

MARGINAL NOTES

The Portland Creek map area (121/4 and including parts of Indian Lookout, 121/5, and Bellburne, 121/5, 121/6) has three distinct tectonic elements: Precambrian crystalline rocks of the Long Range Complex, an early Paleozoic platformal cover sequence, and early Paleozoic sedimentary rocks of the Humber Arm Allochthon.

Precambrian rocks of the Long Range Complex (Baird, 1960) are restricted to the highlands along the eastern margin of the area and occur as a structural (later bounded on the west by the Long Range Thrust (Johnson, 1964)). The dominant rock type is massive to weakly foliated pink granite (Hir') with foliation more pronounced in biotite-rich zones. Foliated and banded amphibolite and granofelsite (Hir') occur along the eastern shore of Inner Pond.

Cambrian and Ordovician rocks of the cover sequence occupy low rolling hills immediately west of the Long Range Mountains and across the northern part of the area. Along the side of the Long Range, beds are moderately to steeply inclined toward the west and locally overturned. There, the cover sequence is thrust above the Humber Arm Allochthon on late thrust faults. Farther north, the cover sequence dips gently beneath the allochthon. From oldest to youngest, the cover sequence comprises the Labrador, Port au Port, St. George and Table Head groups, and the Goose Tickle Formation. The Labrador Group unconformably overlies the Long Range Complex, although relationships within the map area are largely modified by the Long Range Thrust. A depositional contact is preserved locally in the south-east corner of the map area where sediments of the Labrador Group occur in the hangingwall of the Long Range Thrust. A relatively complete section through the cover sequence is preserved along Southwest Feeder and the transect indicated here of the Long Range Complex. The Labrador Group unconformably overlies the Long Range Complex, although relationships within the map area are largely modified by the Long Range Thrust. A depositional contact is preserved locally in the south-east corner of the map area where sediments of the Labrador Group occur in the hangingwall of the Long Range Thrust. A relatively complete section through the cover sequence is preserved along Southwest Feeder and the transect indicated here of the Long Range Complex.

The middle to upper Cambrian Port au Port Group (Knight and Boyce, 1984) is distinguished only along Southwest Feeder. It consists of laminated dolostone, thin bedded dolostone with quartz-bearing beds and siltstone shale, interbedded limestone and dolostone, lime mudstone and minor graptolite. Bioturbation and slump features locally disrupt bedding. Chert nodules occur in the upper part of the sequence. The Middle Ordovician Table Head Group is the uppermost carbonate unit of the cover sequence. From bottom to top the Table Head Group contains the Table Point, Table Cove, Black Cove and Cape Cormorant formations (Klappa et al., 1980). Carbonate breccias of Cape Cormorant type are absent in stratigraphic sections of the Table Head Group in the map area, but similar rocks occur within the overlying Goose Tickle Formation and as possible blocks of breccia within the basal part of the Humber Arm Allochthon. On the north shore of Portland Creek Pond, along the gorge of Southwest Feeder and in Bowing Brook, thick bedded fossiliferous grey limestone of the Table Point Formation grades upward into thin bedded grey lime mudstone, nodular limestone and grey shales of the Table Cove Formation. Dark grey to black shales of the Black Cove Formation conformably overlies Table Cove limestones at Spudgie's Cove and in the Basin No. 2 drillhole near Bowing Brook.

Limestone breccias of Cape Cormorant type are, in most places, internally structureless and massive. Clasts range from granules to large blocks up to 70 cm long. Most are coarse pebbles to fine cobbles. Lithological character and faunal content of limestone lenses indicate derivation from the Table Head Group (cf. Schuchert and Dunbar, 1934; Nelson, 1955; Klappa et al., 1980). Rare yellow-weathering dolomite clasts are probably derived from the underlying St. George and/or Port au Port groups. Many clasts of poorly consolidated grey laminated shale and feldspathic sandstone up to 30 cm long are scattered throughout the unit.

Fourly developed, local bedding within the limestone breccias of Cape Cormorant type suggest two structural settings. On the northern tip of the island in Portland Creek Pond a contact between massive breccias and underlying Goose Tickle shale and sandstone has a west-northwest strike and a gentle southerly dip. In contrast, bedding within coastal outcrops, the coastal occurrences are probably a tectonic block or blocks within the basal part of the Humber Arm Allochthon. Shales and sandstones of the Middle Ordovician Goose Tickle Formation (Cooper, 1937; Knight, 1985) lie at the top of the cover sequence and are equivalent to the informal Norris Point Formation in the Gros Morne and St. Faus areas to the south (Williams, 1985; Williams et al., 1985, 1986) and the Mainland Sandstone in the Stephenville area. The Goose Tickle Formation is well-exposed along the lower reaches of Southwest Feeder. It consists of grey shale interstratified with well bedded grey-green sandstones to granitic conglomerate. Sandstones are graded with marked Bouma sequences in units up to a few metres thick. Sandstone beds are thicker, more massive and coarser grained towards the top of the sequence. Graptolites from shales on the north shore of Portland Creek Pond and the lower reaches of Southwest Feeder suggest a Llanvirn to Caradoc age (Lal, Williams, 1985, 1985).

The Humber Arm Allochthon consists of northeast-trending thrust slices of Middle Cambrian to early Middle Ordovician rocks of the Cow Head Group and overlying Lower and Middle Ordovician Lower Head Formation. In addition, limestone breccias of the Cape Cormorant Formation are interpreted as blocks within the basal part of the allochthon between Eastern Head and Daniels Harbour.

The Cow Head Group (Schuchert and Dunbar, 1934; Kindie and Whittington, 1958; James and Stevens, 1986) consists of limestone breccia interstratified with bedded grey limestone, tan-weathering dolostone lime mudstone, calcarenite and shale. Breccia beds are coarsest, thickest and most abundant to the southwest of Parsons Pond. This facies is assigned to the Shallow Bay Formation (Williams et al., 1985; James and Stevens, 1986). Where breccia beds are less prominent the rocks are assigned to the Green Point Formation. The character of the breccias changes along strike. Breccias assigned to the Shallow Bay Formation at Parsons Pond are finer and laminar northward, and east of Portland Hill they are assigned to the Green Point Formation. The most easterly outcrops of the Cow Head Group are dominated by grey shales, buff dolostomic siltstones and thin platy limestones with minor thin limestone breccia horizons (COhg'). These are regarded as basal, mainly Cambrian, parts of the Green Point Formation (Cawood and Williams, 1985).

The Lower Head Formation (Williams et al., 1985; James and Stevens, 1986) overlies the Cow Head Group. It is well exposed along the coast north of The Arches. The formation consists of interbedded green sandstone and grey to green-grey shale. Sandstone beds are thicker and more abundant higher in the section. They occur in graded to massive beds, which commonly display water escape structures. Limestone conglomerate occurs at the top of the section at Portland Hill. Sparse graptolite occurrences from the formation in the map area suggest an uppermost Arenig to basal Llanelli age (Cawood and Williams, 1986).

The Cow Head Group and Lower Head Formation occur in a series of east-dipping, east-facing belts repeated by west-dipping, west-facing belts. Local bedding revealed by west-dipping thrusts. Midsets of fabricate siltites vary both along and across strike. Local bedding revealed by west-dipping thrusts. Midsets of fabricate siltites vary both along and across strike. Local bedding revealed by west-dipping thrusts. Midsets of fabricate siltites vary both along and across strike.

Original relationships between the allochthon and underlying rock units are largely masked by later structures, except in the northern part of the area where the allochthon overlies the Long Range Formation. South of Southwest Feeder, the Parsons Pond Thrust truncates fabricate belts of the Cow Head Group/Lower Head Formation and brings the cover sequence above the Humber Arm Allochthon. North of Southwest Feeder the thrust is confined to the cover sequence and brings platform carbonates above the Goose Tickle Formation. The Parsons Pond Thrust parallels the Long Range Thrust, which brings the Long Range Complex over the carbonate cover sequence (Johnson, 1964; Ostry, 1955). The presence of Labrador Group strata in both the hangingwall and footwall of the Long Range Thrust suggests displacements of a few kilometres rather than tens of kilometres.

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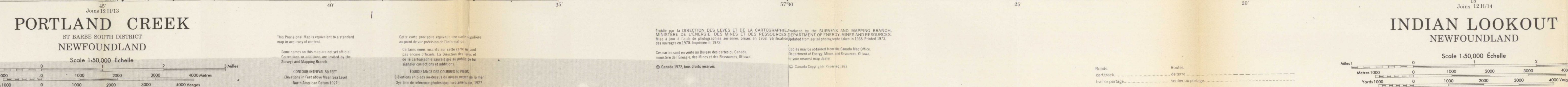
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INDIAN LOOKOUT
NEWFOUNDLAND
Scale 1:50,000 Echelle