

MARGINAL NOTES

Precambrian granites of the Long Range Complex are overlain with profound unconformity by Lower Cambrian strata of the Forteau and Hawke Bay formations. The relationship is seen best at Gros Morne and along the north side of Bonne Bay. The Lower Cambrian strata are succeeded by a shallow-water carbonate sequence (St. George and Table Head) with clastics (Norris Point) at its top. The entire section is southwest-dipping and linked stratigraphically to basement south of Bonne Bay (Nyman et al., 1984; Williams et al., 1984). Northeast-trending high angle faults that cross the unconformity are downthrown on their northwest sides. The autochthonous section is overlain by melange (Rocky Harbour) and higher structural units (Cow Head-Lower Head, Sellars, Crolly Cove, Little Port) that collectively constitute the Humber Arm Allochthon.

North of Bonne Bay, the Long Range Inlier and its Lower Cambrian cover rocks are faulted against upper parts of the autochthonous sequence. The latter is progressively narrower from south to north because of steepening, overturning and structural telescoping. At Stag Brook, intensely deformed grey to black shales of unknown affinity occur at the Long Range structural front. On the north side of Bakers Brook Pond, shear zones or faults in the Long Range Complex dip moderately eastward and these may represent subsidary faults that parallel a major tectonic contact between Paleozoic and Precambrian rocks to the west. A wide zone of relatively intense Paleozoic deformation at the Long Range structural front, polarity of structures and morphologic expression all indicate that the Precambrian Long Range Complex is thrust westward above Paleozoic rocks (structural cross sections AA', BB', and CC'.

The Long Range Complex is offset by a southeast-trending left-lateral tear fault toward the headwaters of Stag Brook. An inferred fault at Deer Pond may be related and smaller left-lateral faults occur elsewhere. The geometry suggests increasing transport northward with northerly segments of the Long Range Complex projecting westward with respect to southerly segments along left-lateral tear faults. Within the map area, a set of northeast and southeast-trending lineaments in the Long Range Inlier has pronounced expression in drainage and morphology.

Shales and graded sandstones that overlie the Table Head limestones are assigned to the Norris Point formation. Stratigraphic contacts can be seen on both sides of Bonne Bay. The informal name, Sandbar formation (Williams et al., 1984), used for these rocks south of Bonne Bay, is now dropped.

A prominent ridge of carbonate breccia between Bakers Brook and Western Brook Pond is assigned to the Cape Cormorant Formation (Klappa et al., 1980). Similar breccias occur at Berry Hill and southward where they are interpreted as large olistoliths structurally incorporated in melange. North of Bakers Brook, the Cape Cormorant breccias are overlain by the Norris Point formation, implying that they are eqivalent to Table Head limestones at Bonne Bay. Dips are generally to the east, indicating an overturned section or more likely a thrust contact between the Cape Cormorant and carbonates to the east (structural cross section AA'). Since the Cape Cormorant breccia is not represented in nearby continuous stratigraphic sections, it is regarded as parautochthonous.

The Norris Point formation is everywhere strongly cleaved and two generations of cleavage are recognized locally. A prominant cleavage at Norris Point is at high angles to bedding and its easterly strike contrasts with a northeast-trending cleavage in rocks farther east.

Rocks and structural styles of the Humber Arm Allochthon are significantly different north of Bonne Bay compared with those to the south. There are no volcanic or ophiolitic rocks in the northern area, sedimentary rocks are of different facies compared with those of the Curling (Stevens, 1970) and Bonne Bay (Williams et al. 1984) groups to the south, and the imbrication of sedimentary slices in the north presents a structural style that is not well developed in coeval rocks of southern areas. The only allochthonous unit in the Gros Morne map area that correlates directly with the nearby Bonne Bay group is the Irishtown Formation at Bakers Brook.

North of Bonne Bay, the Humber Arm Allochthon is dominated by melange and imbricated sections of Cambrian-Ordovician platy limestone, limestone breccia, shale, chert and sandstone. The extensive melange that overlies the Norris Point formation is named the Rocky Harbour melange.

Correlatives to the south (Williams et al., 1984) were informally designated Gadds Point melange, but the Rocky Harbour exposures are superior, and the melange there is more extensive and easier of access. The name Gadds Point is therefore dropped.

The Norris Point formation grades upwards into the Rocky Harbour melange in the vicinity of Norris Point. Bedded shales and sandstones of the Norris Point formation are progressively disrupted passing into disturbed shales and sandstones and then into shales with sandstone blocks. Farther from the contact, blocks that are exotic to the underlying autochthonous section appear in the grey shaly matrix. The largest blocks contained in or surrounded by scaly shales are the Cape Cormorant breccias at Berry Hill and southward, the Irishtown Formation at Bakers Brook, and the imbricated slices at Lobster Cove Head and Salmon Point.

At Green Point and extending well north of the map area to Cow Head and beyond, the Humber Arm Allochthon consists of Cambrian-Ordovician

limestone breccias, platy limestones, dolomitic shales and cherts. These are assigned to the Cow Head Group. Overlying green sandstones are named the Lower Head sandstone (Williams et al., 1985). The Cow Head Group is divided into three formations, all coeval and distinguished by the coarseness, thickness and quantity of limestone breccia units with respect to proportions of platy limestone, shale and chert in local stratigraphic sections. From west to east, progressively finer, thinner and fewer limestone breccias indicate a proximal to distal facies progression across the Cow Head Group. The three divisions of the group from west to east are informally named Shallow Bay, Green Point and Yellow Point formations (Williams et al., 1985). Only the Green Point and Yellow Point formations occur in the Gros Morne map area.

South of Salmon Point and also at Lobster Cove Head, the Yellow Point formation is overlain by Lower Head sandstone and the sections are repeated structurally, with melange developed along some tectonic contacts. Structures are intricate and regional mapping indicates that the imbricated sections are completely surrounded by Rocky Harbour melange. This style of deformation with melange development relates to the assembly and emplacement of the Humber Arm Allochthon. At Green Point the section is overturned, possibly in response to much later thrusting at the Long Range structural front.

South of Bonne Bay, the Sellars formation occurs above the Rocky Harbour melange. The Sellars is interpreted as Cambrian and its mainly quartz and feldspar clasts suggest a Grenvillian source. The formation seems unrelated to the Lower Head sandstone whose clasts are mainly a sampling of Cow Head lithologies.

The Crolly Cove melange separates the Sellars formation from the overlying Little Port Complex. This is the highest structural slice of the Humber Arm Allochthon in the map area.

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