A Walking Tour Of Rocks, Minerals And Landforms of Point Pleasant Park

Nova Scotia
Department of Mines and Energy

Information Circular 7

Point Pleasant Park Has An Interesting Past

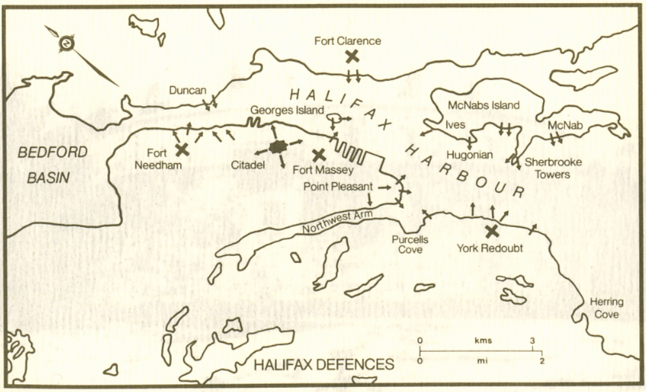
Halifax has an intriguing history both from a human and a geological standpoint. It was originally established as a British military base to act as a guard against French military influence and the threat of the fortress of Louisbourg. The reason this particular site was chosen has much to do with past geological events.

Point Pleasant Park is located at the southern tip of the Halifax peninsula and is bounded by the Northwest Arm and Halifax Harbour. Its location made it an important link in the defence system of Halifax.

Geologically, Point Pleasant Park has much to offer. Various glacially produced landforms and structures can be seen from and within the park. There are several localities where the underlying bedrock is well exposed. These areas tell us the type of environment in which the rocks originally formed and what sort of changes they have undergone. The basic geological history of the Halifax area can be derived from a general survey of Point Pleasant Park.

Point Pleasant Park Was Once An Important Part Of Halifax's Military Defence System

All that remains as a testimony to the once elaborate military defence system of Halifax is the ruins of several old batteries and fortresses. Those seen in Point Pleasant Park are only part of a larger defence network designed to guard the approaches to Halifax and the Northwest Arm from attack. Other parts of this network included fortresses on McNabs and Georges Islands, York Redoubt, and the Halifax Citadel.



Fortifications around the Halifax Harbour area in the late 1700s and 1800s. The small arrows represent the fields of fire from various forts and batteries.

In 1762, two temporary batteries were built at Point Pleasant — one on the harbour side and the other on the Northwest Arm. A chain boom was constructed across the Northwest Arm to prevent enemy ships from sailing up the Arm. The boom began at Chain Rock and stretched across the Northwest Arm.

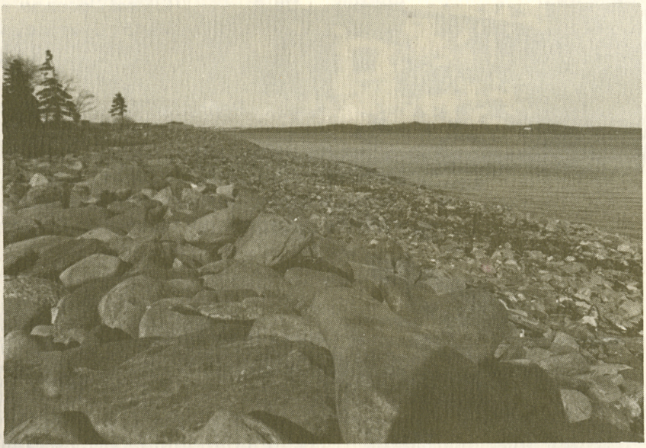
During the American Revolution (1775-1783) the two original batteries were reconstructed and three more were built — two along the Northwest Arm and one near Black Rock Beach.

Ten years after the American Revolution, war broke out between Britain and France and again Halifax's defenses needed strengthening. General Ogilvie, the commander of Halifax's defences, had two of the five existing batteries reconstructed. The remains of these two, which Ogilvie named the Point Pleasant Battery and the Northwest Arm Battery, still exist; however, the other three batteries have long since been reclaimed by the forest and time. At the same time he had a new fortification built which he named Fort Ogilvie.

In 1794, Prince Edward, son of King George III, replaced Ogilvie as military commander of Halifax. He further strengthened Ogilvie's three batteries, reinstated the chain boom across Northwest Arm with a small battery to protect it, and ordered the construction of a central fort on higher ground as a backup defence in case of a land attack. This fortress was completed in 1797 and named the Prince of Wales Martello Tower after Edward's eldest brother. Prince Edward is also remembered in Halifax for the building of the Town Clock on Citadel Hill.

The introduction of powerful rifled guns by 1860 made much of Point Pleasant's defences obsolete. Fort Ogilvie had to be strengthened, and a new battery, the Cambridge Battery, was built. The Prince of Wales Martello Tower was converted into a central magazine.

In the 1890s, searchlights and a new quick-fire battery for defence against motor torpedo boats were built on and near the site of the Point Pleasant Battery. In the early twentieth century, Fort Ogilvie and the Cambridge Battery were converted to modern breech loading guns. The Cambridge Battery went out of service before World War I, but Fort Ogilvie remained in use as a coastal artillery position until 1943.



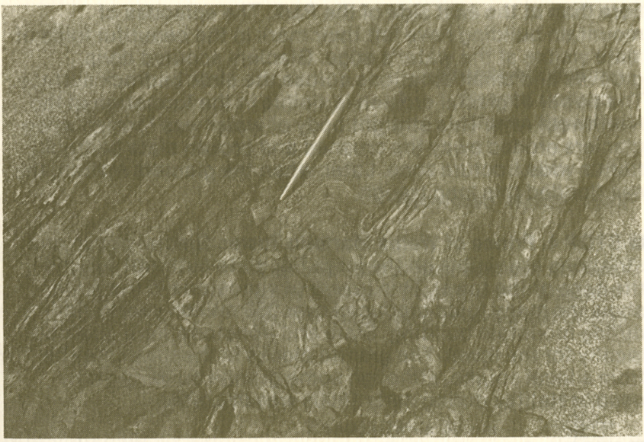
Pebble and cobble beach at the south end of the Park. This is a high energy beach created by storm waves and ocean swells. Hills on the skyline are drumlins on McNabs Island.

The Shape Of The Land And Underlying Rocks Were Important In The Decision To Establish A British Military Base At Halifax

In the early 1700s the tension between Britain and France was high. The people of the New England Colonies lived in constant fear of an attack by the French. In order to dispell this threat, the British decided to establish a naval base between the fortress of Louisbourg and the English Colonies. This would also give them control of the St. Lawrence trade route and allow them to cut off supplies going to Quebec from France should another war break out between the two countries. The British stronghold was founded in 1749 by Colonel Edward Cornwallis in the general location of the French settlement of Chebucto. It was named Halifax after Lord Halifax, president of the Board of Trade and Plantations which sponsored the town's construction.

Halifax was only one of many natural harbours found along eastern and southern Nova Scotia that could have been chosen for the base. The greatest advantage Halifax had over the other possible choices was the Bedford Basin. The basin is a large, deep body of water whose only connection to the open ocean is through the narrows. In addition, both the basin and the harbour remain generally ice free. The shape of the harbour made an easily defendable entrance to the sheltered basin. High, steep land and small islands near the mouth of the harbour provided potential locations for smaller military installations to further guard Halifax from a sea attack. Another factor that was probably influential was Halifax's location at the eastern end of the old French Annapolis Valley - Chebucto trade route.

Most of the characteristics that made Halifax such an ideal site were the result of a complex sequence of geological events. The sediments that made up the slaty bedrock of Halifax were deposited as deep sea muds about 500 million years ago. Since their deposition, the slates have undergone a period of crushing and folding during mountain building, intrusion of molten masses of granite, and finally gouging and shaping by glaciers.

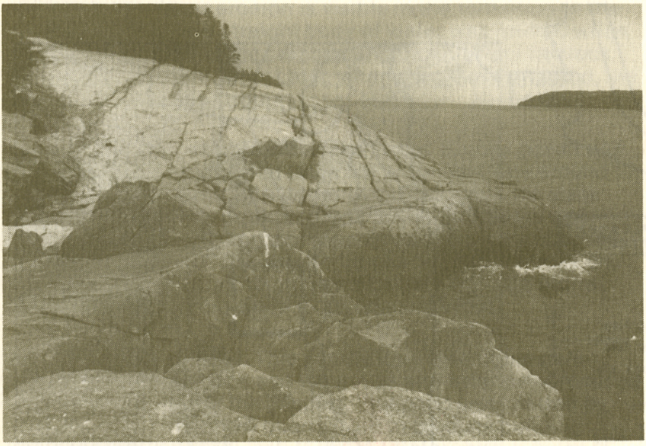


Slate layers folded at Chain Rock. These folds are an imprint of past mountain building episodes. The pen is 5 inches (13 cm) long.

The glaciers carried large amounts of eroded material within them. When the ice melted it left behind an unconsolidated mixture of boulders, sand, and clay. This material composes the characteristic rocky soil of Nova Scotia and is known as glacial till. Hill-like accumulations of till are called drumlins — McNabs Island, Georges Island, and Citadel Hill are examples. These drumlins made excellent sites for fortifications because they were easily excavated. Glaciers also eroded rock. Areas most susceptible to erosion were those in which the underlying rocks were fractured. Parts of the Halifax Harbour and the whole length of the Northwest Arm are old fault zones that developed during the mountain building period and are now recognized by their linear nature. They were enlarged and deepened by the glaciers and, after the ice melted, flooded by the rise in sea level.

Rocks and geological history have influenced the shape of the coastline on either side of the harbour. Granite as a rock is uniform in hardness so that it weathers and erodes more slowly than slate. The layered nature of slate allows water, frost, and wave action to break it apart rather easily. The granite coast from the mouth of the Northwest Arm southward to Chebucto Head and Sambro is bold, rocky, and steep. The Dartmouth side of the harbour has a lower coast with low lying islands and shoals.

For further information on local geology refer to the pamphlet "Geology of the Halifax - Dartmouth Area" available from the Nova Scotia Department of Mines and Energy, the Nova Scotia Musuem, and the Nova Scotia Government Bookstore.



Glacial grooves on the slate surface at Chain Rock. Numerous fine striations and deep grooves mark the passage of the glaciers. The headland in the distance is part of the rugged granite coast on the west side of Halifax Harbour.

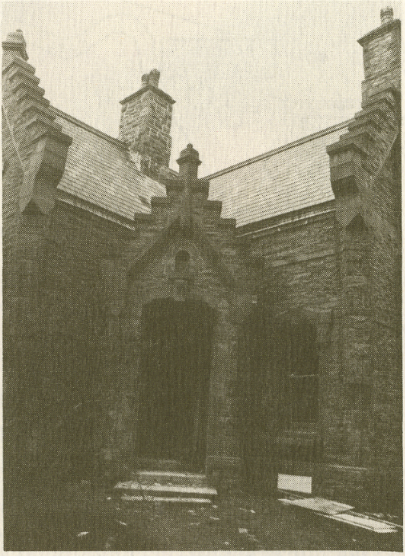
Today Point Pleasant Park Is A Recreational Park And Historic Site

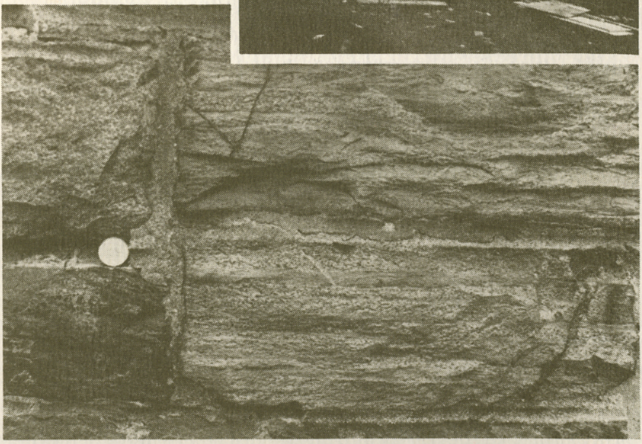
Every year, in early July, a number of people gather at the Prince of Wales Martello Tower to witness a special ceremony. At this time, the Point Pleasant Park Commission presents the annual rent for the park to the Queen's representative, usually the federal Minister of the Environment.

The park was leased to the Commission, by Queen Victoria in 1866 for a term of 999 years. The annual rental fee was set at one shilling (approximately 2 cents in Canadian funds).

The Point Pleasant Park Commission has 9 directors: 7 local citizens, the Mayor of Halifax, and 1 Alderman from the City. The Commission is responsible for the management of the park, with the exception of the Prince of Wales Martello Tower which falls under the jurisdiction of Parks Canada.

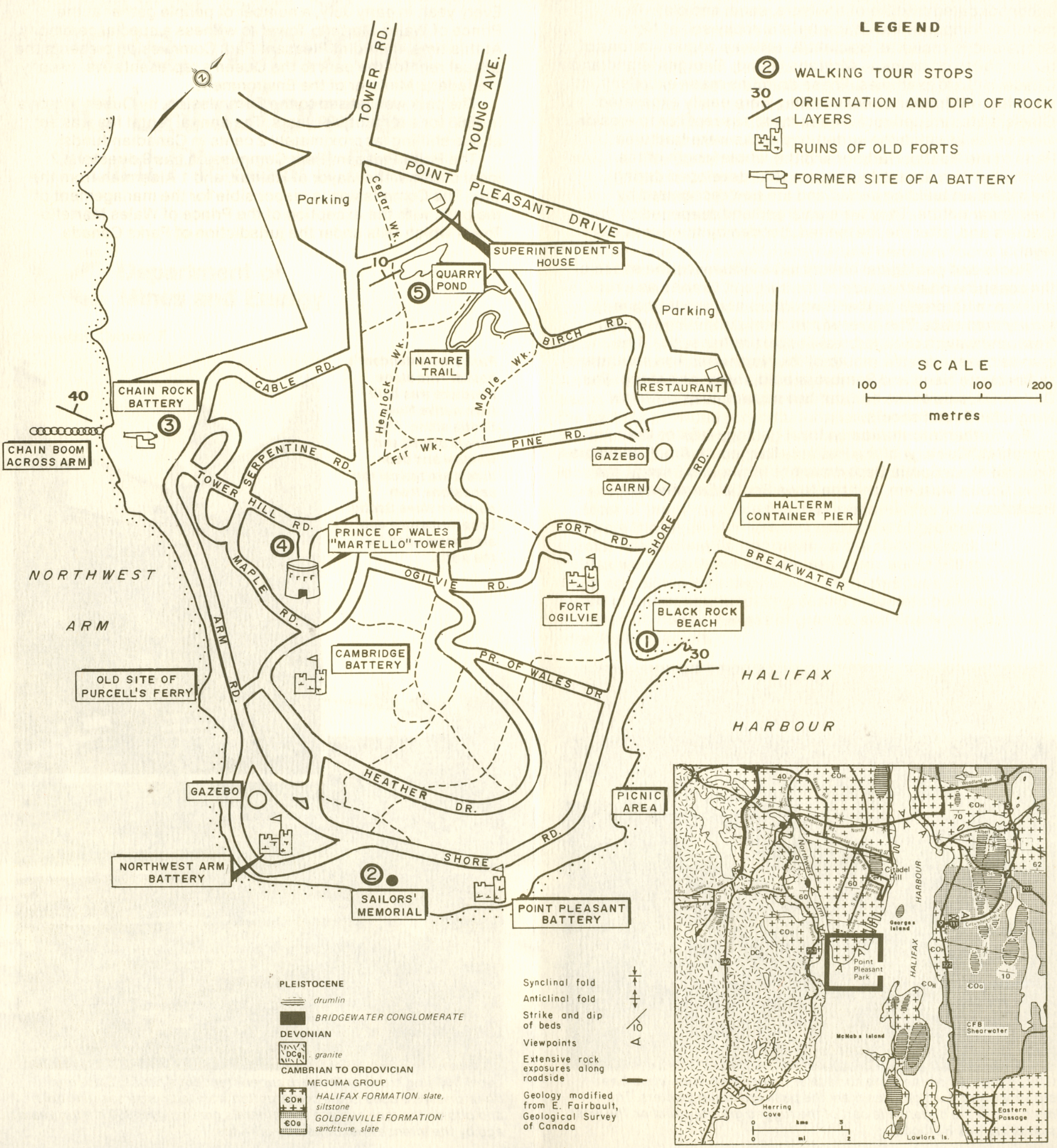
Park superintendent's house. This stone structure was built from native Nova Scotia stone. The carved pieces and window and door lintels are typical tan sandstone from northern Nova Scotia. Local ironstone and slate were used for the walls.





Local building stone at the park superintendent's house. Slate and ironstone were used in the construction from local sources. The dots and pits on the rock surface are minerals created over 350 million years ago by the intense heat of nearby granites.

POINT PLEASANT PARK



Walking Tour STOPS

■ **STOP 1. Black Rock Beach.** We start the walking tour here to show how sand beaches form and to interpret the ancient history "written in the rocks." The sand beach is located here because the large bedrock ledge protects it from the eroding action of the waves. Additional sand has been brought in to enhance the beach. The slate bedrock originated as deep sea muds and fine grained sands which were compacted and lithified into shale over 450 million years ago. Later during mountain building episodes, the rock was altered by heat and pressure into slate. During this time large amounts of granite were injected into the rock mass. The heat from the granite "cooked" the slate and allowed new crystals of andalusite and/or cordierite to grow in the rock. Weathering of these small crystals by sun, rain and ice left countless small pits on the rock surface. Less than 20,000 years ago glaciers striated and polished the bedrock surface.

■ **STOP 2. Point Pleasant Battery.** The high energy beach is the reason for this stop. Looking out along the shoreline, you can see the pebbles and cobbles forming the beach next to the green grass. This is not a sand beach because large, high energy waves and swells from the open ocean strike the land here and carry off the sand. A large shoal area extends out from the beach about a quarter mile (0.4 km). The green buoy on the east and the red buoy on the west mark the limits of the shoal. Notice the many hills on McNabs Island to the east. These are drumlins left by the glaciers. On the west side of the harbour, the granite coast is steeper and rockier than the coast on the east side of the harbour.

■ **STOP 3. Chain Rock Beach.** The slate bedrock here is similar to what you saw at Black Rock Beach. But there is a difference. This location is about a quarter mile (0.4 km) closer to a once hot, molten granite body visible across Northwest Arm at Purcells Cove. More crystals of andalusite and/or cordierite are visible on the slate bedrock surface here because this location was closer to the heat source. In general, the slate rock looks like it has been "cooked" more here than at the east side of the Park. The episodes of mountain building have left their mark in the beautiful folds of slate visible at the water's edge. Glaciers scoured deep grooves and small striations across the slate bedrock surface. The power of glacial erosion is visible in the formation of the Northwest Arm. This straight body of water was formed when glaciers eroded away the crushed and broken slate bedrock from a wide fracture zone. Later, when the glaciers melted, the sea flooded this long trough.

■ **STOP 4. Prince of Wales Martello Tower.** Glacial polish and striations are visible on the large flat slate outcrops around the base of the tower. Thin layers of sandstone in the slate show the many folds produced over 350 million years ago during mountain building. Slate and ironstone were quarried locally for the tower. The granite blocks in the tower may be from a local source, although some granite building stone used in Halifax during early 1800s was imported.

■ **STOP 5. Quarry Pond.** This picturesque area of the park shows the slate bedrock and the polish and striations produced during the passage of the glaciers. The pond was created by water filling a small slate quarry used to produce building stones. Some of the 1½ inch (4 cm) diameter vertical holes in the slate were probably produced by hand held star drills. Later the holes were filled with the blasting charge and fired. The blocks were then shaped by hand for the particular building.

Nova Scotia

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