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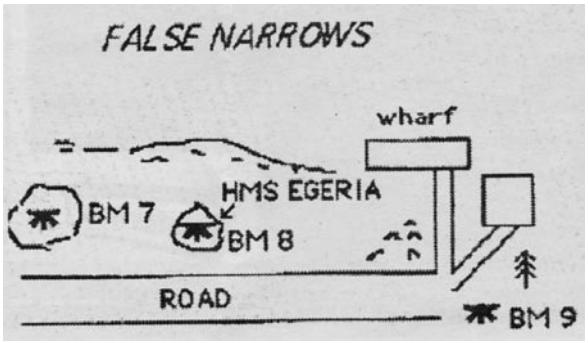
Charting Gabriola —the survey of HMS *Egeria*, 1904

by Nick Doe

Many Gabriolans, and certainly many residents of Mudge Island, are familiar with the 20th-century "petroglyph" down at Green Wharf. The petroglyph is carved on the west face of a large sandstone boulder, about 20 metres (75 ft.) from the wharf. It was used by the surveyors of HMS *Egeria* under Commander J.F. Parry in 1904 as a benchmark for their tidal observations in Dodd and False Narrows. The line at the top of the arrow ⊼ was, according to Parry's notes, taken to be 20 feet 6 inches above the low low-water on ordinary spring tides, and it was this sea level that was used for defining the shoreline around Gabriola and Mudge on his charts.

Next to the benchmark, there is an additional carving, in smaller lettering, but in similar style, now almost completely obscured by the trunk of a Douglas-fir tree, which simply says F.O.E. 11.1621. On top of the boulder, there is also a small "modern" Canadian Hydrographic Service benchmark, BM 8 1978.

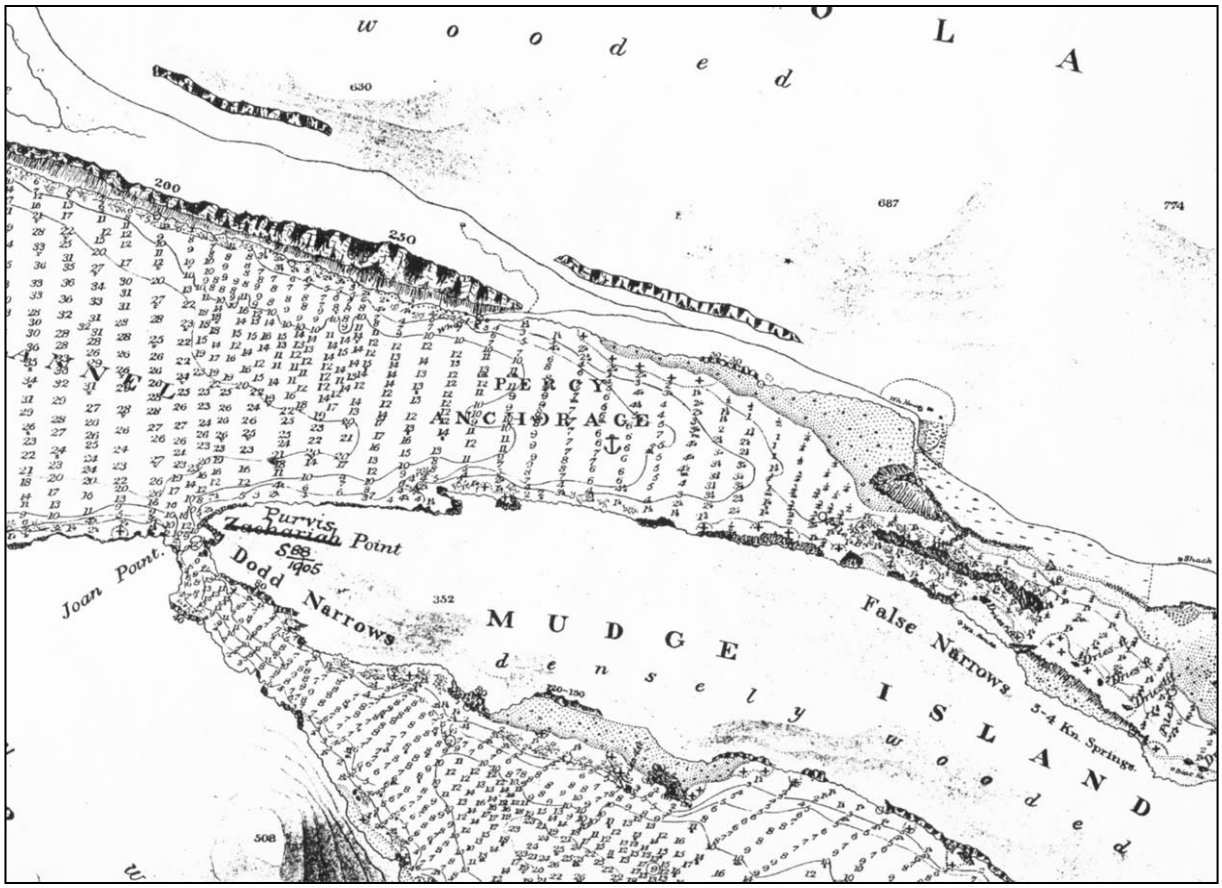
HMS *Egeria* was a 940-ton, 4-gun sloop (two 20-pounders and two machine guns) with three square-rigged masts, a funnel, and one coal-fired steam-driven propeller. It was 160-feet long, had an iron frame sheathed in teak and copper, and was built in 1874 at the naval dockyards at Pembroke, which is at the head of Milford Haven in southwest Wales.



Sketchmap of Green Wharf published in the *Gabriola Sounder*. BMs are benchmarks of the Canadian Hydrographic Service.

The survey ship HMS *Egeria.* It was painted black before the familiar battleship grey was introduced. When under sail, the propeller was hoisted clear of the water to avoid drag. It sailed at 6–8 knots and steamed at 11. It hit a rock off Gabriola in June 1905, but little damage was done.

Victoria Maritime Museum P.983.33.1



A small section of manuscript chart B 9837 drawn by Lieut. Charles W. Tinson, November 1904. It shows Dodd Narrows, the western entrance to False Narrows and the reefs therein, and the Percy Anchorage (Brickyard Beach: Algernon Percy was a Duke of Northumberland and first lord of the Admiralty). It gives some idea of the number of soundings that the boat crews made. A white house is recorded at the bottom of what is now Ferne Road, close to what was to become the brickyard quarry.

Judging from a photograph of the ship's company, which included two dogs—Irish Setters if you must know—the vessel had a crew of about ninety, ten of whom were officers, although not all were on board when *Egeria* was here. The ship arrived on Vancouver Island from China in February 1898, and for several years was based at Esquimalt and used in the Admiralty Hydrographic Service.

Historical background

The history of the charting of the coast in the 19th and early-20th century is best summarized in quotes from a book by Stanley Filmore and Sandy Sandilands. In the 19th century, much effort was expended by the Royal Navy in charting the Canadian Arctic and searching for the lost Franklin expedition.

> "On the west coast, meanwhile, [Captain] Vancouver's charts [of the 1790s] were felt to be sufficiently accurate and extensive enough to cover most contingencies [although Governor James Douglas most certainly would not have agreed]. But some Admiralty survey work was conducted by Captain Henry Kellett and Sir Edward Belcher….

> In 1857, Captain G.H. Richards, in command of HMS *Plumper*, arrived…initially to conduct surveys required for the settlement of a dispute involving the correct determination of a United States/Canadian border in the [San Juans]…. Richards first concentrated his surveys in the contentious boundary area and then, in 1858 and 1859 seasons, he worked around the Gulf Islands [including Gabriola], and also in the Fraser River, Burrard Inlet, Victoria, and Esquimalt….
>
> Richards was recalled to England—he'd been promoted Hydrographer of the Royal Navy—and from 1863 to 1870, west coast charting continued under Captain Daniel Pender. Pender chartered the Hudson's Bay Company steamer *Beaver* and set to work…. In 1869, Pender surveyed Burrard Inlet investigating sites for buoys, lighthouses, and beacons at the request of the British Columbia Government, which wanted to develop sawmill interests in the area. This was before the founding of the city of Vancouver….
>
> As the last two maritime provinces—British Columbia on the west coast, Prince Edward Island on the east—joined Confederation in the early 1870s, the Dominion Government was pressured to assume responsibility for the charting of its own shores. But the simple fact of the matter was that it could barely afford the men, ships, and money for hydrographic operations on the Great Lakes, let alone on two sizeable seacoasts. Accordingly, requests to the British Admiralty for surveys were made on an 'as needed' basis, with the understanding that the Canadian Government would pay half of the costs of each venture.
>
> On the west coast, during the decade after British Columbia's entrance into Confederation in 1871, Admiralty hydrographers made reconnaissance surveys at the request of the Canadian Government, of inlets suitable for a terminus for the CPR. But it wasn't until 1898 that an Admiralty hydrographic ship was again stationed on a regular basis at Esquimalt. This was the HMS *Egeria* and she remained on the coast until 1910. Her reasons for being there were several. In 1899, *Egeria* spent four months engaged in ocean sounding along the route of the proposed Pacific cable from Canada to Australia. The following year, she began resurveying the east coast of Vancouver Island [and the Gulf Islands], bringing charts up to modern standards in a response to increased shipping in the area…..
>
> In 1906, the focal point of the surveying on the west coast switched from the populated southern areas to the relatively virgin, northern coast of British Columbia. The Grand Trunk Railway was pushing its way west and adequate charts had to be produced to open a new terminal to shipping from the Orient. Prince Rupert was the eventual location of that terminal."

With the formation of the Naval Service in May 1910, Canada became solely responsible for its own coasts, and in November, the base at Esquimalt was handed over by the British. The few remaining men and ships returned to the UK, which left the nascent Royal Canadian Navy, then under the Minister of Marine and Fisheries, in a sorry state. Postmasters across Canada were tasked with recruiting young men who were "sea-wise" or had a "sea-sense". One can imagine that not too many from the Prairies were forthcoming. It wasn't until 1920 that training became more organized and recruiting more effective.

HMS *Egeria* was decommissioned and sold at public auction in 1911 to the Vancouver branch of the Navy League for £1416, just under 7000 US dollars. It was intended as a sail-training ship and the ship was towed to Burrard Inlet by volunteers, but sailing was not where it was at, and so *Egeria* was scuttled (some say burnt) in North Vancouver in 1913.

It was one of the last ships of the naval sailing era.

The two ship's dogs (first and second on the *left*) and senior officers of HMS *Egeria*. Somewhere here there likely is Charles Tinson of Tinson Point on the Twin Beaches peninsula, Gabriola. The man holding the dog may be George Nares.

Photograph in "The Chartmakers"

The Gabriola survey

HMS *Egeria* arrived at Percy Anchorage (off Brickyard Beach), Gabriola, from Miners Bay on Mayne Island in 1904. For all of November, surveying parties went out, weather permitting, to sound and chart the near-by coast. Unlike Captain Vancouver's a century earlier, two of their small boats were equipped with a steam engine and this sped up the work and required fewer men.[1] They did however require reasonable weather; no strong wind, fog, or heavy rain. The *Egeria* actually left the Gabriola anchorage several times to go briefly to Chemainus or Nanaimo during November, probably in part to finish up the details of interrupted earlier survey work. It had also previously been in Nanaimo briefly in July and August 1904.

Parry's chart of Dodd Narrows and False Narrows remained current until 1961.

Placenames

Although the names of the officers of the *Egeria* were, in the surveyors' tradition, used in a modest way for several local geographical features, not all the names have survived. On the manuscript charts and in the ship's logbook we find credited:

Commander: John Franklin Parry (b. 1863).
Lieutenants: Vivian Roland Brandon (b. 1882); John Harry Knight (b. 1881); Irving Brock Miles (b. 1869); John Howard Nankivell (b. 1882); George Edward Nares

[1] See Appendix 3.

A boat crew from HMS *Egeria* on a survey. There are seven people shown; two sounding, two taking bearings on big tripods set up on shore to ensure the course was straight; a stoker; an engineer; and a coxswain (helmsman). See Appendix 3. The party usually used a hand lead for sounding, but they also had a device with 100 fathoms of steel wire, 21-pound weight, bell, dial, and grab for sampling the bottom.

Small part of BC Archives F-03787 spotted by Mike Layland, Victoria.

(b. 1873); and Charles Wills Tinson (b. 1883).

Rocky Point on Gabriola, known locally as Pilot Point, became, and still is Tinson Point after one of the lieutenants. But Miles Point, also after another lieutenant, is now Malaspina Point. Knight Bay hung in there for a while, but eventually became the misnamed Descanso Bay (no Spanish ship ever anchored there). Nankivell Point near Nanoose is still there, as are the Brandon Islands in Departure Bay, and Nares Point, formerly Boulder Point, at the north end of Newcastle Island.

The Geographic Board of Canada's efforts to give us the "Galiano Gallery" in 1906 hasn't fared well. It is still known locally by Commander Parry's name given in 1904, the "Malaspina's Galleries".

The officers

All of the lieutenants were young men in their twenties or early thirties. Several came from well-connected families and all from families with a strong Royal Naval tradition.

Charles Tinson must have enjoyed his trip to the Gulf Islands for on January 15, 1905, the *British Colonist* announced his engagement to Ruth K. Maude of Mayne Island, though there's no trace of a subsequent marriage. His sextant is shown on the title page. It sold at auction for C$560 in 2007. Other young men must also have enjoyed Canada. Lieutenants Knight and Miles later left the Royal Navy to join the Canadian Hydrographic Service, and Lieutenant Nankivell retired in Victoria BC.

The *Egeria* had a sports club; their soccer team played in Victoria from Christmas to the beginning of March, and there is one archival photograph of the crew successfully salmon fishing. The ship's *Sporting Journal* also describes hunting trips[2] from which we gather that it wasn't a bad life, so long as you weren't a duck.

The petroglyph mystery

The *Egeria* benchmark at Green Wharf is one of several in the Gulf Islands. There is a similar one for sure in Miners Bay on Mayne Island, and another in Bedwell Harbour on Pender Island. All give the reference for measuring sea level while observing the local tides. The petroglyph on Gabriola is different however, in that there is

[2] BC Archives MS-1008. See Appendix 1.

an additional marking F.O.E. 11.1621, credit for the finding of which behind a large Douglas fir should go to Tammy Kinloch (only the "E." is easily seen).

In the *Gabriola Sounder*, 2000, Debi Williams wrote in Samuel Bawlf fashion (tongue-in-cheek):

> "There was some speculation recently, that F.O.E. 11.1621 might be a date. That would be November 1621! First contact was reported to be Cook in 1788. The imagination soars with the possibilities. Could another tall ship have been exploring this coast over a hundred years before that? The site is definitely safe anchorage during one of November's storms. Would there have been a waterfall coming off the cliff nearby where thirsty sailors could pull alongside and fill empty casks without having to leave the safety of the ship or even the water? Perhaps they needed to make emergency repairs after trying to head down the unknown (False) narrows. Maybe they were just lost at sea in one of winter's major storms, never returning to wherever they came from, to tell of the resource rich land they had visited. But…probably not."

She goes to say:

> "[Grant Keddie at the Royal BC Museum in Victoria] feels that the three letters stand for First Officer Egeria, and that the numerals are a datum point. In the late 1890s, England's Royal Navy sent out the [H]MS *Egeria* as a survey ship…. The crew marked many sites in the Strait of Georgia including two on Mayne Island, one near Thetis Island, and off Chemainus' Bare Point. At South Pender, they named the bay where Bedwell Harbour is located, 'Egeria Bay' due to this early benchmark."

Not to be outdone by Grant Keddie, our own island history expert, Barrie Humphey, casually mentioned to me one day that F.O.E. also stands for "Fraternal Order of Eagles" and that there is one of the earliest groups (Aerie #15) in Nanaimo. The dating was perfect. The order was formed in Seattle in 1898. Plenty of time for them to be organizing a picnic on Gabriola in November 1921 to celebrate the 300th anniversary of the first thanksgiving of the Pilgrim Fathers in the 11th month, November, of 1621.

There ensued lots and lots of research. Old newspapers were scanned. Letters sent to the Fraternal Order. An article asking for information, complete with a cartoon, was published. The history of Thanksgiving was investigated. Log Books and draft Sailing Directions were obtained from the Hydrographic Office in Britain, but the all-important Remarks Book was never found despite much searching. And just in case this was all nonsense, hydrologists and surveyors in both Canada and the UK were quizzed. My files grew thick. But the mystery remained.

And then just recently, I gave it one more try. A letter to the Provincial President of the Fraternal Order of Eagles, Martin Kennelly, brought this swift and illuminating reply from Will Heigh, the BC Provincial Secretary of the F.O.E:

> "Ah, yes, this is an old one. The *Egeria*, an F.C. [Fantome Class] sloop sold and broken and burned by 1913 or so, replaced (I believe) the steamship *Beaver* at the task of conducting Royal Navy surveying along the coast. So the inscription is not in reference to our fraternity, but instead it is the abbreviation for "Fleet of Engineers". There was a similar carving found in the 1960s on a tree up the coast from Prince Rupert. As for the numbers, they were probably some cataloguing reference to which we are not privy. Sitting at anchor for days on end during the surveys would have provided ample time for landing parties to leave such souvenirs.
>
> I hope this helps. Fraternal regards, Will Heigh"

It did of course, help. All that remained was to explain the numbers, and that was easy once the link between the *Egeria* and the inscription had been made. It just had to be something to do with the tides. All it needed was a half-hour at the computer. If you list the times of the tides on the days of a full or new moon in the Northumberland Channel, you'll find that there is always a low tide at around 11 o'clock (11:00), and there is always a high tide the previous afternoon at around twenty-one after four o'clock (16:21). Hence the 11.1621.

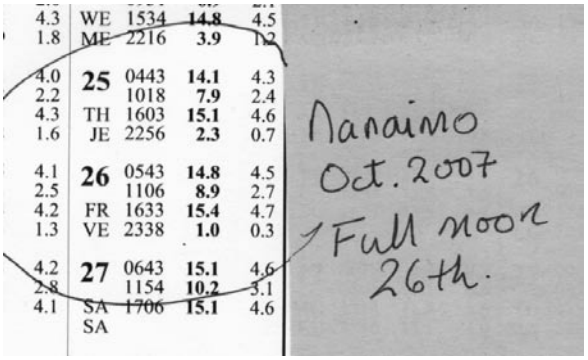
Why the previous afternoon and not the same day as the morning tide? Because it was naval practice to reckon a day as running noon-to-noon, noon being the time that observations of the sun were made for latitude and apparent time, and hence with the aid of a chronometer, the longitude. For the crew of the *Egeria*, the first tide on the "day" of the new or full moon was the afternoon tide, not as it is for us civilians, the morning tide.

Averaging the times of the two tides at Nanaimo (CHS 7917) for all the new and full moons in three years (2003/8/9) gave me the following numbers with one-sigma variation:

11:19 ± 25 minutes and 16:40 ± 69 minutes.

I suspect that the 1904 hydrographers were, in standard naval fashion, using Greenwich Time for their observations, and instead of subtracting eight hours (120°W) for the time zone difference, they more precisely used 8 hours 15 minutes corresponding to the actual longitude, 123°47.6'W, of Green Wharf. Assuming this to be so, the times of the tides become:

11:04 ± 25 minutes and 16:24 ± 69 minutes, close enough to 11:00 and 16:21, I submit, to constitute a theory.



Just in case you are wondering, the significance of the tides at new and full moon is that the timing of the tides is governed mostly by the passage of the moon, not the sun, and hence the tides occur at different times of the day, *except* on those days when the position of the moon and sun are the same or twelve hours apart. Knowing the fixed time of the tide on the day of a new or full moon, you can estimate the time of the tide on any following day by adding 50 minutes 28 seconds for every elapsed day.

The method doesn't work well here because resonances in the Pacific Ocean, Juan de Fuca Strait, and Strait of Georgia make the solar tide close to half as strong as the lunar tide with the result that the tides are mixed and not easy to predict. Captain Parry noted, "the tides are very irregular".

There are a couple of other clues that we have the theory right. If you calculate the difference between the timing of the afternoon tide and the tide the following morning, you find it varies slightly but systematically throughout the year because of the influence of the solar tide. The *Egeria* crew observed a difference of 18 hours 39 minutes, which roughly corresponds to October, a few weeks before we know they were actually here (although the 1904 tidetables also point to October).

The second clue is that Parry recorded on his manuscript chart that high water near Green

Tide clocks are like regular clocks except that they run slow, losing a couple of minutes every hour to match the moon's apparent motion relative to the sun. This clock goes around once every twelve lunar hours, which is twelve hours and twenty-five minutes of regular solar time. The indicated setting shows 5h 15m (solar) before high tide.

Such clocks can easily be an hour out—there's no minute hand you'll notice—but they're perfectly good for timing walks on the beach despite the manufacturers' warnings that they don't work on the west coast.

Wharf on the "full and change" days was "V hours", meaning that on the night of a full or new moon, he saw the tide high, five hours after the moon crossed the local line of longitude (due south or north) at midnight.[3] The five hours is the lunitidal interval for Gabriola, so if you have a tide clock that runs on lunar time, you need to set it, according to Parry, five hours slow. Sailors used to use the Nautical Almanac for a more accurate timing of lunar noon (meridian passage) each day.

[3] Richards, in 1859, measured "VI hours" at Entrance Island for "HW on F&C days" (high water on full and change days). By modern reckoning, the main lunar component of the tide, M2, peaks 5 hours 32 minutes after lunar noon or lunar midnight at Nanaimo.

Parry would thus have also seen a high tide twelve (lunar) hours earlier at 05:00–12:25 = 16:35 PST, and a low tide six (lunar) hours later at 05:00 + 6:12 = 11:12 PST. These times correspond to Green Wharf non-standard time, rather than PST, as 16:20—the petroglyph carvers' 1621—and 10:57—the petroglyph carvers' 11. Bingo! There you have it.

Tidetables generated using these numbers aren't accurate by modern standards, but they were all they had at the time. It works far better on Atlantic coasts, and tide clocks are usually sold for "east coast use only".

Questioned further about the Prince Rupert mark, Will commented:

> "All I remember about the PR [Prince Rupert] carving was that it was on a huge Sitka spruce about 20 yards in from the shore. What the inscription read is lost to my memory now. I was about nine years old and our family had come over from the Charlottes to Rupert to visit friends of my parents and they lived north of PR along the coast. It was about 1971 when I saw it."

Who did it?

We'll probably never know who did the carving but there are some clues.

Tide gauges in those days were not much more than staffs of wood with numbers painted on them and, because tides fluctuate considerably every day, the gauges had to be watched all the time to record the levels of the water. As Will Heigh remarked, "sitting at anchor for days on end during the surveys would have provided ample time for landing parties to leave such souvenirs".

A note in the logbook of *Egeria* for November 29, 1904, not regularly made, reads, "Tide party of 3 hands returned on board from tide watching duties". Now if one of the senior officers had been among

the three, he would have been named. So it wasn't carved by a Lieutenant. Add to this that the title "Fleet of Engineers" was an informal one, probably what the crew called themselves. Which adds up to one of the hands, not having much to do, and with no officer to tell him otherwise, added the 11.1620 inscription to their benchmark, not realizing that a future generation would have little idea how to use the numbers to calculate the time of the tide without a tidetable. A firsthand description of the tidetable party's duties is in Appendix 2.

References

Admiralty Manuscript charts, April 1905: B9837 (*Dodd and False Narrows*); B9838 (*Departure Bay and Approaches*); B9839 (*Nanaimo Harbour*). HMS *Egeria* Log Book (ADM 53/20025) and Commander J.F. Parry's draft Sailing Directions (OD121). The all-important Remarks Book for 1904 could not be located at the Hydrographic Office; RN Museum, Portsmouth; National Maritime Museum; or Public Records Office.

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Debi Williams, *Can a rock save a dock?*, Gabriola Sounder, p.1, March 31 and p.8, April 14, 2000.

Appendix 1 —Sports

The ship's *Sporting Journal* describes fishing, hunting, and skiing trips.[4] The entries for Percy Anchorage, 1904, read:

Nov.2: Dodd Narrows. Got 1 Mallard at Entrance Island lagoon.

Nov.8: 1 Duck & 3 Widgeon. In canoe with Tomlinson (2) through Canoe Pass & at mouth of Nanaimo R.

Nov.10–12: Nanoose. With surveying party in barge ….Nankivell got 2 Honkers…

Nov.17: 1 Mallard & 1 Snipe by Gabriola Lake. Saw 1 B. Grouse & about a dozen Willets, very wild. There are lots of old beaver signs & a lodge on the lake.

Nov.18: Went down to Ruxton Passage in the small skiff & round S. island of the DeCourcey Group. Got 3 Butter Balls [buffleheads] only. There was …shooting round the passage before I got there. Got towed to Chemainus by barge.

Nov.23: Went down to Ruxton Passage in canoe rigged up with brush. Got 1Harlequin. 2 Golden eye. 5 Buffel Hd. Just got through Dodd Narrows against the stream. Saw a Mink.

Nov.24: Through False Narrows & back by Dodd Narrows. Got 9 Buffel Hd. & shot at a Mink. Nankivell 8 Buffel Hd. & 2 Golden eye?

Nov.26: Nanaimo. Entrance Isd. lagoon on Gabriola with Nankivell. I Teal. N got 4. Stalked them on the inshore side of lagoon. Got mine on the spit as they came out.

Nov.27: Gabriola Lake. 1 Teal. 1 Coot.

Nov.30: Mayne Is. …with Knight-Nankivell…

Appendix 2 —Tide watching duties

From Arthur Walpole's reminiscences. Walpole served on the lower deck of HMS

[4] BC Archives MS-1008. An abstract; no author.

Egeria in British Columbia before continuing service at sea. In World War I, he was at Gallipoli in HMS *Queen Elizabeth*.

"An interesting feature of our routine work was tide watching. It was a job we all liked. A party of men was landed at a chosen point in charge of a petty officer. The tide pole was erected in a suitable position, the water being calm enough to avoid ripples, which would confuse the tide watcher, and yet far enough out to ensure a true record would be made of the rise and fall of the water.

The tide pole marked in feet and inches, was painted black and white. We lived in tents, and took turns to serve two-hour watches, making entries in our notebooks every half hour. At night, we obtained light from a ship's lantern. We had a boat so that we could go fishing when off duty. Or we could go off to pick salmon berries, a larger edition of the common loganberry. In fact at such moments we could do as we pleased. We would remain on shore for a fortnight before being relieved—quite a pleasant break for all concerned."

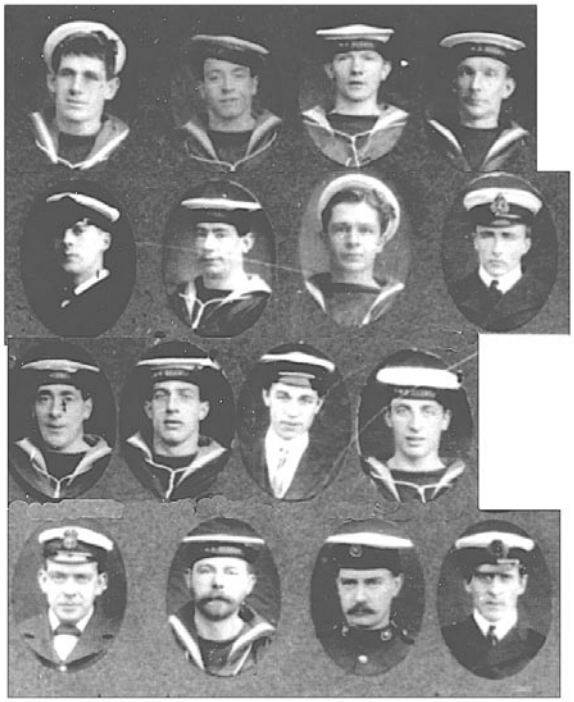
Appendix 3 —The ship's boats

Small part of BC Archives F-03787

From Arthur Walpole's reminiscences.

"We had two steam pinnaces, the *Herald* and the *Alert*, two 14-oared cutters, a jolly boat, a whaler, a captain's gig, and a wardroom skiff, which hung at the stern rails for use by the officers. It was manned by two boys in turn to avoid favouritism, for the crew of the wardroom skiff had a cushy job.

The pinnaces were about 25 feet long, with covered-in stokeholds amidships. The stoker fed the fire from sacks of coal on the deck and the stoker petty officer worked the engine under the enclosed hatch, putting out his head from time to time to get a breath of fresh air. Each pinnace was steered by a tiller and there was a tiny cabin in the stern, which could take six men at a pinch. There was a regular crew of five—a coxswain, two ratings, a stoker petty officer, and a stoker. And both the *Herald* and *Alert* had a jaunty brass funnels which had to be kept beautifully polished." ◊



Unidentified *Egeria* crewmembers