A Historical and Biological Survey of Egg Rock

Spring 1996

INTRODUCTION



Egg Rock--located at 44° 21' 15" N latitude, 68° 08' 19" W lognitude--is a 3.5 hectare, rocky island situated at the mouth of Frenchman Bay, about 6 km (3.75 mi) southeast of Bar Harbor, ME (Burr, 1908). Today this island serves as an important navigational aid complete with a lighthouse, boat slip, and fog signal. Egg Rock light is currently maintained by the United States Coast Guard (USCG).

The first known record of Egg Rock is found in the 1662 journal of a French explorer, Sieur Antoine de la Mothe Cadillac. He wrote of discovering 600 dozen eggs on the "rocq" in the middle of Doauaqez Bay, now known as Frenchman Bay, and this account is used to explain the name Egg Rock. After the American Revolution, the island was named Gull Island; however, this name did not persist. The first map showing Egg Rock is found in a series of charts, created before the Revolution, called the "Atlantic Neptune Series" (McClane, 1989).

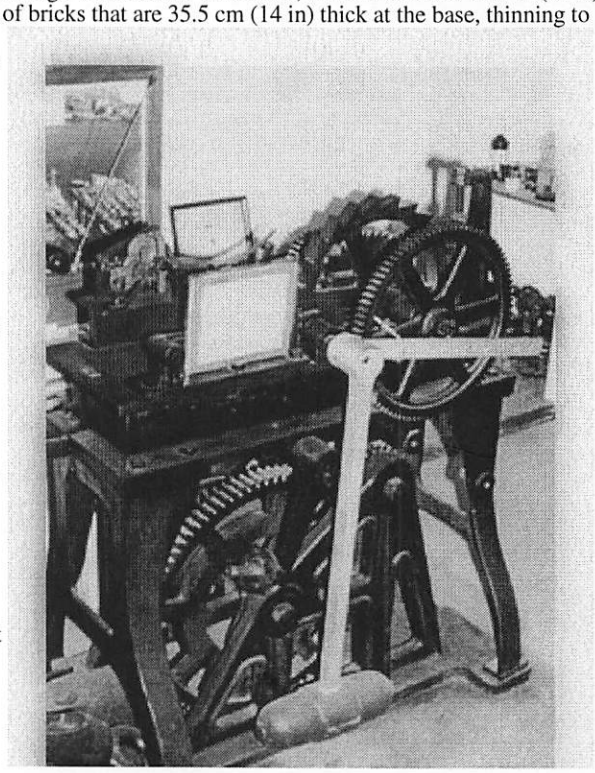
On February 21, 1866, the small island or ledge formation, known as Gull or Egg Rock Island was sold by the State of Maine for $10 to Mr. Eben M. Harris (M

aine State Planbook, 2a). It is unclear as to how ownership of this island was transferred to the state of Maine, but on November 4, 1874, the Govenor of Maine ceded Egg Rock to the United States government.

THE LIGHTHOUSE

During an inspection in 1908, Lieutenant Colonel Edward Burr of the Army Corps of Engineers described the lighthouse buildings and premises. The following descriptions as well as lists of historical events on Egg Rock until 1912 are taken from the United States Lighthouse Records: Egg Rock File, which is located in the National Archives, Washington D.C.

The history of the Egg Rock Lighthouse Station begins on June 23, 1874, when Congress appropriated $15,000 for the construction of this lighthouse site. Construction began in June 1875, and on the night of November 1, 1875, the light shone for the first time. During this first year all materials were landed, the ironwork was completed, foundation laid, brickwork finished, and a fog bell installed. The original house was only one-story high and built around the tower which measured 19.5 m (64 ft) from the mean high-water mark. The tower, which measures 11.8 m (39 ft) high from the ground to the ventilator ball with a diameter of 3.0 m (10 ft) sq., is built of bricks that are 35.5 cm (14 in) thick at the base, thinning to 30.5 cm (12 in) at the parapet. There are 6 landings of iron stairs leading to the top of the tower which, in 1976, contained the polygonal, 5th-order lantern. Each side of the polygon is comprised of a 3.2 cm (1.3 in) thick plate that measures 71.1 x 92.6 cm (28 x 36.5 in). This plate is held in place by a castiron framework and covered by an iron roof. The watchroom in the top of the tower is fitted with a closet; the outside gallery consists of a floorboard along with a two-rail pipe railing. The only other structures present on the island in 1876 were the fog bellhouse and a fuel shed.



During a gale on March 25, 1876, high seas flooded the house, carried away the fuel shed, and displaced the fog bellhouse approximately 9.1 m (30 ft). In 1877 violent waters again washed the bellhouse down the island. Finally, when on December 28, 1987 a major storm damaged the bellhouse, the Coast Guard replaced the old bellhouse with a skeleton tower--a box containing the bell that was set 3-3.7 m (10-12 ft) high legs--so that the sea could pass underneath. In 1988 they also installed a new 454 kg (1,000 lbs) bell, complete with striking machinery.

In 1880, the keeper repainted the exterior of the tower and dwelling for the first time, and in 1882, the first major renovation was made to the premises when the Coast Guard installed a 145-foot-long boat slip, located 45.7 m (150 ft) from the lighthouse. In 1884 a boathouse was constructed next to the slip.

Further renovations were made in 1890 when a fuelhouse was built and the fog-bell machinery repaired. A foot bridge was also built over a chasm in the rocks to connect two areas on the island--one with the main building and the other with the oil and storehouses. This was a much-needed improvement for the keepers because during some high tides, the chasm in the rocks filled with water. Keeper Sawyer reported that during a strong gale on February 1, 1908, the sea moved rocks weighing from 2-30 tons and measured approximately 2.1 m (7 ft) deep in this chasm (Egg Rock Light, 1911).

Despite the need for frequent repairs, the fog bell wore well considering the foggy

weather that Egg Rock is subject to in summer. In July 1897--one of the foggiest months on record--the signal sounded for 360.75 hours, and the longest continuous run was for 105 hours from June 21-25, 1895 (Egg Rock Light, 1911).

In an 1899 assessement of the keeper's dwelling, inspectors decided the rooms were too dispersed for adequate heating in the severe winter months. They proposed adding a second story with enough rooms to accommodate one family for a maximum cost of $1,700. In 1901 contractors built a cellar under the dwelling, and the old bell-striking machinery was replaced.

When the striking machinery was repaired in 1902, the lens was changed from a 5th-order lens to a more powerful 4th-order one. The lens of the light was made by Barbier, Benard, and Quienne in Paris. These lenses, which were comprised of lead crystal prisms and magnifying glass, concentrated the beacon of light which could then be seen for miles. The light signal was also switched from a constantly shining red light to one that flashed white every five seconds. Similar to a cucko-clock mechanism, the flashing was caused by different colored panels that were rotated by weights. This lens was set on a pedestal, with a clock attached to run the rotational equipment. After one winding, the revolving machinery would run for about 7 hours.

On August 14, 1903, the warship Massachusetts, coming down the bay from Bar Harbor, ran ashore in the dense fog and was badly damaged (Egg Rock Light, 1911). Although the lighthouse keeper assured officials that the fog signal was in working order, the signal was replaced and upgraded in 1904 to a 1st-order Daboll trumpet, made by the U.S. Machine Shop in Boston. Constructed of copper and run by compressed air, this trumpet was 4.7 m (15 ft, 7 in) in length. The trumpet was activated by air moisture and blew at a pressure of 4 lbss for 4 seconds, then was silent for 2 seconds, blew for another 4 seconds, and was silent for 24 seconds. In 1907 this trumpet operated for 1,813 hours during the year--an operation that consumed over 2886.4 l (762 gal) of oil.

According to the publisher Joseph Pulitzer, who lived approximately 2 mi north, just opposite Thrumcap, this new trumpet worked a little too well. To block out the sound, he built a sound-proof room in his estate that some refer to as the tower of silence. Although he requested the fog horn be shut off, his complaints resulted only in repositioning the axis of the trumpet to face magnetic south (Spiker, 1965).

Lt. Col. Burr's 1908 description of other structures on the island included a brick cistern with a 7,575.8 l (2,000 gal) capacity located under the dwelling, and an oil house with one service room to hold supplies located about 76.2 m (250 ft) north of the tower. Although Burr's description does not include the cannons on Egg Rock, two were mounted on Egg Rock on May 6, 1899, as part of an effort to protect Frenchman Bay and Bar Harbor from possible attacks by the Spanish fleet (Bar Harbor News, Bicentenial Supplement, 1996). Both cannons are 3.5 m (11 ft, 5 in) long; the muzzles, are marked "Fort Pitt, Pa. - SCL 1865" with the weight and cannon number following. The first cannon weighed 6,827 kg (15,020 lbs), was marked with the number 344, and was located in front of the lighthouse. The second cannon weighed 6,818 kg (15,000 lbs), was marked on the front with the number 312, and was located on the rocks (USCG Records, 1971).

On September 16, 1971, Coast Guard officials proposed moving the two cannons from Egg Rock by helicopter (USCG Records, 1971); in the early-80s? they were placed in Agamont Park, near the beginning of the shore path in Bar Harbor, just to the left of the Bar Harbor Inn.

By 1930 improvements to the original land on Egg Rock included a bell tower, fuel house, oil house, boat house and slip, dwelling surmounted by tower, and a telephone line extending to MDI (Sherman, 1930). Until March 7, 1939, when the station was electrified, the Egg Rock light burned kerosene. With electric power the light intensity was increased from 9,000 to 16,000 candlepower, and the light, which was powered by direct current furnished by 56 two-volt batteries, could then be seen further out to sea. The batteries were charged while the lights or fog horn was on or by a dynamo which was powered from a gas and kerosene engine. The engine had to be started 3 hours after the light was turned on, typically at sundown, but if the fog horn was running, the engine and dynamo had to run continuously. The engine was started with gas, and subsequent refueling was with kerosene ("Egg Rock Light House Completely Electrified", 1939).

Egg Rock was automated on October 8, 1976, when the keeper was lifted from the rock by helicopter (Matava, 1982). The old labor-intensive fresnel lense was replaced, and the lantern house removed. The top of the tower looked as though it was lopped off, and there was much public criticism because of this. Finally in 1986, as part of a restoration project, a new 1500-pound lantern house was mounted around the modern beacon to improve its appearance (Feller-Roth, 1988).



Since the automation of the light station, USCG workers usually spend a few weeks in June checking equipment and repairing damaged structures.

The underwater cable that runs from Egg Rock to Mount Desert Island (MDI)--NECTO Pole #3-120--on Schooner Head Road was inspected and repaired on July 1, 1991. In 1997, this cable continues to powers Egg Rock. A 1992 report states that signs were to be installed on Egg Rock where necessary and were to have read: "NO TRESSPASSING" and "CAUTION, SOUND SIGNAL MAY SOUND AUTOMATICALLY WITHOUT WARNING. SOUND PRESSURE LEVELS BEYOND THIS POINT MAY BE HAZARDOUS TO YOUR HEALTH." The signs were specified to be yellow with black, 1.3 cm (.5 in)-high letters, and they had to be weatherproof and capable of withstanding high winds and salt spray. Whether these signs were actually installed is unclear. They were not present on the island in May 1997. This 1992 report also noted that workers needed to verify whether the remote intrusion alarms and fire supression systems were working properly and that all debris should be properly removed from the site--no debris would be thrown into the water (USCG records 1992).

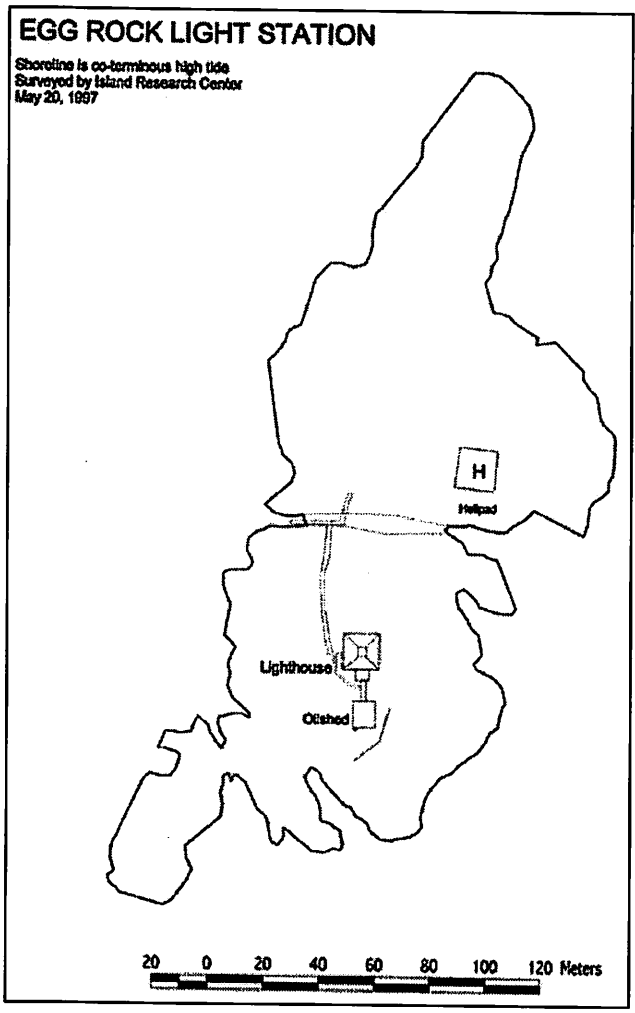
In 1997 the lighthouse site included not only a helicopter pad, boat slip, foot bridge over the chasm, fuel shed that is probably now used for storage, but also duplex dwelling with boarded windows and a fog signal box located on its southeast face.

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BIOLOGICAL DATA

The earliest biological information recorded for Egg Rock is Sieur de la Mothe Cadillac's 1692 journal entry describing 600 dozen eggs on Egg Rock. The earliest, and only, record of vegetation on the island was found in a 1913 issue of the journal Rhodora. Sedum rosea, commonly called roseroot or roseroot stonecrop, was reported as rare on Egg Rock. This plant was reported by Professor A. E. Verill as "new to the flora of Maine in 1863" (Norton, 1931). The plant is an arctic species that commonly grows in moist crevices south along the coast and sea cliffs to Maine (Fernand, 1989). Locally it is common at the south end of Little Moose Island but is rarely found elsewhere in Acadia National Park (Grant and Sharpe, 1963).From both the island's name and Sieur de Cadillac's record of eggs on the island, we can conclude that over the past 300 years seabirds have periodically nested on Egg Rock. However, I found no record of birds nesting on the island from 1875-1977, after the construction of the lighthouse, when keepers maintained the island. Allen and Norton (1931) compiled information about seabirds on Maine coastal islands in the early 1900s. They showed no record of birds on Egg Rock, and lighthouse keeper records from November 19, 1916 read, "Keeper took wife to Bar Harbor, assistant killed his dog" (Keeper's Log). The dog's presence would further decrease the chances of birds nesting on the island.

In 1977, just after the automation of the lighthouse and the breakup of the nearby Petit Manan colony--the largest laughing gull and tern colony in Maine--laughing gulls and common terns were reported to be nesting on Egg Rock. However, no quantitative data were recorded for this year. Data on all nesting seabirds from 1977-1994 is summarized in the following list:

YEAR	SPECIES	NUMBER
1977	Laughing gulls	nesting
	Common terns	nesting
1983	Laughing gull	175 pairs
	Common tern	140 pairs
	Arctic tern	120 pairs
	Roseate tern	5 pairs
	Common eider	4 pairs
1981	Laughing gull	175
	Common tern	300
	Arctic tern	300
	Black-backed gull	5
	Herring gull	25
	Common Eider	8 pairs
1984	Common tern	325 pairs
	Laughing gull	100 pairs
	Arctic tern	60 pairs
	Herring gull	40 pairs
	Roseate tern	3 pairs
1985	Common tern	375 pairs
	Arctic tern	25 pairs
	Laughing gull	25 pairs
	Herring gull	15 pairs
	Black-back gulls	10 pairs
	Common eider	6 pairs
1986	No terns	
1987	Common terns	6
1989	Common eider	15 pairs
	Black-backed gull	56 pairs
	Herring gull	48 pairs

1992	Black-backed gull	5 pairs
	Herring gull	241 pairs
	Common eider	34 pairs
1994	Black-backed gull	5
	Herring gull	241
	Common eider	34

The most extensive bird survey of this island was conducted during June and July 1984 when biologists from COA observed bird activity on Egg Rock. Upon arrival on June 5, the USCG was repairing buildings, and researchers found only 25 tern nests, all of which were abandoned. However, after work was completed, the terns continued to set up territories. Folger (1985) reported 388 tern nests on June 21 using capture/recapture methods. Folger reported that the repair work affected reproductive success as evidenced by the destruction or abandonment of the birds' nests and subsequent laying of eggs later in the season. Reproductive success, however, was low; only 30-55 fledged out of a colony of about 388 pairs.

Another reason for low fledging success was predation. Folger and Drennan (unpub) noted that about 10 individual gulls were responsible for the over 245 gull incursions into the tern colony. A minimum of 29 incursions resulted in the death of tern chicks or laughing gulls. Predation rates varied according to location on the island and proximity to the house where the researchers were staying; researchers harassed the gulls by the house and destroyed the 40 herring gull nests that they found on the island. On July 12 they reported that an immature peregrine falcon made two passes over the colony but made no kills.

Folger and Drennan (1984) predicted that because of Mt. Desert Island's active fishing and tourist industry, and consequently the waste produced, this island would be a prime roosting location for gulls, and therefore the tern colony would likely perish without active management .

Personal comments from local naturalists indicate the periodic visitation of Peregrine falcons or bald eagles to feed on Egg Rock (Hill, pers. comm.). Similarly, harbor seals, Phoca vitulina, as well as gray seals, Halichoerus grypus, prefer to sun and rest on half-tide ledges or small islands (Kenny and Gilbsert, 1994) and are also known to use Egg Rock as a haul out (Hill and Stevenson, pers. comm.). Although I was unable to find reports documenting numbers of seals resting on Egg Rock, I did find that on June 7, 1972, a USCG observer found 1 gray seal, Halichoerus grypuss, stranded/dead on the island (Richardson, 1976). Both harbor and gray seals are common on the southwest ledge from May through September. During May of 1997 up to 30 seals were observed resting on the island (Sharp, pers. com.). The site also appears to be used for pupping by 3 female harbor seals.

1997 BIOLOGICAL SURVEY

The island was mapped on May 21, 1997. We used a Trimble GeoExplorer Differentially Corrected GPS to survey the island. We first mapped the helicopter pad and buildings; then we proceeded to digitize the coastline by walking the shoreline, just above the splash-water mark, while the GPS unit recorded one point every 5 sec.

We also photographed the buildings and collected plants to be identified.

On May 27, 1996, 17 COA researchers visited the island to count seabirds. When we arrived, there were two eagles resting on the southern ledge, and we observed guillemonts in the shoreline waters. As suggested by Drury (unpub) we used mark/recapture methods to survey the seabird colony on Egg Rock which consisted of herring gulls, black-back gulls, and common eiders. We formed a line, each person spaced an arms-length apart from the next and walked across the island, counting and marking with craft sticks each nest we encountered. Once completed, John Anderson recounted a section of the nesting area while recording both the number of marked, 59, and unmarked or (missed), 4, nests. Using these numbers, I calculated a Peterson (or Lincoln) index as follows: Total number of nests recounted (63) divided by the number of marked nest found (59). I then multiplied this index (1.06) by the total nest count (294) to get a final corrected nest count of 311.64, 21.2 eider nests and 290.44 gull nests. The uncorrected nest count results for the island are as follows:

SPECIES SCRAPES 1 EGG 2 EGGS 3 EGGS 4 EGGS 5 EGGS

Eiders 6 3 2 6 6 3

Gulls 232 93 93 85 3

Although we did not distinguish between herring and black-back gulls, we visually estimated an approximate 7:3 ratio respectively. We also observed that most of the black-back gulls were nesting in the southern more protected area of the island whereas the majority of the herring gulls were on the northern wind exposed ledges.

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THE LIGHTHOUSE KEEPERS AND NOTEABLE EVENTS

"The keeper of the lights and frequently their families have traditionally shared not only the dangers and hardships always faced by sea-faring folk, but have exhibited heroism beyond the call of duty when the need for courage arose" (Spiker, 1965).



Keepers as listed in the register of Lighthouse Keepers for Egg Rock (Nat. Archives microfilm m1373) include:

KEEPERS FROM TO

Ambrose H. Wasgatt 1876 1885

Amaziah R. Small 1885 1889

Lewis F. Sawyer 1889 1899

Herbert Sawyer 1899 1912

W.H. Dodge 1912 ?

Winfield Kent 1916

J. B. Pinkham 1935

ASSISTANT KEEPERS

Hebert Sawyer 1898 1899

Clifford M. Robbins 5/1902 7/1902

Stephen Flood 11/1902 1905

John E Purington 9/1905 10/1905

J.B. Ingalls 1908

Harry Smith 1912

Augustine Hamor 1916

Buster Dalzall 1935

The Coast Guard took over lighthouse management from the Lighthouse Service in 1932, and a staff person from the National Archives stated in a telephone interview that the USCG probably never compiled a comprehensive list of keepers because that information was not administratively necessary. The following accounts are primarily based on the Keeper's Logs and Correspondences (from record group 26) in the National Archives.

From 1876-1912 lighthouse keepers at Egg Rock were paid between $600 and $620 per year, and assistants between $400 and $480, to maintain the light, fog signals, and buildings. These jobs were critical to ensuring safe navigation through the waters and were sometimes all-day and all-night commitments. For example, when keepers were first on the island, the light signal mechanisms had to be checked regularly; if they found the weight-driven mechanism stationary during the night, they had to not only remedy the problem but also check the mechanism each hour throughout the night to detect any irregularities. The keepers' responsibilities also included washing the windows, keeping the crystal fresnel lenses spotless, and polishing the brass--a duty that many keepers and keepers' wives considered the bane of their existence.

With this amount of continual work, an assistant keeper seemed essential. However, in 1889, while father and son had been maintaining the light for the past year, the inspector wrote in correspondence letters that despite all the difficulties maintaining a station like Egg Rock only one keeper should tend the light as in earlier years. The position of assistant keeper was abolished in 1899, but later records show assistants to be on the island again in 1902.

The old logbooks are a testament to the keepers' dedication to their positions and include records of important events, daily weather conditions, storms, and damage. Keeper Sawyer recorded that on December 24, 1899, the fishing pinky, Julia Ann, ran ashore during the night. Sawyer said that by morning the boat looked like kindling wood and that this was a very mysterious occurrence because both men on board died; he thought maybe they fell asleep while rowing (Egg Rock Light, 1911).

Some keepers recorded only required data, whereas others also reported excursions to the mainland for supplies, picnics, or other events. Keeper Dodge reported that on May 16, 1912, Smith, his assistant, went ashore for mail, supplies, and medicine for the baby boy who was sick with measles. Harry Smith later reported that on July 23 the keeper and his family went to Schoodic for berry picking. When digging through these records, I found the first record of a family--assistant Clifford M. Robbin's family--on the island in 1902 (Keepers' Log). Keeper Sawyer lived with his wife on the island, but whether other family members were present was not clear. He stated that he "liked his work, and is never lonesome, nor is

his competent wife either" (Egg Rock Light, 1911). In 1912, the keeper, W.H. Dodge, had his family on the island, as did Winfield Kent in 1916 (Keepers' Log).

Because Egg Rock is so near MDI, keepers could get supplies and escape the loneliness of island life more easily than the light keepers at stations such as Mount Desert Rock. However, even though the trip to the mainland was a less than 6.5 km (4 mi), the waters could still be treacherous, especially in winter. In fact, on March 14, 1918, the keeper began rowing to Bar Harbor and lodged the boat in floating ice. A patrol boat had to tow him home. Although this keeper was returned safely home, one assistant drowned while rowing to the island. Assistant Buster Dalzall was lost in February 1935 while rowing into Bar Harbor. It is thought that he hit some ice in the water which wrecked the boat. He drowned just before his wife gave birth to their third child, and his body was not found until about 3 weeks after his death (Spaulding, pers. comm.).

Since October 8, 1976, when the lighthouse was automated, the critical roles of the keepers have been performed by relays, generators, and computer chips. Now the island is visited by researchers observing wildlife, USCG workers maintaining the buildings, and an unfortunate boater or two. On August 18, 1981, Bar Harbors's largest fishing vessel--The Northern Miner--ran aground on Egg Rock at 1:52 AM. The boat suffered a 10-in gash in the keel, and her sister ship, theJesse , from Steuben had to come in the afternoon to help pull her off at high tide (Brechlin, 1981). The reasons the boat ran aground at such and early hour are unclear. Quinn (1983) reported that "Egg Rock is the only island ledge with a light house (which was operating at the time) and there was no explanation given as to why the vessel grounded."



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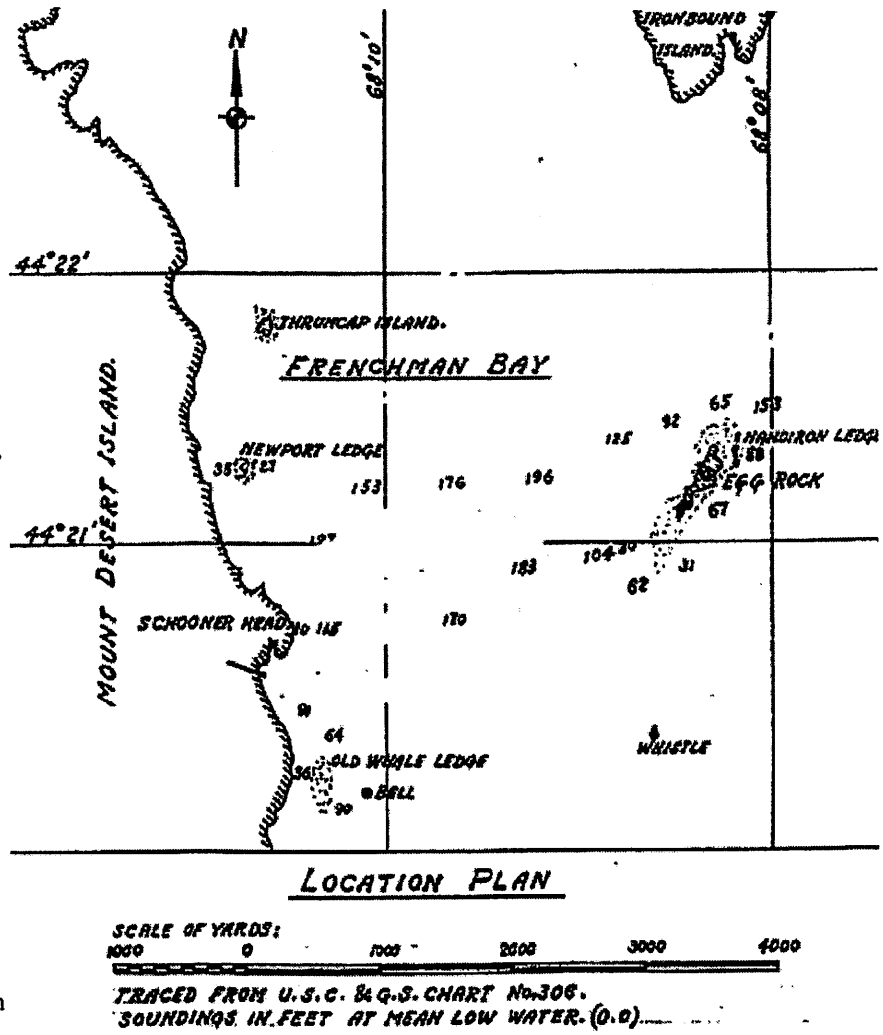
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