GEOLOGICAL SURVEY OF CANADA

DEPARTMENT OF ENERGY, MINES AND RESOURCES

PAPER 70-8

NOTES TO ACCOMPANY GEOLOGICAL MAPS OF ANTIGONISH AND CAPE GEORGE MAP-AREAS, NOVA SCOTIA

(Report and Maps 2-1970 and 3-1970)

D. G. Benson

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(11F/13 W 1/2, 11F/12)

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NOTES TO ACCOMPANY GEOLOGICAL MAPS OF ANTIGONISH AND CAPE GEORGE MAP-AREAS, NOVA SCOTIA

Although the present topography is mainly a reflection of the underlying bedrock, glacial deposits up to fifty feet thick mantle most of the map-area. There are several good outcrop sections along the coast, most with offshore extensions to the low tide level and beyond. The configurations of these exposures are often altered annually by storms and shifting beach sands. Outcrops are found mainly along the stream valleys with a few in road and railroad cuts and on steep hillsides.

The Browns Mountain Group (1) forms an inlier consisting of a mixed volcanic and sedimentary (eugeosynclinal) assemblage exposed to the west in the Antigonish Highlands. This intensely deformed group which is also exposed on Cape George is intruded by dioritic to diabasic (2) bodies that may represent the intrusive phase of the Browns Mountain volcanics. The highland areas underlain by these rocks were topographically high and undergoing erosion during the Carboniferous and were the source of much of the Carboniferous clastic sediments.

The small exposures of the Arisaig Group (3) at the northern tip of Cape George appear to be part of a series of fault slices that also include some Browns Mountain and igneous rocks. Lithologies and fossils suggestive of the Moydart and Stonehouse formations are present but the rocks are not subdivided.

The granite (4), which intrudes the Browns Mountain Group (1) and is nonconformably overlain by limestone of the Windsor Group (10), is similar to Devonian granite about twelve miles to the southwest near James River. The shape of the pluton is also outlined on the Geological Survey's aeromagnetic map (Map 240G) of Antigonish map-area.

The Horton Group (5-9) rests unconformably on older rocks (1-3) or is in fault contact with them. It appears to have been deposited in two basins, one north of the highland of Browns Mountain rocks (north of Antigonish), and the other east of the highland. The rocks of the eastern basin are subdivided into a lower grey unit and an upper red unit, comparable to the lower and middle units in the threefold division in Lochaber map-area (Benson, 1963). The northern basin is underlain by a coarse-grained unit (7), which yielded some Upper Devonian spores and which is overlain unconformably by the volcanic Fisset Brook Formation (8). The uppermost unit (9) on Cape George may include parts of the lower unit (7) with the intervening Fisset Brook represented by thin basaltic flows.

The marine Windsor Group (10) is present in several incomplete and faulted sections. Individual limestone horizons and successions similar to the Windsor type section, are recognizable at the better exposures such as McIsaac and Monk points, Pomquet River, Monastery Brook and Cape Jack. The Windsor is conformable with the upper Horton Group but lies unconformably on older rocks.

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The Canso Group (11) was included in the Mabou Group by Belt (1965). His revision of the middle Carboniferous stratigraphy was based mainly on palynology and some of the better spore collections are from Pomquet River and Quarry Point. However the maps accompanying these notes retain the term 'Canso Group' pending further evaluation of the revised Carboniferous terminology. The contact with the Windsor Group is not exposed but is interpreted as varying from a slight angular unconformity to a conformity.

The Pomquet Formation (12) is a fossiliferous, mainly red sequence of channel sandstones interbedded with poorly sorted sediments. The basal contact is gradational and is placed above the highest calcareous bed of the Canso Group.

The Port Hood Formation (13) is correlated with the type section on the basis of lithology, spores and a thin coal seam that is exposed on the shore of Pomquet Harbour. It is probably conformable with the Pomquet Formation but the contact was not observed. It unconformably overlies the Browns Mountain and Horton groups at Cribbean Head.

The Browns Mountain Group was strongly folded and faulted during at least two periods of deformation. The faults cutting the Carboniferous rocks were probably initiated during the late Devonian and early Carboniferous Acadian Orogeny with local readjustment during the Carboniferous.

Several holes were drilled in a search for salt (see Reports of Nova Scotia Department of Mines, 1951, 1952, 1953, 1958). Three holes, near Southside Antigonish Harbour intersected salt in thicknesses up to one thousand feet and varying amounts of gypsum and anhydrite. In 1958 a hole was drilled near Monk Head to a depth of about two thousand feet in an unsuccessful search for petroleum. Thick gypsum and anhydrite sections are exposed on the east and west side of Antigonish Harbour. Thin limestone beds of the Windsor Group often have a petroliferous odour when freshly broken.

Minor amounts of sulphide minerals, mainly pyrite, are found in the Browns Mountain volcanics. Sphalerite and galena veins occur in the Windsor limestone on Cape Jack. There is considerable pyrite in the Horton Group wacke along the Havre Boucher fault and along the railroad tracks at Little Tracadie River. The Horton arenite (5) in the southeast corner of the map-area consists principally of quartz and feldspar with few argillaceous impurities and may be of interest to the ceramic industry.

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