fault running along its axis. The fault is probably a thrust, dipping northwest, but the same effect could have been achieved by horizontal movement to the northeast, on the northwest side, or a combination of the two types of movement. Another fault, running parallel to the more southerly of the two anticlines, about ½ mile northwest of its axis, is down-thrown on the southeast side, and causes repetition of the northwest-dipping Clemville rocks.

Cleavage is present throughout the area, though only well developed in the more argillaceous of the Ordovician rocks. In the Honorat group the celavage is folded. In all the other rocks it usually strikes parallel to the fold axes, and dips steeply in the opposite direction to the bedding. It is, therefore, fan cleavage.

ECONOMIC GEOLOGY

No mineral occurrences of economic importance were discovered. Disseminated pyrite occurs in most of the intrusive and extrusive rocks, and rare small specks of malachite may be seen in the Mount Alexander lavas.

In 1938 R.A. Brown reported (1) on some gold claims, then held by Edmond Essiambre and F. Boisseneau, which lie a little over 1 mile east of the present area,

(1) MS. in files of Quebec Department of Mines.

near the north end of Arsenault lake in northwest Weir township. The gold occurs in a lenticular quartz vein penetrating feldspathic sandstone of the Honorat group. Values up to $ 7.00 per ton (at $25 per ounce of gold) were reported by the holders of the claims.

The rocks most suitable, from the point of view of porosity, for petroleum reservoirs are the conglomerates, sandstones, and fossiliferous limestones of the Chaleurs Bay group. However, closed structures within this group which would provide a trap for the accumulation of petroleum are not apparent.